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Ahh...Summer

The livin' is easy. There are endless days at the lake followed by full-of-joy barbecues featuring great conversations punctuated with hearty laughter and then drifting off to a peaceful sleep with the sounds of summer outside your open window – for some of us maybe.

In Tom Wolfe's The Right Stuff, the crew of an aircraft carrier stationed in the tropics referred to its deck as "the skillet." I think that term could be used to describe the ramps of many airports in the summer, with hot sun beating down on the sticky, black tarmac. And in this busiest of seasons, this is where many maintenance personnel can spend extended shifts for many days in a row; either that or working long shifts at unnatural hours in the middle of the night and trying to sleep with the sun blasting in a window while your friends and family enjoy the lake. It could even be a combination of the two, working day and night to get the job done because the aircraft MUST fly. It's the nature of many aspects of this business (heli-skiing is an exception) that the summer months pay the bulk of the bills for the whole year, so we're stuck with it, like it or not.

All we can do is keep our wits about us and know when to call it quits before we become dangerous, and then – when that cherished day off finally arrives – make the most of it.

Go to that barbecue, have a swim, and leave your work behind. A worker with a balanced life is a better worker, so enjoy the rest of the summer whenever you can, and do something other than read aircraft manuals for entertainment. Maybe even leave this copy of AMU behind when you go away for the weekend.

— Ian Cook, Editor



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Upcoming Events

CANADA

50th Abbotsford Airshow

August 10 – 12, 2012 Abbotsford Airport, BC www.abbotsfordairshow.com

Atlantic Canada International Airshow

August 25 – 26, 2012 Summerside Airport, PEI www.airshowatlantic.ca

Canadian International Airshow

September 1 – 3, 2012 Exhibition Park Toronto, ON; www.cias.org

Ontario AME Symposium

October 17 – 19, 2012 Delta Meadowvale Resort and Conference Centre Mississauga, ON www.ame-ont.com

UNITED STATES

56th Annual ACPC – Air Carriers Purchasing Conference August 18 – 21, 2012 Caesar's Palace Hotel and Casino

Las Vegas, NV www.acpc.com

Aircraft Interiors Expo Americas

September 25 – 27, 2012 Washington State Convention Center Seattle, WA www.aircraftinteriorsexpo-us.com

AOPA Aviation Summit

October 11 – 13, 2012 Palm Springs Convention Center Palm Springs, CA www.aopa.org/summit

NBAA 65th Annual Meeting

and Conventioin October 30 – November 1, 2012 Orange County Convention Center, Orlando Executive Airport Orlando, FL http://www.nbaa.org/events/amc/2012/

INTERNATIONAL

9th Annual Latin American Business

Aviation Conference & Exhibition August 15 – 17, 2012 Congonhas Airport – Av. Washington Luís, 6000 – Gate 3 Sao Paulo, Brazil www.abag.org.br/labace2012/eng/ labace2012.htm

Shanghai International General Aviation Show

August 28 – 30, 2012 Shanghai World Expo Exhibition and Conventioin Center Shanghai, China www.sh-aero.com/en/

Beijing International Business

Aviation Show September 4 – 7, 2012 Flight Inspection Center of CAAC Beijing, China www.cibas-beijing.com

Berlin Airshow

September 11 – 16, 2012 Berlin ExpoCenter Airport Berlin, Germany www.ila-berlin.de

Business Aircraft Europe

September 12 – 13, 2012 Biggin Hill, UK www.miuevents.com/bae12

Dubai Helishow

November 6 – 8, 2012 Grand Stand, Meydan Hotel Meydan Racecourse Dubai, United Arab Emirates www.dubaihelishow.com

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Digital Torque Tester from Snap-On provides quick and accurate tests

The new Digital Torque Tester from Snap-On Industrial is a low-cost torque tester that can be mounted on a wall or in a bench-top vise to allow a technician to quickly and easily test torque wrenches and torque screw drivers.

The tester comes in 1/4-inch, 3/8-inch, 1/2-inch and 3/4-inch sizes, and features a user-friendly touch screen pad to capture peak torque values during a test in real time. Six different styles of the tester are available, and come in test ranges between 5 and 600 foot pounds.



New Electronic Dial Bore Gages are easy to read, easy to use

Sunnen Products has announced the availability of optional, large-readout electronic indicators on its entire range of dial bore gages. Highly visible in the shop environment and a quick reference for multi-tasking operators, the new electronic dial bore gages feature precision indicators with 6-digit LCD readouts, 11-mm character height and three large buttons for easy operation. Capable of checking bore sizes from .054 inches (1.37 mm) to 12 inches (300 mm) and bore lengths up to 24 inches (600 mm), Sunnen's electronic bore gages allow users to set upper and lower tolerance limits for GO/NG judgments.

For more information visit www.sunnen.com



Ultra-Portable Jack Weigh Kit now available in waterproof case

Intercomp's Wireless Jack Weigh Kits feature top-of-jack weighing, now in a more compact, user friendly, package. This new kit comes with all the features of larger kits but fits in a standard, ultraportable case. This waterproof, hard case features a convenient telescoping handle and wheels for the ultimate in



portability. This kit allows your operation the ability to economically complete your aircraft weighing in-house. This wireless weighing system features advanced digital output load cells, which perform the analog to digital output conversion right at the cell itself. These systems offer the utmost in accuracy and ease-of-use. For more information visit www.intercompcompany.com

DHC-6 Twin Otter STC SA03971AT approved to install Concorde Batteries

Concorde is pleased to have the RG-380E/60L selected as the original equipment battery for Viking Air Limited new production DHC-6-400 aircraft. Concorde is also pleased to announce FAA approval of STC SA03971AT to replace nickel-cadmium main and auxiliary batteries on DHC-6-1, DHC-6-100, DHC-6-200, and DHC-6-300 vintage aircraft. The STC provides for



the replacement of the heavy duty main 40Ah nickel-cadmium or AN-3150 lead-acid battery and/or the nickel-cadmium auxiliary battery. The main battery can be replaced with either of Concorde's popular RG-380E/44 (42Ah) or higher capacity RG-380E/60L (48Ah) battery for cold weather operations. For more information visit www.concordebattery.com

Hartzell receives STC approval for Top Prop conversion kit

Hartzell Propeller Inc. has received an FAA Supplemental Type Certificate (STC) for its new 3-blade Top Prop conversion kit for Cessna Skylane R182, FR182, TR182 and T182 (Lycoming O-540-J3C5D or O-540-L3C5D powered) models. These turbocharged and/or retractable Skylanes were last built in 1986 in both the USA and France. The new



Top Prop kit improves performance, increasing the value and utility of these unique Skylane models.

For more information visit www.hartzellprop.com

Service Landing Gear Struts 10x faster and 10x safer

Bogert Aviation has introduced a revolutionary new tool. The 16M-PSF Pressurized Strut Filler (patent pending) completely changes the way landing gear struts are serviced. This new method is totally safe and totally clean. It's 10 times faster because you don't have to drag the jacks out to lift the plane and



10 times safer because the plane never leaves the ground. For more information about this product, visit www.bogertaviation.com or call (800)627-8088.

To announce your STC or new product, email a JPG photo and a product description to amu.editor@gmail.com or amu.magazine@telus.net

6



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AAC LOGS 12-YEAR CHECKS ON BOEING BUSINESS JETS

GENEVA, May 14, 2012 — Standard Aero has announced that Associated Air Center (AAC) – its Large Transport Category, VIP Aircraft Completions Center in Dallas, TX – has logged multiple Boeing Business Jet (BBJ) 12-year inspection service contracts. To date, AAC has completed two and currently has two in the works. AAC has four additional 12year service inspections scheduled for 2012. These 12-year checks are on the first deliveries of the BBJ.

AAC specializes in maintenance checks with an AOG service that offers direct support for operators. The company's 12-year check offers BBJ operators a streamlined cost- and time-saving MRO alternative to enhance customer value by giving the customer options to refurbish cabin furnishings and avionics upgrades in the same time frame as the 12-year check. Associated Air Center also provides landing gear overhaul support which has been timed to coincide with the 12-year checks for the Boeing BBJ aircraft. The tooling for gear removal and reinstallation is provided at no charge to customers requiring this service.

Associated Air Center is a recognized leader in cabin completions for Boeing and Airbus aircraft. Supporting its reputation for excellence in quality and distinction is the company's MRO capabilities with its on time delivery performance and consistency in customer satisfaction. For more information visit www.standardaero.com.

FORUM ISSUES A CALL FOR APPRENTICESHIP CHAMPIONS

OTTAWA ON, June 7, 2012 — The Canadian Apprenticeship Forum (CAF-FCA) has launched its first membership campaign, calling for champions of apprenticeship to come forward to support

a national research, discussion and promotion mandate.

"The Canadian Apprenticeship Forum has fundamentally changed the apprenticeship conversation in Canada, bringing together apprenticeship stakeholders to the benefit of all," said Pat Blackwood, Director of Skilled Trades at CAW Canada and the organization's outgoing chair. "We've built an organization that provides unique research insights, facilitates national apprenticeship conversations, profiles promising initiatives and promotes apprenticeship as a valued pathway to great careers in the trades."

CAF-FCA's Board of Directors learned last July that operational funding would be discontinued as of March 2013 as part of cuts to the federal government's Sector Council Program. The Board of Directors has been examining options to allow CAF-FCA to continue its national apprenticeship mandate.

Dave Suess, CAF-FCA's incoming



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chair and Apprenticeship Learning Advisor at Suncor Energy, said: "With 12 years of government funding, we've built something truly unique – a national collaborative body that brings the stakeholder community together to solve apprenticeship challenges. We've become a place where the apprenticeship community comes together to share its successes and collaborate to effect change. It's time for stakeholders who recognize this value to step forward and put some skin in the game."

CAF-FCA is a not-for-profit organization working with stakeholders in all regions of Canada. It influences pan-Canadian apprenticeship strategies through research, discussion and collaboration to promote apprenticeship as an effective model for training and education. Members are expected to include apprenticeship champions, practitioners and trainers across Canada, as well as businesses, apprentices and journeypersons.

More information about membership levels and benefits are available at www.caf-fca.org.

BAKER AVIATION PURCHASES AEROMECH, LLC

DALLAS TX, June 27, 2012 — Baker Aviation Maintenance, LLC recently announced they have purchased Aero-Mech, LLC. As part of the agreement, Baker will now operate at two locations: Meacham International Airport (KFTW) in Forth Worth, TX, and Addison Airport (ADS), in Dallas, TX. The purchase was finalized in late 2011.

Originally a mobile maintenance company, AeroMech, LLC has been known for their aircraft inspection/repair work and their superior product knowledge gained over a 28-year span. Baker will capitalize on this extensive knowledge and reputation by retaining all AeroMech, LLC employees.

In addition to providing extra hangar space for maintenance operations and expansion, the agreement also gives Baker the means for additional tooling purchases for customer support. All maintenance operations will take place at Addison Airport; services offered include avionics installation and repair, interior refurbishment, and full line maintenance. Currently, Baker offers airframe maintenance for Hawker, King Air, Beechjet and Citation aircraft.

Baker Aviation is a full-service private aircraft charter, management, and maintenance company licensed to provide professional aviation services in the United States, Canada, Mexico, Central America and the Caribbean. ARGUS Platinum Rated, they are headquartered at Meacham International Airport, Forth Worth, with new maintenance facilities at Addison Airport, Dallas, specializing in airframe maintenance for Hawker, King Air, Beechjet and Citation Aircraft.

To learn more or to schedule service, please visit www.baker-aviation.com or call 877-541-5387.

NEW PROGRESS ON AIRCRAFT CO2 STANDARD

ST. PETERSBURG RUSSIA, July 11, 2012 — Global aviation has moved a step closer to establishing a worldwide CO2 standard for aircraft as the International Civil Aviation Organization's (ICAO's)

Committee on Aviation Environmental Protection (CAEP) unanimously agreed on a CO2 metric system which characterizes the CO2 emissions for aircraft types with varying technologies.

"The new CO2 metric system agreed today by intergovernmental and nongovernmental organizations, addresses emissions from a wide variety of aircraft on a fair and transparent basis," stressed ICAO Council President, Roberto Kobeh González.

"It includes factors which account for fuselage geometry, maximum takeoff weight and fuel burn performance at three different cruise conditions and is a major move forward."

The CAEP agreement on the new aircraft CO2 metric system will allow observer organizations that comprise the CAEP to move onto the next stages in the development of an ICAO CO2 aircraft standard. This work includes the definition of certification procedures to support the agreed metric system and the standard's scope of applicability.

For information visit www. icao.int/ Newsroom/Pages/default.aspx.



Feature

Stalling aka Delaying



BY MIKE BRODERICK Helicopter Engine Repair Overhaul Services

Today we are exploring the word "stall"

- as in "delaying" or not wanting to finish the task at hand, or to put it another way, a cool new cocktail knowledge (CK) word, "prevaricate". The reason I bring this up is that I am going to have to stall on our exposé on the Mighty Martin Mars. It is not that I do not **want** to finish the task at hand; no, quite the contrary. It appears that because of scheduling conflicts between my friends who fly these wonderful aircraft and me, we could not get together for the last part of the article, which requires a visit to their facility, an interview with the maintenance crew and pilots, and best of all, a flight in one of these magnificent aircraft. So in consideration of the circumstances as just explained, our studies about the Mars sisters are in a stall mode until further notice.

However, speaking of stalls, how 'bout when a turbine engine compressor stalls in its assigned job? See how cleverly I snuck into the subject? That is why I get paid the big bucks. Anyway, what happens when the compressor does not effectively persuade the air to en-

ter into the engine? The individual compressor blades stall (just like the wings on an airplane; see Figure 1 at left) and the air that the compressor should be processing and delivering to the turbine for combustion begins to surge in reverse of its designed flow.

If you noticed, I used both stall and surge to describe the airflow disruption in a compressor.

Is there a difference between a surge and a stall? The short answer is yes. However, this disruption of compressor airflow has been called both surge and stall, with the terms seemingly interchangeable. But a compressor experiences a surge when the airflow disturbance effects the operation of the entire engine. The word "stall" applies to the action occurring at each individual compressor blade.

The basic cause of compressor surge is fairly simple. Each blade in an axial flow compressor is a miniature airplane wing which, when subjected to a higher angle of attack, will stall just as an airplane wing stalls, as we just discussed. Surge may be defined as resulting from an unstable air condition within the compressor. A pilot or engine operator has no instrument to tell him that one or more blades are stalling. He must wait until the engine surges to know that. The unstable condition of air is often caused from air piling up in the rear stages of the compressor. Surge may become sufficiently pronounced as to cause loud bangs and engine vibration. In almost all cases, this condition is of short duration, and will either correct itself or can be corrected by retarding the throttle or power lever to idle, then advancing it again slowly. This, of course, is an action that is counter intuitive to most pilots, especially in a single-engine helicopter. However, there are other things to minimize the tendency of a compressor to surge. The compressor can be unloaded during certain low RPM conditions, like during the start cycle, by reducing the pressure ratio across the compressor for any given airflow. One method of doing this is by bleeding air in the middle or toward the rear of the compressor. In a dual axial compressor engine, air is often bled from between the low and the high pressure compressor. Air bleed ports are located in the compressor section. These ports are fitted with automatic overboard bleed valves which usually operate in a specified range of engine RPM.

Some large engines have been provided with variable-angle stators (variable stators) in a few of the forward compressor stages. The angle of these vanes changes automatically to prevent the choking of the downstream compressor stages as engine operating conditions vary. One thing that all turbine and turbo-shaft engines share, as you can see in Figure 2 at top right, is that their optimum performance is operating very close to its surge line.

As you are looking at Figure 3 on page 12, you can see that during blade stall, the air shifts from its general direction of motion, at which point the low pressure on the upper surface of the blade disappears, which causes the formation of turbulence toward the back of the blade's upper surface. When this flow disturbance forms, the normal flow of air is disrupted on that particular blade. When a bunch of blades within the compressor experience this phenomenon it can lead to a compressor surge.



Compressor Designs

Axial Flow

There are three basic types of compressor designs in use today. They are: axial flow, centrifugal flow, and a combination of both. Figure 4 on page 12 is an example of an axial flow compressor. This is a typical compressor design used in turbine engines powering large transport fixed-



wing aircraft as well as the business class private aircraft. As you can see, air is drawn in by the larger blades on the low pressure compressor and is transported axially or parallel to the axis of rotation (thus the name axial flow compressor) to the rear of the compressor rotor or the high pressure compressor. During this transportation, the pressure increases proportionally at each row or stage of the assembly. Axial types of compressors are more prone to a blade stall leading to a compressor surge, than the centrifugal flow or the axial/centrifugal flow compressor. To relieve the possibility of a compressor blade stall and/or compressor surge, a bleed valve assembly is mounted to the external casing in between the low pressure and high pressure sections.

Centrifugal Flow

In Figure 5 (opposite page) we have a





picture of a Rolls-Royce 250 Series IV turbo-shaft engine, which is an example of a single stage centrifugal type of compressor. This is an engine used in a number of helicopters in production today, the most popular being the Bell model 206L series. A centrifugal compressor is most likely the least prone of all the designs to experience a blade stall/compressor surge. The bleed valve in this installation is mounted on the shroud. Also, to assist in the prevention of stall and surge issues, the compressor is designed with a relief port called the blow/suck hole that allows air to escape at low RPMs. As the speed increases and the pressure ratio in the compressor changes, it actually draws air into the compressor.

Axial/Centrifugal

The next example (Figure 6 on page 14) is another entry from the design team at Rolls-Royce (Allison). This is a 250 Series II or turbo-shaft engine. This also is a popular engine found in a large number of turbine-powered helicopters. The model shown in Figure 6, the 250-C20J, is specifically used in the Bell 206 BIII helicopter. As you can see, this engine is designed with six axial compressor wheels with a centrifugal impellor as the last stage of compression. This engine, like the Series IV, uses a bleed valve to relieve the compressor during the starting sequence. The bleed valve is mounted between the fifth and sixth stages of the axial compressor.

The next example (Figure 7 on page 16) is the Pratt & Whitney PT 6 turbo-shaft engine, which also has a combination of both types of compressor design, but with a slightly different twist than the 250 engine. In this design the axial compressor is more of an air accelerator (rather than increasing pressure axially), driving as well as stabilizing the air to the entrance of impellor. This engine, like the previous engines, uses a compressor bleed system to relieve the compressor from the possibilities of stall during starting.

In Figure 8 (on page 16), we see the final example of an axial-centrifugal compressor: the Honeywell (Lycoming)



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CALL OR VISIT US ONLINE! 618.797.3140 (local) 618.931.0190 (fax) apsbrakes@apsbrakes.com (email) WWW.APSBRAKES.COM T53 engine. This engine uses a variable inlet guide vane design to help relieve compressor blade stall during the start sequence.

The cause of compressor blade stalls and compressor surges:

Now that we have discussed the mechanics of a compressor blade stall and compressor surge, what are some of the causes and what can and have been done to mitigate the circumstances that cause compressor stalls?

Mechanical designs

First, the engine manufacturers have designed compressor bleed valves to relieve the compressor. These are simple devices that sample compressor discharge pressure and, via a mechanical valve and seat system, allow a certain percentage of air from the later stages of the compressor to escape until the compressor rotational speed reaches its optimum RPM to process all the air required to support combustion. Bleed valves are always open during start and at low engine RPMs.

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Next are variable inlet guide vanes (as shown in Figure 9) and are used in the Lycoming T53 engine. This device will rotate the stator vanes to relieve compressor pressure. This system is a little



more complicated than the simple bleed valve but accomplishes the same job and, like the bleed valve, is mainly working during the start cycle.

Fuel systems have become more automatic and meter fuel in a more precise manner so as not to push the compressor to try and process more air than is mechanically possible.

The latest versions have moved from a mechanical and pressure sensing operation to computer controlled fuel systems.

Operational/Environmental Factors

No matter what the engine manufacturer designs, the operational environment will also contribute to the possibility of a compressor stall.

Here are a few examples:

- Flying in erosive conditions which compromise the shape and design configuration of the compressor blades
- 2) FOD



"

... the honking and roaring that you hear are some of the compressor blades stalling a bit ... Should this persist and you hear explosive sounds, abort the start and investigate the cause ...



- 3) Landing/taking off from unimproved landing zones or runways contribute to the erosion or FOD
- 4) Degradation of the stall margin over time due to normal wear
- 5) Distorting the intake flow during an abrupt maneuver
- 6) A helicopter hovering in a tailwind condition
- 7) Hovering such that the helicopter is re-ingesting hot exhaust gasses
- 8) A malfunctioning bleed system
- 9) Flying in ice, water, or snow which can block or distort the inlet

What do compressor blade stalls and compressor surges sound like?

The next time you hear an engine start, listen to the compressor noise. The honking and roaring that you hear are some of the compressor blades stalling a bit. This is a normal event and usually ceases early in the start sequence. Should this persist and you begin to hear a rapid staccato of explosive sounds, abort the start and investigate the cause.

After the engine is running and you move from an idle RPM to the full flight RPM, and you hear a loud explosive report, investigate to see if the pilot has commanded too rapid an RPM increase or see if the fuel system requires an adjustment. Also, check the condition of the compressor. Although there is most likely no damage caused, this event (assuming that it cannot be attributed to pilot technique) was the beginning of a complete compressor surge, and is a symptom of something that the maintenance folks should investigate and address.







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Most likely the previous events just described will not cause any damage to the airframe or the engine but should not be ignored. However, should you hear a loud explosive sound from the engine, either during start or during operation, check the instruments for a rise in turbine temperature, and the engine for a degradation in RPM and/or power. Congratulations, you have just experienced a compressor surge and have most likely severely damaged the engine and, in the case of a helicopter, quite possibly some of the dynamic components.

In all cases of a compressor surge, read and follow the engine and the airframe manufacturer's maintenance instructions. From a maintenance perspective, how can you prevent a compressor stall?

- keep the compressor and the inlet filters clean
- pay attention to small changes in engine temperature, fuel consumption, and vibration signature as felt through the engine hard lines
- know the type of environment your aircraft is going to be operating in and adjust your maintenance habits accordingly
- pay attention to the pilot comments on changes in the aircraft operation

OK? Any questions on today's discussion? Good, then go forth and enjoy the adult beverage of your choice, and remember that your pilot is depending upon you to get home safely.

MIKE BRODERICK is Vice President of Business Development at Helicopter Engine Repair Overhaul Services (HEROS). Over the past 35 years, he has served as a shop technician, engine shop supervisor, Engine Program Director, Director of Maintenance, Director of Operations, and owner of a Rolls-Royce engine overhaul and MD Helicopter component overhaul shop. He is a certified A&P, and holds a Bachelor of Science degree in Aviation Administration. As well, Mike has been appointed as an FAA representative for the FAA Safety Team (FAAST) and is a member of the HAI Tech Committee. Mike is a regular contributor to Air Maintenance Update.

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PAMA SoCal Chapter



The May 2012 chapter meeting was a perfect illustration of how flawlessly SoCal PAMA Chapter President and Regional Sales Manager of Universal Avionics, Greg Potter, can change hats. After hosting a wonderful tri-tip dinner at the 94th Aero Squadron Restaurant on behalf of Universal Avionics and conducting the chapter's business meeting as Chapter President with guest intros, employment opportunities, and event announcements, Greg delivered his own (humorous) bio and Universal Avionics presentation on "New Mandates for CVRs and FDRs". Highlights of Greg's presentation were: mandate effectivity (Europe 2013, U.S. 2014), CVR/FDR related acronyms; revisions from current CVR (cockpit voice recorder)/DFRD (digital flight data recorder) back power up source time, interval sampling rates, data link recording time requirements and memory storage; aircraft equipment requirements (Pt. 91, 121, 135); CVFDR products, their physical attributes and data link recording and storage; RIPS (recorder independent power supply); cockpit control units; troubleshooting ramp tester/loaders; data parameters, and CVFDR panels.

Greg welcomes questions and inquiries. The chapter thanks Greg Potter and Universal Avionics for their generosity sponsoring the dinner, technical presentation and donating raffle prizes for the SoCal PAMA scholarship.

\$237 For The April 2012 SoCal PAMA Scholarship Fund Raffle Drawing

Thank you chapter supporters:

Aero-Nasch/Jet Brella, Aviall Van Nuys, Business Aerotech, Consolidated Aircraft, Dart Aviation, Gulfstream LGB, HRD Aerosystems, Kansas Aviation, Rotorcraft Support, Triumph Instruments, and Universal Avionics. All proceeds from raffle ticket sales benefit the So-Cal PAMA Scholarship Awards program.

Job Opening to Post?

Get the word out through SoCal PAMA. Send your postings to Dan-WRamos@verizon.net including company name, logo, position title, location of position, and contact information. The SoCal chapter offers employment and educational opportunity postings free of charge on its website to the aviation maintenance community worldwide.

Congratulations 2012 SoCal PAMA Scholarship Winners

- Nicholas Arnold, A&P Student Class of 2013 North Valley Occupational College
- Brian T. Felt, A&P Student Class of 2013 North Valley Occupational College
- David Murphy, A&P Student Class of 2013 S. CA Logistics Airport School of Aviation

Thank you SoCal PAMA supporters for making SoCal PAMA scholarships possible by your generous donations throughout the year. The 2013 SoCal PAMA scholarships applications are coming to SoCal-PAMA.org soon

Website

Advertise your company while you support SoCal PAMA for only \$50 for 12 months. Contact Gail Erwin or Nikki King for posting a new ad, renewal fees, and artwork updates. gailjerwin@verizon.net, nikki@extraord-n-air.com

SoCal PAMA Calendar 2012

- Sept. 1: Chapter Meeting
- Nov. 13: Chapter Meeting
- Nov. 15 Dec. 1: RSVP for Holiday Social
- Dec. 11: Holiday Social

Industry Events 2012

- Sept. 4 6: ALEA W. Regional Conference, San Diego; ALEA.net
- Sept. 11 13: AEA W. Regional Conference, Reno; AEA.net
- Sept. 12 6: Reno Air Races, Reno; Airrace.org
- Oct. 11 13: AOPA Aviation Summit, Palm Springs; AOPA.org
- IA Training Rotorcraft Support: TBA, Burbank; 818-997-7667
- Oct. 30 Nov. 1: NBAA Annual Convention, Orlando; NBAA.org
- Monthly: Western Museum of Flight, Torrance; WMOF.com

The SoCal chapter offers aviation event postings free of charge to the aviation maintenance community worldwide.

SoCal PAMA Board of Directors

- Greg Potter, President, greglpotter@verizon.net
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- Phil Samuelian, Website/Photography, psamuelian@me.com

PAMA Mission Statement

The mission of PAMA is to promote continuous improvement in professionalism and recognition of the Aviation Maintenance Technician through communication, education, representation and support.

SoCal PAMA News

Dan Ramos, Publisher; Gail Erwin, Editor

PAMA First State

First State Update

Next Chapter Meeting: September 11, 2012, 7 p.m., FlightSafety International, New Castle, DE

Chapter Meeting Speakers Needed

The First State Chapter – PAMA is currently looking for speakers or vendors who are interested in presenting a 45-minute technical presentation at our chapter meeting at FlightSafety International in New Castle Delaware at 7 p.m. on the dates below. Your presentation will be FREE of charge and the chapter will provide a free catered dinner to all in attendance at each meeting. This is a great way to show your product or company in front of 20 to 30 aviation professionals. Dates: Sept. 11, 2012, Oct. 9, 2012, Nov. 13, 2012, Jan. 8, 2013, March 12, 2013, April 9, 2013, May 14, 2013

Congratulations

The chapter would like to congratulate the following individuals for being selected to receive the 2012 First State Chapter – PAMA Scholarship. Each of these young mechanics will receive a \$1,000 scholarship from the First State Chapter to help further their education in the aviation field. This money will be deposited directly into their school account to help with tuition cost.

• David Pearce – 2012 Delcastle Technical High School – Aviation Shop Graduate, presently attending Aviation Institute of Maintenance in Philadelphia, PA – Enrolled 6/12

• John Alderson – 2010 James H. Groves High School Graduate, presently attending Aviation Institute of Maintenance in Philadelphia, PA – Enrolled 9/11

Golf Tournament

The 7th Annual First State Chapter Golf Tournament on June 19th at the Deerfield Golf Course was a huge success. 115 attendees enjoyed a beautiful day of golf. Only one team won with a score of 10 under: Glenn Reynolds, Jim Murray, Jim Murray Jr, and Paul Weatherwood. Also: Longest Drive – Chad Belmont, Closest to the Pin – Chris Holder

The chapter would like to thank the following sponsors for their generous support of the Golf Tournament:

Golf Event – International Communications Group (ICG); Lunch – Duncan Aviation; Dinner – Dassault Falcon Jet; Cocktails – Dallas Airmotive; Gold Sponsor – Biz Jet; Silver Sponsor – FlightSafety International; Bronze Sponsor – JSSI; Longest Drive (Prize) – Professional Aviation Associates; Closest to the Pin (Prize) – CAE

Hole Sponsors:

ICG, Satcom Direct, Concorde Battery, CAE, Dallas Airmotive, Atlantic Aero, West Star Aviation, Falcon Jet Spares TEB, FlightSafety, Sherwin Williams Aerospace, Satcom Direct, Winslow Rafts, SureFlight Completions, Bizjet, Winslow Rafts, Sharp Details, ICG

John Agnew, President, First State Chapter - PAMA

PAMA Cincinnati

April's topic was presented by Aero Battery. It was a very electrifying program but had nothing too shocking. Thanks and a big applause to the McCauleys for keeping us grounded in facts and wisdom.

Psst, we have a celebration today - Martha reaches 50

No silly, 50 years in aviation. Martha Lunken has been hanging around airports and flying airplanes since December 1961 when she started flying in an Ercoupe at Cincinnati's Lunken Airport and received her Private Pilot Certificate on May 23, 1962. She was a hostess (flight attendant) on TWA Constellations and Convair 880s for nearly a year, flying out of Chicago, but got homesick and came back to Cincinnati to finish college. After graduating from Edgecliff College with a degree in English Literature, she began flight instructing and eventually opened her own flying school at Lunken. She taught traveling, threeday ground schools for Beech Aircraft and wrote several manuals and an audiotape series for pilots. In 1970, Martha married Ebby Lunken whose family had given the "Turkey Bottoms" property to the City of Cincinnati in 1928 for use as an airport. They were divorced in the late '70s and she accepted a job as an aviation safety inspector for the FAA. After four years in Chicago and two in Indianapolis, Martha came back to Cincinnati as safety program manager, a position she held until 2006 when the position was eliminated and she retired.

Martha has over 13,000 hours, an ATP and type ratings in the SA-227 (Metroliner), L-18 (Lockheed Lodestar) and DC-3. She has Commercial privileges in single and multiengine seaplanes and hot air balloons. She also holds advanced and instrument ground instructor ratings.

Martha is an active pilot and has owned her 1956 Cessna 180 for 20 years. She's an FAA designated pilot examiner, a Part 125 DC-3 check airman for Remote Area Medical and Dodson Air Freight International and writes a monthly column, "Unusual Attitudes," for Flying Magazine.

Important Miscellaneous

Cincinnati State brought more classes to join us. What a way to go. Thanks for bringing them and letting us get to know and meet them. As before, your classes couldn't have been introduced to a finer group of people.

Career Day

It is coming in September or October. Suggestions are to have an opportunity to do riveting and electrical troubleshooting.

Ideas are needed for the October IA Seminar or maybe you have wishes on information you would like to get. We've had a riveting hands-on experience in 2010 with rivets, and a fascinating experience handling fasteners in 2011. What type of experience would you like to see this year? Where do you feel you are lacking knowledge or need a reminder/refresher? Don't forget the heated talk about hot air balloons.

Website: Have you checked us out on the web? The address is https:// oatsline.com. Thanks to Don Streitenberger and James Dawson. I think they may have snuck some pictures from our April meeting. Did you see them? Way to go gentlemen. Thanks for your hard work.

Prize Winners: April's prize? The door prizes were piling up last month. Louis Wolf got a hat with a volt meter (odd type of hat); Don Streitenberger and Gary Goodpaster didn't want their prizes (wonder what was wrong with them) so Linda Ray and Don Kleiman each got

a hat to wear as they spent their \$25 gift cards at LaRosa. Katie Bell and Tom Esper also got hats with gift cards (were they Kroger cards?) Gary Meier made a killing when he won 50/50 - \$25. Glenn McCauley was our Mysterious Prize winner. He got some ice cream topping, a screwdriver to jimmy the ice cream machine so he can have an immeasurable amount of ice cream, and the tape measure to prove it is immeasurable. Glenn, will you need any help eating that? I can bring my own spoon. Congratulations ladies and gentlemen.

Company Members

We appreciate the support from our company members:

Aero Battery Inc, J.R. Ries & Associates, Aviall, The Kroger Company, Cintas Omnicare Inc, Chemed/Jet Resources, Proctor & Gamble Co, Executive Jet Management, Tool Testing Lab Inc, Great American Insurance.

Contact Information

If you need to contact the OATS officers, email Gary Goodpaster at gary.goodpaster@kroger.com, Don Streitenberger at don.streitenberg-er@kroger.com .

Do you have something you would like to include in the monthly newsletter? E-mail me at aluken@ejmjets.com or Karin Hartman at khartman@ejmjets.com.

Remember: Don't be afraid; volunteering can be exciting.

PAMA Hartford-Springfield

February and April Chapter Meetings

Our February chapter meeting was held at the Skyline Restaurant on February 21st. Our guest speaker was Tom Peghiny from Flight Design USA. The presentation was very informative about the maintenance requirements of Light Sport Aircraft. For a long-time aircraft mechanic with little exposure to Light Sport aircraft, it was actually eye-opening. For one, I did not know that Cessna's Light Sport Aircraft methat category than anyone else, and that Cessna's Light Sport Aircraft was used by so many flight trainers.

Located here in Connecticut, Flight Design USA is actually one of the largest Light Sport manufacturers. Tom was very knowledgeable and answered all of the questions for those in attendance. Some of the data that he put out concerning maintenance technicians included the requirement to attend 120 hours of training. I found it unique that a technician with an A&P would be the equivalent of an IA.

Uniquely, since the LSA's are not type certificated, the manufacturers are very involved in major repairs. We were told that there are three levels of safety notifications used by LSA OEMs. There are Service Notifications, Service Bulletins, and Safety Alerts, which would be equivalent to an AD note. All in all, this presentation was very informative and gave a good overview of a segment of the aviation industry that I have had little exposure to. Thanks Tom, and best wishes to Flight Design USA.

On March 8th we held a very successful IA Symposium at the New England Air Museum. This was our first time teaming up with the museum, and it was overwhelmingly appreciated by all attendees. This might well become our venue of choice for future events.

On April 10th we again met at the Skyline Restaurant and had a presentation on Engine Run and Taxi Safety. The presenter was Clyde Ayers who works for FlightSafety at their Wilmington facility. He gave a good presentation, and like most FlightSafety presentations, had plenty of video material to supplement the presentation. I would like to thank Tom Williams, our regional maintenance sales representative, who arranged for the presentation for us.

Aviation Humor

If Airlines Sold Paint

Someone recently checked on round-trip fares between Boston and Washington, DC. There were 105 different fares ranging from \$78 to \$2,028 for the same flight, same plane, same day, same time. It is entirely possible that no two passengers on the plane paid the same fare.

If airlines sold paint instead of travel, here's how it'd go:

Customer: Hi, how much is your paint?

Clerk: Well, sir, that all depends.

Customer: Depends on what?

Clerk: Actually, a lot of things.

Customer: How about giving me an average price?

Clerk: Wow, that's too hard a question. The lowest price is \$9 a gallon,

and we have 150 different prices up to \$200 a gallon.

Customer: What's the difference in the paint?

Clerk: Oh, there isn't any difference; it's all the same paint.

Customer: Well, then, I'd like some of that \$9 paint.

Clerk: Well, first I need to ask you a few questions. When do you intend to use it?

Customer: I want to paint tomorrow, on my day off.

Clerk: Sir, the paint for tomorrow is the \$200 paint.

Customer: What? When would I have to paint in order to get the \$9 version?

Clerk: That would be in three weeks, but you will also have to agree to start painting before Friday of that week and continue painting until at least Sunday.

Customer: You've got to be kidding.

Clerk: Sir, we don't kid around here. Of course, I'll have to check to see if we have any of that paint available before I can sell it to you.

Customer: What do you mean check to see if you can sell it to me? You have shelves full of that stuff; I can see it right there. Clerk: Just because you can see it doesn't mean that we have it. It may be the same paint, but we sell only a certain number of gallons on any given weekend. Oh, and by the way, the price just went to \$12.

Customer: You mean the price went up while we were talking?

Clerk: Yes, sir. You see, we change prices and rules thousands of times a day, and since you haven't actually walked out of the store with your paint yet, we just decided to change. Unless you want the same thing to happen again, I would suggest that you get on with your purchase. How many gallons do you want?

Customer: I don't know exactly. Maybe five gallons. Maybe I should buy six gallons just to make sure I have enough.

Clerk: Oh, no, sir, you can't do that. If you buy the paint and then don't use it, you will be liable for penalties and possible confiscation of the paint you already have.

Customer: What?

Clerk: That's right. We can sell you enough paint to do your kitchen, bathroom, hall and north bedroom, but if you stop painting before you do the bedroom, you will be in violation of our tariffs.

Customer: But what does it matter to you whether I use all the paint? I already paid you for it.

Clerk: Sir, there's no point in getting upset; that's just the way it is. We make plans based upon the idea that you will use all the paint, and when you don't, it just causes us all sorts of problems.

Atlantic AME Association

News from the Rock By Mel Crew

Hello fellow AMEs, apprentices and corporate members. It is newsletter time once again and the opportunity to bring all of our readers up to date on happenings from this end of The Rock.

Since returning to St. John's from Halifax where I attended the 34th annual Atlantic Region Aircraft Maintenance Conference, I had the opportunity to speak with many operators around the airport to get the scoop on things. My first contact was at the Canadian Coast Guard hangar where I spoke with Maintenance Supervisor, Tim Sheppard. Operations at the base have been very busy in the past few months as two BO-105s were on shipboard duty supplying support on the seal census program with the Department of Fisheries and Oceans. Engineers Guy Beazley and Gerard Murphy kept the two aircraft operational for this high flying job. Scientists from DFO performed a seal count as well as other tests carried out for research purposes. The population of seals has increased dramatically, which accounts for the declining fish stocks. This program concluded last week and the aircraft have returned to base for normal operations.

Other engineers at the base include Bob Quinton and Justin Taylor. On the west coast of the island at Stephenville, the Canadian Coast Guard operate a base and a BO-105 is there supporting requirements in that area. The base engineer is Gerard Sampson but he is currently being relieved by Bob Quinton. Gerard is off on sick leave but is expected to return around the end of the month.

In January, engineer Bill Tucker retired and a retirement party was held at the Yellow Belly restaurant as over 20 colleagues gathered to give Bill a great send-off. Best wishes Bill, and now Marilyn can get things done around the house.

Over on Majors Path, adjacent to the St. John's Int'l Airport, Universal Helicopters Newfoundland Ltd. has a small hangar where they operate their Bell 407 on the Government of Newfoundland and Labrador contract.

They also perform maintenance duties on Quinlan Brothers Fisheries Limited Bell 407. Engineer Vivian Matte is kept busy turning the wrenches at the base. From all indications, this summer is shaping up to be a very busy period as mining exploration activity is at its peak. Have a safe season.

My next contact was at Cougar Helicopters Inc. where operations supporting the offshore continue to be hectic. Five Sikorsky S-92As are busy daily transporting crews and materials to the offshore oil drilling and production platforms off our coast. While operations continue, the company is currently constructing a new hangar on the airport, dedicated to search and rescue. The new facility will house another S-92A and its support crew. It is expected to be opened in the next couple of weeks. This aircraft is expected to have a response time of wheels up in 20 to 30 minutes. It will be a state-of-the-art facility with pilots,



engineers, search and rescue technicians, and other support crew on site 24/7/365.

This facility is being built as a result of recommendations in the Wells Report following the crash of Cougar Flt. 491 on March 12, 2009.

Over at Hangar #2, I spoke with the engineers at Skylink Express. Maintenance Supervisor, Dwight Collins and Jason Lundrigan are kept busy maintaining the Beech 1900D which drops in on a daily basis. The aircraft arrives every morning around 1000 hrs. and departs daily about 1700 hrs. While the aircraft is in St. John's, the boys perform various maintenance tasks as well as snags. The aircraft is on a contract with the banks and is based out of Halifax. Skylink engineers have a daily talk forum where they discuss any problems and concerns that they may have and any snags/corrective action which are required. This is a very valuable tool for the maintenance staff. Keep them flying and have a safe season.

Over at Hangar # 4, the Boeing 727 in Purolator livery and owned by Kelowna Flightcraft is a daily sight. The aircraft arrives in St. John's about 7 a.m. and departs St. John's about 5:30 p.m. During the daytime, engineers Bob Hutchings, Wally Hynes and Chris Squires can be seen performing their maintenance tasks. Most of their work is performed outdoors. However if required, they put the aircraft in Hangar # 4. Any heavy maintenance and inspections are performed inside.

The boys are tough and hearty. Bob, Wally and Chris also perform maintenance duties for Air Transat, SunWing and other airline companies that require their services. It is no good to be idle.

The Newfoundland and Labrador Government Air Services operate a Beech King Air 350 from Hangar # 3. This aircraft is primarily used for Air Ambulance and is on call 24/7/365. When the aircraft requires extensive maintenance work, other aircraft are chartered to supply the service. Maintenance Supervisor Jeff Pollett, engineers Dave Walsh, Peter Snow, Ralph Roberts and Avionics Engineer Christopher Morris ensure the aircraft is in top-notch condition.

A report from Provincial Airlines Limited and Provincial Aerospace Maintenance Services Inc. is not available at this time.

This concludes my report for now, and have a safe and enjoyable summer.

Western AME Association -

I don't really know how far one can go, or what can be said on this subject without getting into trouble. To anyone who has taken the time to really read the Auditor General's report, which came out in March of this year, I respect your fortitude. It was an unbiased, scathing report about Transport Canada's own inconsistencies regarding their inspectors understanding and implementation of regulations, and lack of internal control in their own safety management. It also notes the lack of training required to conduct surveillance activities by Transport Canada inspectors.

One aspect of the report that was not mentioned was the additional stress these inconsistencies impose on all aspects of a company's maintenance personnel as they attempt to comply with a flawed system that has few positive, definitive results.

Safety is something that, as Aircraft Maintenance Engineers, is ingrained in us from the moment we enter this profession. This has always been a risk management industry and no good mechanic would let an aircraft be dispatched that knowingly could put life at risk or damage property. The same can be said for a pilot.

One statement in the Auditor General's report that is easily overlooked but is so relevant is this: "Transport Canada did not measure the impact of shifting resources to SMS activities on the frequency of traditional oversight activities, which continued for smaller, non SMS companies."

That short statement is a lot to wrap your head around, but I understand it to mean this: Was consideration taken as to what the costs would be for companies to implement and follow up on all the requirements for this type of system. Also, does Transport Canada even have the resources and personnel to dedicate to this type of surveillance?

Most of the companies we work for do not have \$14-million budgets to throw at this type of program. In fact, it could result in budget cuts to maintenance, parts procurement and training, which all cost the employer money. The manpower involved to follow up on all the proposed corrective action plans could break smaller companies.

I won't comment further on this subject but would like to recommend taking the time to read it and you will understand why we are in our present situation. It can be found on the web under "Auditor Generals Report into Aviation Safety."

One other piece of interesting reading is SI SUR-007 regarding fatigue risk management system (FRMS) which became effective March 22, 2011 and has some disturbing aspects that are to be implemented. One aspect in particular is the surveillance questions and scoring which mirrors SI SUR-001. If this type of surveillance is totally implemented, pretty soon you can expect to have a monkey on your back to come home with you to monitor your home life, as this has become more relevant than what you do at work.

If this seems silly, imagine if part of your morning meeting would be to tell your supervisor what you did from the time you left work till you came back, and he would judge whether to send you home or not. With pay of course!

I didn't know how to emphasize to everyone that we need to pay attention to these staff instructions and give the governing bodies our input into proposed changes. This can be done on an individual basis or by contacting your AME association. As I see it, this needs to be discussed in the workplace with the apprentices and record-keeping personnel to get them involved in this very important aspect of our profession. This is not meant to be a put-down but more of a wakeup to the industry to pay attention to what is really going down.

Everyone out there have a great day and play safe. Create a safe day. Rod Fisher

President Western AME Association





UPDATE 2012 Ontario AME Symposium & Trade Show October 17-19, 2012

- Half Day Training Sessions
- Training sessions may support the training requirements specified in CARS 573.07 & CARS 573.06
- Join us for an Aviation Industry Social on Thursday, October 18 "free entrance to the trade show from 2 to 6"
- Discounts for Ontario AME Association Members
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For more information contact:

Cara Tweyman, Precision Aero Components Tel: (905) 405-1870 cara@precisionaerocomponents.com

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The Regs

the Misinformation about importing



BY NORM CHALMERS Pacific Airworthiness Consulting

We are starting this month's column

with a letter from Martin Grechan, Director of Maintenance for Ledair Inc. His issues are regarding importing aircraft, major and minor modifications, and FAA 337 forms. In his letter he states, "I have been given so much misinformation to date that I've grown dizzy, particularly with what constitutes an Installation Approval". I am sure that Martin is not the only person out there today with this problem. In my previous life as a Transport Canada (TC) Inspector, I found that importing aircraft and evaluating 337 forms was often an issue.

If we go back to my column in the February/ March issue of AMU, I gave a brief overview of the changes to the previous Canadian definitions of major repair and modification. In retrospect, I may have been too brief, so I'll revisit that topic now. For the purpose of this discussion, what applies to major modifications also applies to major repairs.

When we think of a major modification we think of a big or significant change to the aircraft. Although that seems OK, what we need to know is that we have two separate topics.

The first topic is the data package, which includes drawings and instructions of the design and for installation. For more on that, refer to the



Canadian Aviation Regulation (CAR) Standard 571.06, which specifies various forms of data.

The second topic is the application of that data to accomplish the work of installing the major modification. This brings us to the topic of specialized work. To do specialized work in Canada you need to be an Approved Maintenance Organization (AMO). All AMOs approved by TC are listed on the TC website for all types of approved companies.

In the US, an Airframe and Powerplant Mechanic (A&P) can do the work, but an A&P with Inspection Authorization (IA) or another Federal Aviation Administration-authorized person must approve the specific installation, including the quality of the work. That information and its approval is where the 337 form comes in. For more information regarding IAs and what they are authorized to certify, do an Internet search for the FAA document "Inspection Authorization Information Guide".

In Canada, we can have a major modification that does not implicate specialized work, negating the need for an AMO. An example of this might be an upgrade of an aircraft to a more powerful engine that just involves changing the engine mount, instruments, engine controls and flight manual. Another example can be a change that is within the purview of the aircraft's Flight Manual. That job, which does not include specialized work, can be done by an Aircraft Maintenance Engineer (AME) with or without an AMO. To determine what kind of authorization and paperwork is needed to cover a modification, you need to examine and compare the definitions of major modification and of specialized work in relation to those modifications. Each of these two topics described above has its own requirements.

To understand where we are going with this, you must be aware that the FAA definition for major alteration is different from the TC definition for major modification. The 337 form is the document that the FAA requirements specify for reporting major alterations. It is used in different ways regarding level of approval of the data. As Martin stated in his letter, the Form 337, Block 3 that states "For FAA Use Only" can be a problem. If the major alteration is done without previously approved data, then Form 337, Block 3 may be needed for a field approval, such as if there is no 8110-3 form approval.

In the FAA system, the field approval has been around for a long time. This field approval is meant to address less significant changes and can be signed off by an FAA person without a full engineering certification authority. The 337 Form, Block 3 field approvals are not accepted in Canada. If the change was done in accordance with an STC, an 8110-3 form, and the manufacturer's data (including installation kits and the Illustrated Part Catalogue [IPC] or other pre-approved data), then Block 3 remains blank.

As we are now moving into the realm of FAA requirements, I am an "outsider" with no claim to expertise. Regarding any mistaken assumptions that I make here, I apologize in advance and request letters from readers pointing out my errors. With that caution in mind, I march onward with providing information to you that is correct to the best of my knowledge.

Moving down the Form 337, we come to Block 6 which is completed by the individual who did the work. Since an FAA- approved Airframe and Powerplant Mechanic may do the work but may not complete final certification returning the aircraft to service, the final sign off in Block 7 needs to be done by an FAA-authorized person, such as an IA.

The back of a Form 337 contains the description of the change. When the change was made in accordance with previously approved data, including the 8110-3, that information is recorded here. Block 3 is not needed.

To get back to Martin's import dilemmas, the new aircraft went from the manufacturer to the completion centre for finishing. If the completion centre is approved by the aircraft



manufacturer for completions, then all the work ought to be acceptably approved for import into Canada. Often in a situation like that, the aircraft will arrive in Canada with a Certificate of Airworthiness for Export. Those companies usually know how to export aircraft, and the process is meant to work with a very cursory inspection on arrival in Canada to ensure that the aircraft and documentation match up.

Canada does have additional requirements aircraft must conform to. These import conditions are, for the most part, identified in TC's checklist detailed in the TC document MSI 26. Those should be taken care of at the completion centre but may need to be done by the importer.

Back again to Martin's import where he is having issues regarding the FAA 8110-3 form: This form is the document that bears the approval statements of data. I quote the form: "I therefore approve these data." That statement means what it says. The Canada-USA bilateral agreement and its related policy documents accept DER approvals in Canada. If you have a 337 form with an 8110-3, both certified by authorized persons, then you ought to have everything that is required. For your import official to say (and I quote Martin) "It's only a supporting document" is wrong.

The narrative of Martin's aircraft story is a common process. The aircraft manufacturer builds the "green aircraft" (referring to the primer paint) up to the point that the mass production line leaves off. After that point, the custom order items such as avionics, interior, and paint scheme are added at another facility or company, typically referred to as a completion center.

Sometimes, aircraft come straight from the manufacturer into Canada in an airworthy condition, with a Certificate of Airworthiness for Export, in which case you would have a complete package. An aircraft put through a completion center gets custom installations. The completion center can have its own FAA-approved designee or delegate approve the custom order data on an 8110-3 Form. They then approve the installation to that 8110-3 with a 337 form

appropriately completed. Then the aircraft is exported with all the documentation required.

In reviewing the problems that Martin describes, it seems that someone is being an obstructionist or is not aware of the process. Either way, I recommend pushing issues up the management ladder at Transport Canada. I also recommend shopping around for a Minister's Delegate - Maintenance (MDM). Search for an MDM that is familiar with your aircraft type and who is known for good service. TC lists all MDMs on their website at www.apps.tc.gc.ca/Saf-Sec-Sur/2/ mdm-rmm/. AMOs that do frequent imports or exports usually have their favoured MDM who provides good service.

As a general comment regarding the timeliness of the subject material I cover in this column, it is unfortunate that there are delays involved in receiving, answering and publishing my answers to your questions. Although this edition may be too late to help Martin Grechan with his aircraft import issues, it might help others following in his footsteps.

Several of our readers have written in about elementary work versus other elementary stuff, including servicing and independent inspections. These three are linked and blurred in our minds because they are all "small M" maintenance tasks that may be done by non-licensed

Elementary work tasks are identi-

Now for something completely

different

individuals.

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fied in Canadian Aviation Regulation (CAR) Standard 625 Appendix A. In the

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December/January 2012 issue of AMU, I addressed elementary work for private owners. Commercial operators (Air Operator Certificate AOC) are excluded from items 1 to 10 by the wording "on small privately operated aircraft." Most, if not all, AOCs and AMOs already have a training program in place to address elementary work. Elementary work item 15, regarding "role equipment", is the source of some confusion. It includes passenger and cargo configuration change equipment, including seats and bulkheads. For that, I'll refer you to

the excellent article in the TC Aviation Safety Letter Issue 3/2011 by TC Inspector Steve McLeod at the TC Thunder Bay office. The link to the Safety Letter index page is: www.tc.gc.ca/eng/civilaviation/ publications/tp185-menu-5395.htm. If you have a problem with that, go to the TC website and perform a search for the term "TP 185 – Aviation Safety Letter".

Servicing is similar to elementary work. CAR 101 defines servicing as the "cleaning, lubricating and the replenishment of fluids not requiring the disassembly of the product." Training for this can be completed during a pilot's type training or initial training.

Independent inspection is addressed in the CAR Standard 571.10(4) table of Types of Work Item (e). Note that before the Airworthiness Manual came along, this was referred to as the dual inspection. This table imposes the independent inspection as an additional standard of airworthiness. Rather than go into this in detail, I refer you to TC Airworthiness Notice AN-C010, Inspection of Control Systems. Under the FAA system these are called required inspection items or RIIs.

These three task subject areas – elementary work, servicing, and independent inspection – are all addressed under a variety of the CARs, leading to some confusion. The standards and advisory materials are not much help in sorting things out. I recommend that every aviation person – AMO, and AOC - disregard any perceived or real differences amongst the three subject areas. Integrate all the training into your training program with a common management program and urgency.

For those organizations with an AOC, CAR 706 Sections 706.10 to 706.12 and the attendant Standard 726.10 to 726.12 specify that training must be done. Note that the training is to be done by an AME who ought to be familiar with the aircraft type. Some organizations have treated elementary work, servicing, and independent inspection requirements as aberrations or distractions that must be dealt with by law – done and out of the way. The result is that all of these three have been factors in numerous aircraft accidents and incidents.

On the TC website page "Human Performance Factors For Elementary Work and Servicing," TC makes the following statement: "The terms 'elementary work', and 'servicing' tend to diminish the importance of the tasks being accomplished. It is essential that everyone working on an aircraft understand that no matter how simple the task, if it is not done properly, the results can be serious." To that I add the independent inspection task.

News Flash: Through my current work with an engine repair facility, I have become aware of changes to the FAA procedures for the approval process discussed above. Specifically, this involves changes to the DER authorizations and the usage of the 8110-3 form by DERs. In a future issue I may eat some of my words provided above, i.e., ASAP.

On that note, I will say "Over" to you and will wait here for your letters. Be good, and remember "Duty of Care."

Please be aware that I am not a lawyer or legal expert. What I write in my column is not legal advice nor legal opinion. If you face a legal issue, you must get specific legal advice from a lawyer, and preferably one with experience in the aviation matters in your own country.

NORM CHALMERS worked with Transport Canada as an Airworthiness Inspector for 25 years. Before this, from 1967 to 1983, he worked in the aircraft maintenance industry in and around Western Canada and in the Arctic. His industry experience includes the operational maintenance of normal and commuter catego*ry aircraft and smaller transport category* aircraft in the corporate sector as well as several years working in major repairs in the helicopter sector. As an Airworthiness Inspector, he has been responsible for most duties related to the position, including the approval of all aspects of maintenance, manufacturing, training, and responsibilities related to distribution organizations. Norm now operates Pacific Airworthiness Consulting; www.pacificairworthiness.ca.



Feature

Passenger Address Systems)))





BY GORDON WALKER, AME 'E', Professor of Avionics Centennial College

As a hot-shot 23-year-old airline

employee, I was quite delighted with my lot in life. I loved the job of fixing avionics systems on big jets; I revelled in the hustle and glamour of working airside at an international airport, and most of all, I enjoyed the amazing travel benefits available through the interline airline employee agreements. I knew of, and used, ALL of the deals available to interliners, and seldom spent days off at home. From circumnavigating the globe on a \$50 pass, to sipping Martinis in an Eastern Airlines first class cabin as I jetted towards yet another golfing weekend in Bermuda, I took full advantage of the opportunity to travel. It was on one such sojourn that an incident involving an aircraft's PA system occurred, inspiring this month's article.

Having blasted off from LAX several hours earlier, I was enjoying a midmorning breakfast, complete with champagne and orange juice. The passenger beside me was also an interliner, a TWA flight attendant hoping to improve her tan by spend-

ing a few days on the beach at Waikiki. Hawaiian guitars and ukuleles played softly on the cabin's PA system as we discussed plans to get together later in the week at the Honolulu Interline Club.

And then everything changed. The airy widebody cabin was suddenly replaced by what looked like some kind of rubber jungle. Yellow masks appeared everywhere, magically springing from nowopen ceiling panels and jumping from passenger seat backs. The clatter of plastic slapping plastic as the oxygen mask doors opened to jettison their contents mingled with the panicked cries of terrified and confused passengers. The cheesy Hawaiian music was replaced by the friendly, albeit somewhat robotic tones of a pre-recorded female voice, urging us to remain calm, extinguish all smoking materials, pull the mask towards our faces, and, of course, breathe normally.

The female robo-voice was replaced by that of a real, live flight attendant saying basically the same

things, but much more emphatically, and with just enough of a terrified tinge to push a few frightened travellers to the brink of incontinence.

Suddenly, in mid-sentence, the flight attendant's words were halted, and replaced by a very kind, fatherly type of "aw shucks" voice saying, "Ah, well folks ... it ... um ... well, it looks like we've had ourselves some kind of little glitch up here in the cockpit, and well ... heh ... heh ... well, there's really no cause for alarm ... just a little malfunction of our oxygen mask test system. Y'all can take those masks off and relax. By the way, the weather in Honolulu is a balmy 78 degrees, etc."

This brings us to the topic of this month's article: no not oxygen systems, but "Passenger Address Systems Explained".

The Passenger Address, is "a system that is an integral part of the onboard communications network of a large M2 passenger aircraft". Along with the crew call system and the interphone systems, the PA enables electronic voice communications between cockpit crew, cabin crew, and passengers.

While most passengers consider the PA system as nothing more than a source of boarding music, pre-flight safety demos, and chatty announcements from the cockpit, it is in fact an essential safety system and is identified as a NO GO item in virtually all minimum equipment lists (MEL). Most dispatch deviation guides (DDG) will permit an aircraft to depart with an unserviceable interphone system, provided the PA is operational.

At the heart of an aircraft's PA system is the PA amplifier.



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contact: Terry or Orest 1487 Dublin Avenue, Winnipeg, Manitoba R3E 3G8 ph. 204-775-4200 cell: 204-781-0084 fax: 204-779-9402 Input from various sources and places around the aircraft are fed into the PA amp where these signals are amplified and distributed throughout the cabin. The PA amp output is fed to the cockpit, passenger cabin, lavs, galleys, and entertainment system headsets. In many cases, the master PA amp will also feed the output signals to a secondary, "slave" PA amp, providing further distribution and redundancy. The PA master amp, and slave amp are interchangeable, providing the opportunity for quick troubleshooting.

The audio signals being fed into the PA amplifier do come from various locations and sources. For example, a PA microphone can often be found in the vicinity of the flight attendant's jump seats, or galley areas. Flight crew are able to use their audio selector panels and microphones to make PA announcements from the cockpit and may also have a dedicated PA microphone, typically mounted on the aft side of the centre pedestal.

The PA system works in conjunction with the crew call system, which uses a series of audio tones (chimes) and coloured lights to alert crew members that they are being hailed. The circuitry that creates these chimes is typically contained within the PA amplifier.

Pre-recorded audio, in the form of passenger entertainment/boarding music or safety and emergency announcements are fed to the PA amplifier from a variety of digital or analogue sound reproduction devices, such as music reproducers and digital recorders.

To prevent garbled audio due to more than one input being active at the same time, the PA amplifier operates using a priority input protocol, which will enable a higher priority input to cut off and override a lower priority input. The typical sequence is:

- 1. Cockpit
- 2. Flight Attendants
- 3. Pre-recorded announcements
- 4. Entertainment/boarding music

This means that announcements from the cockpit will override ALL others; the flight attendants can override the prerecorded announcements and entertainment/boarding music, and the pre-recorded announcements will override the entertainment/boarding music.

An unlikely input to the PA amplifier comes from the engine oil pressure switches. Whenever an engine is started and oil pressure is developed, the PA volume will increase to compensate for the increased noise in the cabin. This automatic increase in volume also occurs on some aircraft models when a sudden loss of cabin pressure is sensed.

The PA system works in conjunction with the crew call system, which uses a series of audio tones (chimes) and coloured lights to alert crew members that they are being hailed. The circuitry that creates these audio chimes is typically contained within the PA amplifier, and is referred to as the chime generator. For example, when a passenger presses the flight attendant call button at their seat, a light will illuminate (typically pink in colour) and a chime will be heard in the galley areas. Similarly, various coloured lights will illuminate when calls are initiated between cockpit and cabin crew, or when the call buttons in the lavs are pressed; "hi" and "lo" chime tones will enable the crew to determine where the call is being initiated from.

The PA amplifier will generate chimes whenever there is a change of status of the "No Smoking" and "Fasten Seat Belt" ordinance signs. These signs, incidentally, can be turned on and off manually or automatically. In the "Auto" mode, landing gear position will control the No Smoking signs (OFF when gear is up, ON when gear is down) and flap position will control the Fasten Seat Belt signs; (ON when flaps are extended, OFF when flaps are fully retracted).

Aircraft equipped with passenger entertainment systems are designed such that PA audio is injected into the entertainment system so that those wearing headsets are also able to hear all PA announcements.

On that fateful flight to Hawaii years ago, I managed to witness a full demonstration of the PA amp's priority override system, and it worked exactly as designed.

Oh, and by the way, I did hook up with that charming flight attendant at the Honolulu Interline Club. I never did drink any of her TWA coffee, but I sure enjoyed her TWA tea.

Q: Where is the circuitry for the crew call and ordinance sign "Chime Generator" located?

The answer to the previous MLS question:

Q: What are two advantages realized by MLS over ILS due to the higher frequency of operation?

A: The higher frequency means interference from commercial FM broadcasts is not a problem, a greater number of channels are available, and the higher frequency also means smaller antennas, both on the ground transmitter side, and the airborne installation.

GORDON WALKER entered the avionics industry after graduation from Centennial College in 1980. His career with Nordair, Air Canada, CP Air, PWA, and ultimately Canadian Airlines took him to many remote corners of Canada. Since leaving the flight line to pursue a career as a college professor, Walker has continued to involve himself in the aviation/avionics industry, by serving on several CARAC Committees concerning the training and licensing of AMEs, being nominated to the CAMC Board of Directors, and being elected President of the National Training Association. (NTA). Accessories, Service and Time are Critical! CONDOR Aircraft Accessories (1996) Inc.

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Perception

is it all in your mind?



BY SUE YOST

per-cep-tion...(Oxford English Dictionary)

- Awareness of something through the senses
- The way in which something is regarded, understood or interpreted
- Intuitive understanding and insight

hy am I talking about perception? This is not one of the Dirty Dozen, but it is influenced by the DD, and will have an impact on how, when, and if you put your safety nets into place.

What makes perception so difficult to understand, so variable, and so frustrating? It is an individual awareness or understanding, and when it comes to humans, our minds all work differently. Perceptions are formed by each individual's knowledge, life experience, prejudices, and the influence of others.

Why is perception important? What will influence it, and what safety nets will help to keep everyone's point of view within parameters?

Judgments that you make in the workplace about what is really wrong, what to do about it, and whether or not the fix was the correct one, will be influenced by your fatigue level, pressures put on you (both internal and external), the norms of the workplace, your health at the moment (proper diet, illness, injuries) and general knowledge, experience, and training. That is a whole cocktail of human factors.

Perception of your own fatigue and stress levels, your ability to do the job, and ongoing perception of how the job is progressing can mean the difference between success and failure. If the shift maintenance manager working on the BAC 1-11 had perceived that things were going wrong at any time during the night, the accident would not have happened.

Perception can influence individual behavior, the opinions of groups, or affect the rules that govern the whole industry. Individual behavior is simple to understand: I see the job as being safe, you don't; I think I am handling my fatigue and stress levels just fine, so why did I just fall asleep at a red light; I think that the short cuts I take are acceptable, you don't.

Then there are the trainers in the industry who will deliver the best training possible (in their view), but that is based on the perception that what they offer is what you need. Group perceptions can be more involved and complicated, and can cause friction and conflict. Customers just want their aircraft fixed, flying and generating revenue, and they will tell you what they perceive as a necessary (minimal and cheap) fix, and you (the AME) have to educate them about what is really needed. HR wants a quickie, one-day training - after all, Canadian Aviation Regulations (CARs) are just rules and can't be that complicated - but the trainer knows that more time will be needed. The person responsible for maintenance (PRM) doesn't see/understand what Quality Assurance (QA) perceives. QA perception of the systems can be different from those of the AMEs, and pilots and engineers will seldom see eye to eye about anything.

And what about the regulators? Do their perceptions of CARs and how they interpret them really address the needs of each operation? This can be the bane of the AME/QA/PRM's existence. And what about the individual interpretation of the CARs within Transport Canada Civil Aviation (TCCA) itself? Every inspector seems to have a different perception of the CARs, what they mean, and how they should be complied with.

This article is not designed to get everyone in the industry upset and ticked off at each other (or me), but it is intended to get you thinking about why your co-workers, managers, customers, and TCCA inspectors, (oops, almost forgot the trainers) may not have the same perception of problems, interpretations and solutions.

Individual work habits can be, (but often aren't) the least affected, simply because there are procedures, instructions, manuals and SOPs (along with a host of other documentation) that should keep the results of any task somewhat predictable and consistent.

But there is always the perception that procedures are not necessary, and don't need to be referenced. That comes under the heading of norms (the negative ones) and should not be acceptable; but then, that is what norms are: practices that are accepted by the majority of people in the workplace, which means that the whole group perceives the procedures as unnecessary. But I digress; back to the individual.

Your individual perception of the job, your peers and co-workers, and life in general, will be strongly affected by your own health, both mental and physical, by your experiences, prejudices and opinions (yours and others), and the norms of the workplace. There can be variances in the end product, conflict, and strife as a result. Safety nets such as following procedures, maximum communication and teamwork will all reduce the chances of real frustration getting in the way of a smooth and safe operation.

Individual interpretation of the CARs, and other regulatory documentation can be resolved by questions, and honest and open communication between everyone involved, and a thorough knowledge of the CARs.

Going back pre-CARs, the engineer was signing for the airworthiness of the a/c, now you are signing for work done, but there is still a perception, for some, that work signed for means the a/c is airworthy. Just think about the problems that might (or have in the past) happened because of a difference in perception, and ask yourself why this happened. Was there a lot of pressure to get the job done, or to do it as cheaply as possible? Was the person involved not feeling well, really tired, or hurt, and just wanted to get home? Or is it a workplace where shortcuts and cutting corners are the norm, as long as there is a perception of safety (not the reality).

Communication, teamwork and dialogue are great safety nets for ensuring safe, consistent and compliant production, and for reducing conflict and perception problems.

In the next issue we will address the perception problems that can happen between groups, and within TCCA.

SUE YOST is the principal facilitator for HPA Consultants, based in SW Ontario and providing quality workshops to maintenance and manufacturing for the last 12 years. HPA offers training in Aviation Maintenance Human Factors, classroom and online, QA, SMS, CRM and CARs. We also offer First Aid and WHMIS. Check schedules or contact us through www.flysafe.ca or call 519-674-5050 ■





In-Flight Left Engine Fire: McDonnell Douglas DC-9-82



engine did not start, and the flight crew notified American Airlines maintenance personnel of the problem. The cockpit voice recorder (CVR) recorded a mechanic informing the captain that maintenance personnel were ready to manually start the left engine. The flight crew performed the Before Start checklist and the takeoff briefing. About five minutes later, maintenance personnel instructed the captain to initiate the manual enginestart sequence by holding the engine-start switch in the START position while maintenance personnel manually opened the left engine's air turbine starter valve (ATSV). The captain informed the mechanic that he saw no indication that the left engine's ATSV had opened. During the second attempt to start the left

Executive Summary

On September 28, 2007, a McDonnell Douglas DC-9-82 experienced an in-flight engine fire during departure climb from Lambert-St. Louis International Airport, St. Louis, Missouri. During the return to STL, the nose landing gear failed to extend, and the flight crew executed a go-around, during which the crew extended the nose gear using the emergency procedure. The flight crew conducted an emergency landing, and the crew and passengers deplaned on the runway. No occupant injuries were reported, but the airplane sustained substantial damage from the fire.

The National Transportation Safety Board determines that the probable cause of this accident was American Airlines' maintenance personnel's use of an inappropriate manual engine-start procedure, which led to the uncommanded opening of the left engine air turbine starter valve, and a subsequent left engine fire.

During the initial attempt to start the engines, the left

engine manually, the engine started.

During post accident interviews, the flight crew stated that during the taxi for takeoff all cockpit indications were normal, and no warning lights were illuminated. The flight crew reported that the takeoff was uneventful until the airplane reached an altitude of about 1,000 to 1,500 feet mean sea level when the first officer stated that the Left Engine "ATSV Open" light had illuminated. Soon afterward, the CVR recorded a sound similar to the Engine Fire warning bell and then the first officer stating that the Left Engine Fire warning light had illuminated. The captain stated that the flight would need to return to STL, and the first officer contacted STL and declared an emergency.

After this, the first officer began performing the Engine Fire/Damage/Separation checklist. The first officer took control of the aircraft while the captain briefed the flight attendants. After the briefing, the captain resumed control of the airplane and the first officer stated that the Left Engine Fire warning light was still illuminated. He then resumed



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conducting the Engine Fire/Damage/ Separation checklist. During post accident interviews, the captain stated that, about this time, the airplane began to experience some electrical malfunctions, which resulted in the loss of the captain's primary flight and navigation display panels.

A short while later the first officer stated that he was pulling the fire handle, which subsequently fired the first fire bottle. He then stated, "this will not discharge," but soon reported that both of the fire bottles were discharged. The captain then instructed the first officer to lower the landing gear, and, subsequently, the CVR recorded a sound similar to the landing gear handle being operated followed by a sound similar to the spoiler handle being armed.

According to the CVR transcript, less than one minute later, the captain stated that he had tried to start the auxiliary power unit (APU) (which supplies the backup electrical power to the airplane systems), but that it would not start. He also stated that the landing gear position lights had not illuminated. Shortly thereafter, the captain asked the controller to verify whether or not the landing gear had extended. The tower controller reported that the nose landing gear was not extended, and the first officer responded that they were going to go around. Soon after, the controller informed the flight crew, "there was quite a bit of black...soot...on that engine so.... the fire was real."

During the go-around, the flight crew continued to experience problems with the nose landing gear and electrical systems. Ten seconds later, the first officer began performing the Emergency Gear Extension checklist. Once this was completed, the captain stated that, although none of the landing gear indications had illuminated, he heard noise similar to the sound of the nose gear being extended. The captain then stated, "we've got no left engine; we've got no right hydraulic pressure...we don't have any hydraulics on left side." Shortly thereafter, the controller confirmed that the nose landing gear had extended.

After the airplane stopped on the runway, ARFF personnel applied fireextinguishing agent to the left engine. The passengers were then deplaned without incident.

Company Manual Engine-Start Procedures

The American Airlines MD-80 Maintenance Procedures Manual contained one approved manual engine-start procedure, which stated that maintenance personnel must open the ATSV using an approved, specialized wrench to turn the wrenching flats on the upper end of the butterfly valve shaft and request that the flight crew activate the enginestart switch. The procedure further instructs maintenance personnel to close the ATSV using the wrenching flats and verify that the ATSV is closed.

During post accident interviews, American Airlines maintenance personnel indicated that the approved procedure was very time consuming and could take about 20 to 40 minutes to perform because the required specialized wrench was not part of the standard tool kit and so had to be found; then, the cowl latches and lower door had to be opened, the engine start sequence performed, and the lower door closed. They stated that, instead of using the approved procedure, they usually chose to use a prying device to reach, depress and hold down the ATSV's manual override button, which is accessed through a small panel located on the forward lower cowl door.

Manufacturer Manual Engine-Start Procedures

The Boeing MD-80 Aircraft Maintenance Manual (AMM), dated June 15, 2005, contains two approved manual engine start methods. One method, which is similar to the approved American Airlines procedure, involves manually opening the ATSV using a special wrench to turn the wrenching flats on the upper end of the butterfly valve shaft. A notch across the flats points to the words "Open" or "Closed" on the switch cover to indicate the butterfly valve position. The other method involves depressing the manual override button, which accomplishes the same function as normal electrical activation of the ATSV.

On December 16, 1997, Boeing is-

sued All Operators Letter (AOL) 9-2549, applicable to all DC-9 and MD-80 airplanes, cautioning against the use of a tool to depress the manual override button. The AOL was the result of a December 1996 event in which an operator experienced an uncommanded ATSV-Open indication during climb out. An engine teardown inspection found that the manual override button's internal pin was bent and that the button was stuck in the depressed (override) position which allowed the valve to open uncommanded. The AOL informed operators that using a screwdriver or similar levering tool to depress the manual override button could deform the manual override button's internal pin. In keeping with the AOL, Boeing added the following caution to its AMM: Use only hand pressure to depress override button. Use of screwdriver or other type of prying device to depress override button can deform slender pin mechanism inside valve. A deformed override button pin can hold solenoid switcher ball off its seat which allows valve to open uncommanded when air pressure is available to engine start valve. If undetected or uncorrected, this condition will result in significant damage to engine starter.

Hydraulic Power System

The hydraulic power system consists of two main (left and right) hydraulic systems and an auxiliary system, which provide primary and backup power, respectively, to the hydraulically actuated systems and subsystems on the airplane, including the landing gear. Each hydraulic system has a reservoir filled with about 16 quarts of hydraulic fluid. System return fluid, except for the hydraulic fluid used for the brakes, flows through the system return line filters into the reservoir. Each reservoir has a relief and bleed valve, direct fluid level indicator, fluid quantity transmitter, low-level switch, and temperature sensor. Post accident, the left hydraulic reservoir was found empty; however, the indicator located on the left hydraulic reservoir was found indicating 16 quarts, and the cockpit fluid-level indicator showed that it was full. The right hydraulic reservoir was found full.

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AMU Chronicles

BY SAM LONGO



Rookie Rules

Fledgling aircraft maintenance students still have a lot to learn after being pushed from the cozy nest of their community college. Some will fly, while many others fall in their desperate struggle to adapt to their new career environments.

one of the many topics of discussion at a recent program advisory committee meeting at Centennial College was the need for aviation industry feedback directly provided to students. Despite excellent, experienced, qualified professors telling the maintenance and avionics students about the harsh realities of life in the trenches, there is a reluctance on their part to believe. Perhaps it is simply the age-old "parent-child syndrome" where the adults' sage advice falls on young deaf ears and rolling eyes.

So, in the spirit of cooperation, and at the risk of much yawning and additional eye rolling, I have put together the following four "Rookie Rules" for apprenticeship success in aviation maintenance.

Rule #1: Strive to be on time, every time. As I have said many times before, you can be the best mechanic in the world, but if you are not there, ready to work at the start of your shift, your score is zero. The aviation industry is time-driven. People expect flights to be on time and therefore your employer expects you to be on time. Your start time is not a suggestion, and you are not playing horseshoes. There are no points for being close. Personally, I learned this lesson early in my working career. When I was a teenager working one of my first jobs, my dad often gave me a ride to work on Saturday mornings. One morning, the van got a flat tire, so we hopped out and installed the spare before continuing our journey. His comment afterward was simple: always leave a half hour earlier for work than normal circumstances would dictate, just in case something happens. That way, you will never be late. The lesson stayed with me throughout my career. Subsequently, it saved me from being late on more than one occasion.

Rule #2: Always be honest. This point is critical to your gaining the trust of the AME or foreman that you report to. If you make a mistake or are unsure about what you are doing, it is your responsibility to speak up. The industry may appear large, but it is amazing how small it will become if you make a mistake and try to cover it up. Word travels fast. Minor screwups are allowed and even expected of a fledging apprentice, but dishonesty is the fastest way out the hangar door. Be forewarned: not many will reopen after the fact.

Rule #3: Always keep busy. Remember that as an apprentice, you will be watched closely by everyone from management on down, so if you can't keep busy, try to look busy. Ask for more work when your task is finished and lend a hand whenever you can, in whatever capacity. As a young apprentice at Nordair in Montreal, I had an experience I will never forget. Shortly after an aircraft was pushed out the hangar door in bitterly cold weather, I strolled across the hangar floor with my hands in my pockets. Imagine my surprise and horror as the hanger loudspeakers blared out "Longo, get your hands out of your pockets!" Not what you want to hear when you are the new kid in town. Lesson learned: look busy.

Rule #4: Try to be prepared at all times. Another early lesson that I learned at Nordair happened on an evening shift. I was inside a Boeing 737 that had just been reconfigured into cargo mode when a foreman asked to borrow my screwdriver and flashlight. I immediately informed him that I had to go to my toolbox to get them. In response, he flew into an angry tirade, screaming at me that mechanics should have those tools with them at all times. From that day forward they were part of my shift-start routine: coveralls, flashlight and multibit screwdriver. His anger was so intense, and the trauma so complete, I still, to this day, cannot don coveralls without feeling slightly incomplete without the comfort of those two tools tucked safely in my pockets!

Now that you have the benefit of my four rules for rookies, your next step is to go forth and find that first job, assuming of course that after reading the four rules you are still considering a career in aircraft maintenance. That first job is always the toughest to land, so be prepared to do some research on the companies you apply to. Find out what type of aircraft they fly and do your homework. Don't expect them to take an interest in you if you don't take an interest in them.

Finally, if you just can't find work, don't fret; Canada's unique geography has its advantages. As the temperature drops, the opportunities rise, so head north. Don't be afraid to move outside of your personal comfort zone. You will likely learn more about your trade, yourself and life in general. In addition, it is quite possible that you may just have the greatest adventure of your lifetime. Just remember the rookie rules; stay warm, pay attention, and hang in there, because, trust me when I say, before you know it, you will be the guy training all those new recruits.

For more published writing by Sam Longo, please visit www.samlongo.com ■











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