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BUSINESS AVIATION

GETTING AHEAD OF THE GAME

Saving time is what business aircraft do for a living. Now, new transmittable diagnostic messaging systems are putting corporate aircraft operators ahead of the game when it comes to aircraft maintenance.

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BUSINESS AVIATION LANDS IN LAS VEGAS

NBAA's Convention & Exhibition (NBAA2015) in Las Vegas will bring together an estimated 26,000 business aviation professionals, 1,000 exhibitors, and 100 business aircraft from around the world

Five years ago, during the global economic downturn, the National Business Aviation Association (NBAA) along with the General Aviation Manufacturers Association (GAMA) launched the "No Plane No Gain" campaign. What is No Plane No Gain? It's definitely much more than a catchy slogan and a cool looking lapel pin. This joint advocacy initiative was designed to both provide and reinforce the understanding of just how valuable business aviation is to people, companies, and communities served by general and business aviation.

Has it been successful; of course it has. Just visit www.nbaa.org and go to the advocacy tab to learn more.

IN THIS ISSUE

Having recently completed his two-year term as NBAA Maintenance Committee Chairman, Jim Sparks reflects on some of the worthwhile activities of the NBAA Maintenance Committee in his article beginning on Page 6 of this issue titled, "Aviation is Good for Business". The NBAA Maintenance Committee, like other NBAA committees, is made up of dedicated professionals that volunteer their time and talents to understand and advocate for maintenance and safety issues facing the business aviation maintenance community and individual maintainers.

Advances in information technology continue to change the way in which maintainers approach aircraft maintenance today. Jerry Chandler in his article "Getting Ahead of the Game: The Surge in Transmittable, Real-time Diagnostics," takes a look at some of the transmittable diagnostic messaging systems in business aircraft today designed to put operators of these aircraft in front of the maintenance challenges.

But this issue of *Aircraft Maintenance Technology* is not only about new technology and what's going on the world of business aviation today. Aviation is full of great stories, historical perspectives, and pioneers that came well before us. Charles Chandler provides you with one such story in his article "A Trip to the Doc's Office." Who is Doc? Well, Doc is a B-29 Superfortress in its final stages of becoming airworthy again after decades parked in an aircraft graveyard. The most fascinating part of this story is one of the many young women called Rosie the Riveter who at 18 years old helped build Doc in 1945. Now 90 years old, Connie Palacioz is again working on Doc as part of the restoration crew. Congratulations Connie.

Ron

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THE NBAA Maintenance Committee is cooperating with ASTM to make sure business aircraft technicians are up for the task and equipped with the required knowledge to contend with the challenges accompanying today's office in the sky.

AVIATION IS GOOD FOR BUSINESS

NBAA and the NBAA Maintenance Committee tackle issues facing the industry with programs like NEXT TECH for NEXTGEN, Technical Rewards and Career Scholarship (TRACS), and regulation updates that match today's technological advances

By Jim Sparks

Many in our profession are familiar with the old adage “the only way to come out of an aviation related business with a small fortune is to begin the business with a large fortune.” It is true that the price to acquire and operate aircraft can be quite high and many corporate accountants are often stymied with service invoices along with common aviation business practices such as exchange parts and core charges but in the end, the benefits of the aviation asset almost always offset the costs.

The National Business Aviation Association (NBAA) is perceived by many to be a special interest group as well as a professional organization dedicated to provide political clout in Washington, D.C., supporting the interests of corporations. While it is true the association is made up of corporate members, much of its agenda involves looking after a significant part of the general aviation world.

The NBAA Maintenance Committee is made up of about 140 representatives from member compa-

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nies along with recognized industry experts and advocates. This number includes various NBAA sanctioned "Technical Committees" associated with industry manufacturers. The body of the main committee consists of around 35 members. Although

The Maintenance Management Conference (MMC)

provides resources including regulatory updates, technology briefing along with management and human factors programs.

the undertaking touts supporting initiatives that enhance the mission of corporate aviation most all activities, in the end, provide value throughout the aircraft industry.

Having just recently completed the two-year term as Maintenance Committee Chairman, I would like to relay some of the worthwhile activities of this dedicated group of professionals that volunteer their time and talents.

INDUSTRY CHALLENGES

As most are aware, the aviation maintenance profession is currently facing many challenges. In many

cases, we are still operating under regulations created 50 years ago. Technology advancements are coming at a much faster pace and the vast majority of us charged as the "guardians of airworthy" are rapidly approaching retirement. A&P school enrollments, for the most part, are well below school capacity and significant percentages of school graduates elect not to enter an aviation-related field.

Even those that fulfill the required A&P school curriculums and do enter the profession find themselves far less than qualified to undertake many of the tasks required on current generation aircraft.

One of the major undertakings of the Maintenance Committee is promoting a project known as NEXT TECH for NEXTGEN. This initiative targets several fronts including defining the "Need to Know" of today's technicians along with the means to impart the required knowledge. One way of engaging middle and high school kids is to illustrate that aviation maintenance is not a dead trade but a very attractive profession with all the high-tech gadgetry they already expect and understand.

The Technical Rewards And Career Scholarship (TRACS) program creates a means of delivering real world scholarships and in some cases, assists in funding basic schooling as well as providing complete Maintenance Initial Courses along with

a cost of living allowance to help defer costs associated with attending a school outside the reach of the scholarship winner's home. The estimated value of these career awards is around \$ 500,000 and unfortunately, there are frequently more scholarships available than there are applicants.

In addition to tackling the issues associated with technicians, the committee wholeheartedly pursues regulatory concerns. This arena permits jousting with regulators regarding rules and actions that may apply to one segment of the industry but is not well suited for business/





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general aviation. Positive outcomes have been realized in numerous areas including the application for Letters Of Authorization (LOA) for operation in Reduced Vertical Separation Minimums (RVSM) airspace. Current activities include the Airworthiness Directive process and considerations to Alternate Means Of Compliance (AMOC) and terminating actions, use of electronic documentation along

with conforming certain analog regulations to the now predominantly digital world.

The now world renowned Maintenance Management Conference (MMC) is one of the shining stars illuminating the way for those engaged in support of a wide array of aircraft. Although the conference is referred to as a "management" venue, it does not exclusively cater to maintenance managers. Approximately 70 percent of business aircraft operators depend on various service networks, repair stations and independent freelancing technicians to ensure their airworthiness. In addition, many flight department managers and often flight crew members are tasked with overseeing the maintenance function. MMC provides resources including regulatory updates, technology briefing along with management and human factors programs. This conference has seen dramatic growth in the past few years and many of the attendees have been overheard saying "if there were only one industry function I could attend, it would be MMC."

Recently a Connectivity sub-committee has been added to the cadre and consists of a team of knowledgeable professionals exploring ways to develop standards, education and training for those tasked with operating and supporting high speed data, in-flight communications, and WiFi as well as general data networks. Thanks to the forward thinking of Jim Jensen, founder and CEO of Satcom Direct and his crew, for undertaking the project of creating an Aero IT standard along with a supporting course to make attendees proficient in airborne network technology.

COLLABORATIVE EFFORTS

The NBAA does offer interesting opportunities for collaborating with other global organizations with similar interests and where necessary provides legal and in some cases guidance on how and when to approach regulators. One recent collaborative initiative is participation with the globally recognized standards group ASTM International. The project, from the NBAA perspective, is the metamorphosis of programs intended to make sure technicians working business aircraft were up for the task and equipped with the required knowledge to contend with the challenges accompanying the modern office in the sky.

It seems there is a universal concern regarding the need to know of today's aerospace professional, not only those entrusted with return to service authority but also those involved in the aerospace industry. This includes equipment and wiring installers, interior specialists, composites technicians, flight technicians, inspection personnel, and of course those validating airworthiness. A multifaceted plan includes assessment and rejuvenation of A&P school curriculums, create standards specifically developed for each identified area of specialization, petition regulators to assist in bringing analog regulations in line with the digital age and reestablish the aerospace profession as a viable and attractive career choice for young people.

The mission statement of the NBAA: "To foster an environment that allows business aviation to thrive in the United States and around the world." Yes, the National Business Aviation Association does align its agenda around business aviation but it seems what is good for business is often good for the rest of us. The Maintenance Committee does appreciate input regarding issues that impact aviation activities world-wide and information pertinent to ongoing committee activities can be reviewed at: www.nbaa.org/ops/maint/. In addition contact information is provided on the NBAA site for the entire leadership team.

The realization of this group of professionals is that the aviation maintenance profession is blessed with an abundance of brilliant people capable of overcoming a wide array of challenges. After all, when something is broken, who better to fix it than a mechanic? **AMT**



JIM SPARKS has been maintaining aircraft for almost 40 years with the majority of the time involving Business Aviation activities. Jim's endeavors have placed him on six of the seven continents contending with numerous situations from routine flight dispatch to critical AOGs. His career includes maintainer, avionics/electrician, educator, tech rep, and director of aircraft maintenance. In addition to other activities he is engaged with ASTM assisting in the global development of criteria defining the Next Tech for NEXTGEN. You can reach him at sparks-jim@sbcglobal.net.



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THE PROS AND CONS OF TECHNOLOGY ADVANCEMENTS IN AVIATION MAINTENANCE DOCUMENTATION

We are rapidly reaching a point where the ability to manage content effectively may soon turn into a competitive advantage for those companies that are proactive in doing so.

By Wally Hines

Although writing in some form has been in existence since the mid-third millennium BC, mankind has been slow to make significant advances in how data is communicated in written form. Even getting the medium right has taken time, taking almost 3,800 years to move from the first clay tablets to papyrus, parchment, and finally the widespread use of paper in 300 AD. From this point, 1,150 years passed until the first printing press was created, making the production of books on a large scale a reality. Although there certainly have been many notable improvements to the production of books since

that time (e.g., offset presses, computers, PDFs), the next significant portable medium change came a mere 570 years later, on April 3, 2010, when the first iPad was released.

DO THE POSITIVES OUTWEIGH THE NEGATIVES?

Maintenance, Flight Operations, and In Flight departments have all rushed to embrace tablet technology, but to what end? We have all heard the positives: manuals on a tablet weigh a lot less than paper, they are easier to revise, and they

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LYCOMING

Unfortunately, with some of these positives, we have also created new negatives. For example, now that manuals are easy to revise, fewer end users are actually reading the revisions.

cost less than paper. But, do these positives really outweigh the negatives? With the average price of a mid-range iPad hovering between \$399 and \$499, the argument can be made that, over time, this cost will be recouped by savings on paper as well as a more efficient revision distribution process. What the proponents fail to mention, however, are the negative consequences of this transition. iPads are breakable, they require power, they require some level of connectivity, they require IT support, the technology changes over time resulting in replacement costs, and so on.

Unfortunately, with some of these positives, we have also created new negatives. For example, now that manuals are easy to revise, fewer end users are actually reading the revisions. In informal surveys over the last 12 months, the prevailing opinion at the Flight Operations level is that, when manuals were being revised on paper, approximately 60 percent of end users were taking the time to read the revised pages. Now that they are being revised electronically, that number has dropped to less than 10 percent. It is simply too easy in our fast paced society to hit that "Update All" button and fail to review what actually changed. This is just one example of a negative consequence created

as a direct result of making the manuals easy to revise while saving paper. There are others. Does this really classify as an improvement or benefit?

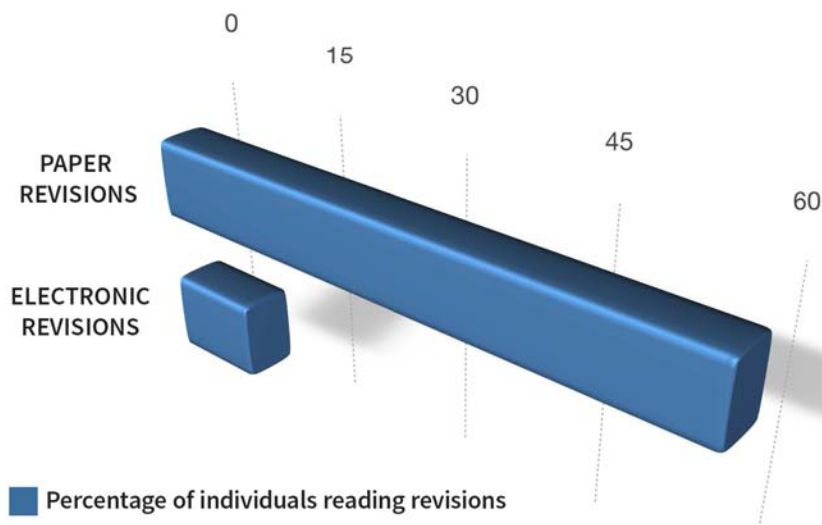
With few exceptions, we as an industry have simply taken a paper book and put it on a tablet in electronic form. When you weigh the pros and cons and reflect on what we've really accomplished, you have to question what we have really gained so far. I have actually been told by several airlines that they were starting to use iPads "because everyone else is using them."

Now, lest you think that I am an opponent of mobile technology, let me set the record straight and tell you that I am not. I am, however, skeptical of how this amazing technology is currently being used. Consider the following: Over the last 5,500 years, each significant improvement in producing documentation has taken less time to implement than its predecessor, but one thing has never changed. Although it takes far less time today to create and produce a book, report, or article, we are still shackled by the constraints of the manual as a delivery system for the transfer of knowledge. Certainly, we are able to access content on the Internet quickly, easily, and concisely. If I want to know the lyrics to a song, what is playing at the local theater, or the current weather for McMurdo Station, I don't have to read a book. I can find these answers in seconds.

And, as far as apps go, there are some real time savers out there. One of my favorites, by the way, is Plowz & Mowz, where I can schedule someone to mow my lawn within 10-15 seconds of opening the



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app. The best parts? It costs a fraction of what you would pay for a lawn service, you don't have to talk to anyone, and you don't have to commit to a schedule. It would be great if there were things like that for aviation content, but the industry as a whole has not adopted any similar methods of easily relaying relevant and meaningful content to their staff or intended audience at the exact moment that they need or request it. This is a problem that needs to be addressed.

MANAGING TECHNICAL PUBLICATIONS

Another element that bears mentioning is the creation, maintenance, revision, and as appropriate, approval of manuals (i.e., the technical publications department and all of the things that happen to a manual prior to distribution — whether on paper or a tablet). Even companies that have transitioned to mobile content are still managing their technical publications in the same way they have been for decades. Most are doing it internally with poor results and, since digital content delivery is less forgiving than paper, the manuals have become more difficult for those departments to manage.

Managing manuals internally is a giant money hole that, surprisingly, seems to go unnoticed in most departments who instead see it as a necessary evil.

To correct this problem, several airlines have purchased expensive document management systems which increase costs dramatically and make life much more difficult for those staff managing and contributing to the manuals. If you really stop and think about this objectively, this "solution" makes no sense. It's more expensive and it's harder to use. To make matters worse, every airline is reinventing this wheel on their own.

At the other end of the spectrum, companies have opted for Microsoft Word and similar programs to manage their manuals. Although less expensive than their document management counterparts, these companies are also spending unnecessary dollars utilizing a piece of software that was never intended to manage manuals thereby creating higher than necessary costs



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and a lesser end product. Managing manuals internally is a giant money hole that, surprisingly, seems to go unnoticed in most departments who instead see the vast amount of work and resulting costs as a necessary evil. It's not.

TRANSFER OF KNOWLEDGE REMAINS A TIME-CONSUMING PROCESS

Let's look at maintenance task cards and associated documentation. Despite all these advances in technology and the transferring of knowledge, maintaining accurate and timely maintenance records remains a time-consuming and arduous process at the vast majority of maintenance facilities. As an example of my skepticism, even though the task cards and documentation are already electronic, mechanics are printing out paper copies, performing the work, and then duplicating their notes back into the same electronic system from which they obtained the task card in the first place. This is akin to me printing out a form from the Plowz & Mowz app, taking it out to the yard to fill it out, and then coming back inside to manually transfer the information back into the app.

Although the specifications of these improvements are largely unknown at the moment, company culture will have a big impact on when and how these improvements are implemented. We are rapidly reaching a point where the ability to manage content effectively may soon turn into a competitive advantage for those companies that are proactive in doing so. Those that fail to adapt and insist on sticking with the old ways, like internal technical publications departments, document management systems, and tablets that just display searchable PDFs will be left behind, unable to compete effectively.

The FAA's Office of Aviation Safety (AVS) conducted a workshop in 2012 titled, "Technical Documentation Challenges in Aviation Maintenance." In the final summary of their 41 page report, they stated, "Technical documentation is one of the most common problems in aviation, and the solutions are extremely difficult in today's typical culture. Addressing the problem will require significant commitment and investment by all parties. Fixing it means changing a culture. The question remains: Is the aviation industry ready to tackle these challenges?" Good question. Are you ready ... and willing? **AMT**

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NBAA2015 BUSINESS AVIATION CONVENTION & EXHIBITION

NBAA's Business Aviation Convention & Exhibition (NBAA2015) held at the Las Vegas Convention Center will bring together an estimated 26,000 business aviation professionals, 1,000 exhibitors, and 100 business aircraft from around the world.

NBAA Professional Development Program (PDP) has courses on Monday Nov. 15 and they go through the entire week. Many of the PDP sessions are eligible for Certified Aviation Manager (CAM) application and recertification credit.

Many of the business aircraft manufacturers exhibiting also have Maintenance and Operator (M&O) Sessions planned during the convention.

Here are just a few sessions and events of particular interest. A full schedule of all sessions and events is available during NBAA2015.

MONDAY, NOVEMBER 16, 2015

7:30 a.m. – 5:00 p.m.

Inspection Authorization Renewal

Room N232/234

1:00 a.m. – 6:00 p.m.

NBAA Committee Meetings

TUESDAY, NOVEMBER 17, 2015

8:30 a.m. – 10:00 p.m.

NBAA2015 Opening General Session

Hear from NBAA President and CEO Ed Bolen as he welcomes everyone to the convention and introduces several government officials and speakers including FAA Administrator Michael Huerta.

10:30 a.m. – Noon

Attract Top Talent to Business Aviation Careers

Room N252/254

This interactive workshop will identify key challenges to recruiting top entry-level talent and ways to overcome those challenges.

TUESDAY, NOVEMBER 17, 2015 (CON'T)

1:00 p.m. – 2:00 p.m.

SAS – The New Certification Oversight System

Room N261

This session provides an inside look at the FAA's Safety Assurance Systems (SAS), the new risk based data support oversight system.

5:30 p.m. – 7:00 p.m.

YoPro Networking Reception

Innovation Zone Booth N704

Hosted by the NBAA Young Professional (YoPro) this networking event provides an opportunity to meet and greet rising business aviation professionals and current industry experts.

WEDNESDAY, NOVEMBER 18, 2015

10:30 a.m. – Noon

Second Day General Session

NBAA President and CEO will welcome several aviation leaders and legends including Captain "Sully" Sullenberger.

3:00 p.m. – 4:00 p.m.

Greatest Employee Safety Risks and How to Mitigate Them

Room N259

This session will discuss some of the greatest employee and regulatory risks involving safety.

THURSDAY, NOVEMBER 19, 2015

9:00 a.m. – 10:00 a.m.

Careers in Business Aviation Day – General Session

Room N245/247

NBAA will once again open its doors to future leaders from middle schools, high schools, and college students interested in a career in business aviation.

9:30 a.m. – 3:30 p.m.

2015 NBAA National Safety Forum

Room N250

NBAA Safety Committee's Inaugural National Safety Forum will provide an opportunity to dialogue with top safety thought leaders.



EXHIBIT HALLS & INDOOR STATIC DISPLAY HOURS

LAS VEGAS CONVENTION CENTER

November 17 10:00 a.m. – 6:00 p.m.

November 18 9:00 a.m. – 5:00 p.m.

November 19 9:00 a.m. – 4:00 p.m.

STATIC DISPLAY HOURS

HENDERSON EXECUTIVE AIRPORT

November 17 9:00 a.m. – 6:00 p.m.

November 18 9:00 a.m. – 5:00 p.m.

November 19 9:00 a.m. – 3:00 p.m.

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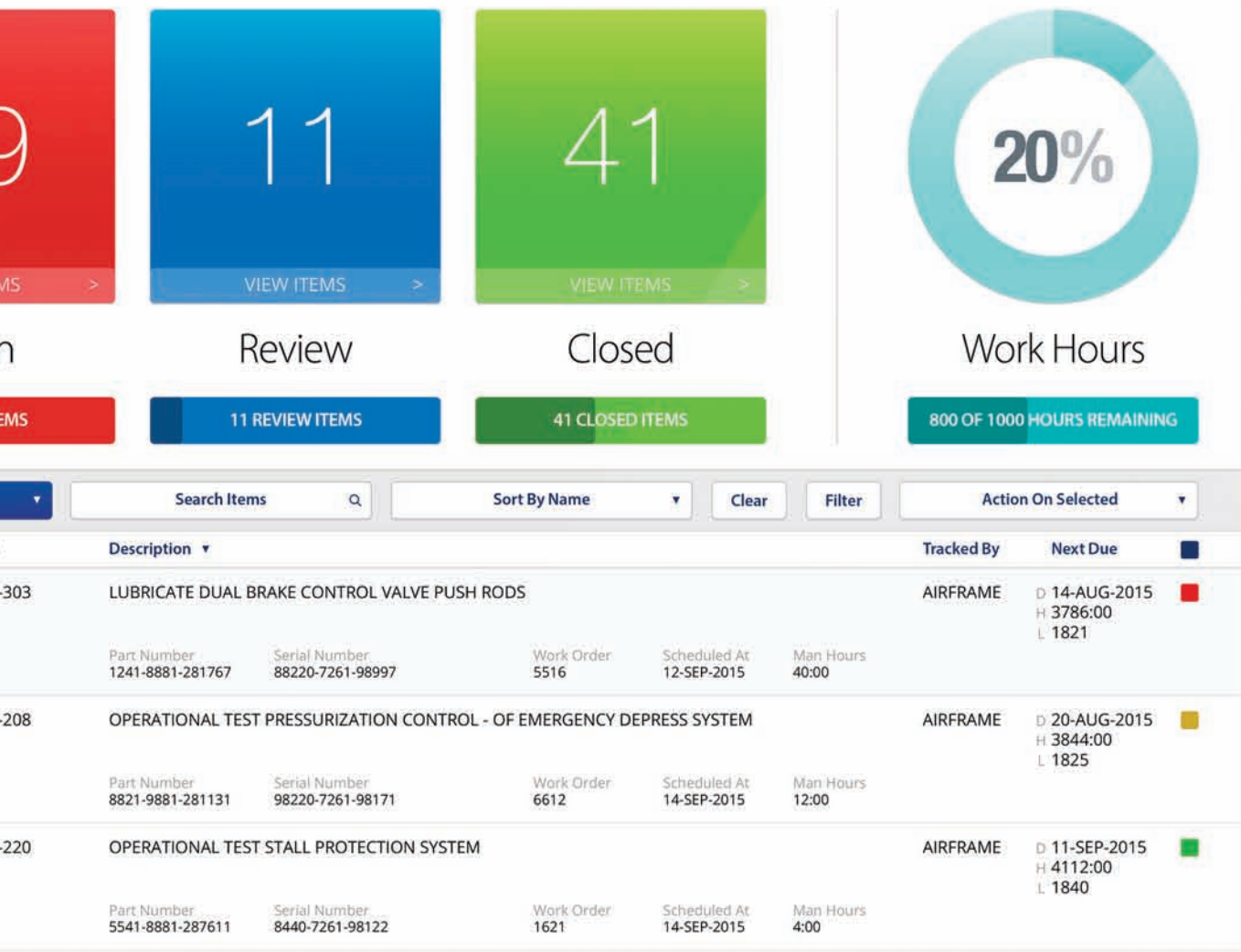
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HUMAN FACTORS ARE IMPORTANT TO AIRCRAFT CERTIFICATION

By Dr. Bill Johnson

A few months back, *AMT* Editor Ron Donner asked me to write about design specifications that addressed human factors. He wanted the article for the “October” issue. My initial response was the usual, “no problem.” Knowing that there are plenty of design regulations for aircraft and parts certification it would be easy to describe human factors in certification in a few pages. After considerable discussion with FAA personnel from Aircraft Certification this is my 1,000-word attempt to answer Ron Donner’s request. This article describes the FAA Aircraft Certification Service and the general structure of its regulations. It should serve as a review for most readers and lead you to sources of additional detailed information. It ends with Chapter 6 (Considering Human Factors Issues when installing equipment and conducting other maintenance) of the *Operator’s Manual for Human Factors in Maintenance*.



DR. WILLIAM B. JOHNSON is the FAA Chief Scientific and Technical Advisor for Human Factors in Aircraft Maintenance Systems. His comments are based on nearly 50 years of combined experience as a pilot/mechanic, an airline engineering and MRO consultant, a professor, and an FAA scientific executive.

AIRCRAFT CERTIFICATION SERVICE

FAA’s Aircraft Certification Service (AIR), as paraphrased from Order 8100.5A, works with authorities, manufacturers, and other stakeholders to ensure continuing safety. The AIR process administers safety standards governing design, production, and airworthiness of products. AIR oversees design, production, and airworthiness certification programs. They ensure that the aircraft and components are designed for safety, manufactured for safety, and modified for safety throughout the product life cycle.

The initial AIR mission appears to be straightforward. However, this mission must extend to small and large aircraft including airplanes and helicopters, powerplants, propellers, avionics, and other accessories. The AIR process must serve not only brand new aircraft and powerplant design and manufacturing but also certification of new parts for very old aircraft. AIR supports certification of the constant flow of new technologies and the demand of special repairs and

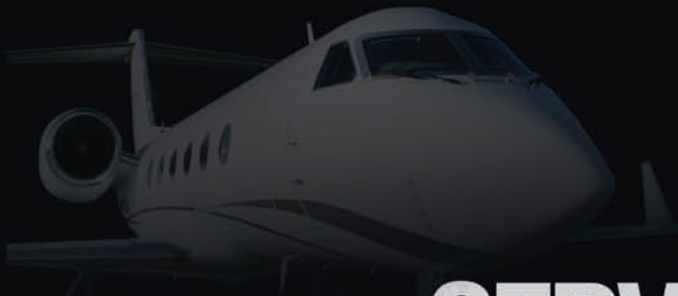
alterations made in the field. That support extends to the entire world.

AIR pays attention to human factors by staffing the various Directorates and Aircraft Certification Offices with design, manufacturing, continued operational safety, and flight test human factors professionals. Those personnel are involved with most new systems and modifications, especially related to flight deck and flight control avionics and control systems. They are especially supportive in matters related to engineering assisted field approvals. Increasingly, because of FAA encouragement and commercial value, most manufacturers have a team of human factors experts on staff. FAA human factors engineers have the skill set and education that helps ensure effective communication with their industry counterparts.

I have worked with a variety of the FAA Aircraft Certification Human Factors professionals, mostly with activity on the Aviation Safety Human Factors Coordinating Committee. That group brings together the FAA personnel that have industry, government, and academic perspective of aircraft and component certification process and the related human factors issues. I have observed a high degree of competency and level of industry cooperation among that team. I encourage readers to take advantage of that expertise.

THE CERTIFICATION DETAILS

If you want the “details” you must proceed to the Federal Aviation Regulations. Part 21 is the overarching certification rule, titled Certification Procedures for Products and Parts. From there you can proceed to aircraft, engines, avionics, and other chapters. From those sections you can obtain everything from the strength limits for flight controls to the size, color, and location of icons on avionics displays. A recent certification rule for transport category aircraft affects “Installed Systems and Equipment for Use by the Flightcrew.” (See AC25.1302-1.) That human fac-



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6.2 HOW TO CONSIDER HUMAN FACTORS ISSUES WHEN INSTALLING EQUIPMENT AND CONDUCTING OTHER MAINTENANCE.

A. Talk to your customer. Ask them how they are going to use the new equipment. Are they going to use it all of the time? Do they mainly fly at night, during the day, VFR, IMC? Knowing how they might use the equipment might help you deliver something that would meet or exceed their expectations. It will also help meet the expectations of the equipment designer.

B. Do your homework before starting.

1. Look at the installation material to identify any questions or concerns with the installation instructions as they pertain to your pending work.

2. Identify areas that may be affected by your modification. Those could include, but are not limited to: Ability to:

- View
- Read
- Reach

Adequate lighting (day and night). Perform simple lighting evaluations to check night lighting using a moving blanket to block out light. Then evaluate any necessary dimming features. Use of colors for added annunciators in the flight deck, 14 CFR 23.1322 discusses the proper color use for flight deck alerts. Adequate knowledge for

the pilot for the new installed system. The manufacturer may provide a recommended Aircraft Flight Manual Supplement or pilot's guide.

C. Consider a mock-up or prototype location before you start drilling or cutting holes. Check the planned installation with the owner/operator, if that is a reasonable option. Weigh such input carefully since you may have better experience than the customer.

D. Check for experience of other installers or with FAA personnel who have seen and/or approved other similar installations.

tors oriented information was nearly a decade in the making and approval process and is representative of the important information likely to continue to flow from AIR.

There has been a lot of industry talk about upcoming momentous rule changes for Part 23 — Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes. The proposed rule has the goal to reorganize Part 23 based on airplane performance and complexity. This rule will ensure the safety of aircraft but will also streamline the time and cost to certify many small aircraft.

MAKING HUMAN FACTORS DECISIONS IN THE FIELD

This discussion above addressed the part of the certification process that tends to happen with parts or aircraft production facilities. It is more likely that you are more concerned about “field approvals” — an FAA approval of technical data for a major alteration or repair to a single typed-certificated product. For example, your customer asks you to install a new avionics component, cameras, air conditioner, etc. to an existing aircraft. In many cases the product provider has already completed most, if not all, of the data necessary for a field approval. However, that is not always the case. The responsibility then falls on the installer to ensure the compatibility and obtain the necessary data to complete the installation.

The 2014 version of the *Operator's Manual for Human Factors in Aviation* (See *AMT* October 2014) (full document at www.humanfactorsinfo.com) had a chapter to offer human factors support on field approvals. Chapter 6 was written for general aviation

mechanics, repair station personnel, and mechanics with Inspection Authorizations. They must make decisions regarding such factors as: A mechanic may be the best final check to ensure not only for safe physical installation, but also for alterations made to the aircraft, ensuring selected human-machine issues are addressed. These can include: visual access/viewing angles, installation specific readability, glare, nighttime application, panel real estate, electrical loads/load shedding, pilot workload, and more. These types of factors should be considered for field approvals. Chapter 6 emphasizes that proper attention to human factors during installation not only helps ensure effective and safe equipment use, but also offers ideal customer/user satisfaction.

See the section of Chapter 6 above as an example of the practical advice.

The *Operators Manual* is but one of many sources to help with field approvals and other aircraft and parts certification. Many sections of the certification rules have matching Advisory Circulars. They can be accessed through the FAA website (www.faa.gov, go to Certification). Additionally, many of the FAA's certification personnel and resources can also be accessed by working with your local Flight Standards District Office who has a working relationship with the engineers in nearby offices.

We have all heard the famous expression that “FAA is here to help.” When it comes to human factors and certification, I believe that to be true. Yes, there is a trace of Kool-Aid on my upper lip. **AMT**

Dr. Bill thanks FAA Certification Engineers Barry Ballenger, Jason Brys, and Steven Thompson for the technical guidance provided herein.

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3. Adapter Set, Consumer Units, Malabar P/N 1016310, connects the 1016 SCS Cart and PF56201 Hand Pump to the A350 Consumer Units.

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GETTING AHEAD OF THE GAME: THE SURGE IN TRANSMITTABLE, REAL-TIME DIAGNOSTICS

Saving time is what business aircraft do for a living. Now, a slew of new transmittable diagnostic messaging systems is putting corporate aircraft operators ahead of the game when it comes to responding to squawks.

By Jerome Greer Chandler

A Dassault Falcon bizjet is motoring along nicely when a CAS (crew alerting system) warning message pops up. The crew elects to divert. This is going to cost some time. The issue is *how much* time? A system called FalconBroadcast has already sent an email to the technician on the ground. The report flagged suspect part failures and maintenance had parts moving prior to aircraft touchdown at the alternate airfield. Time-savings were substantial.

Saving time is what business aircraft do for a living. Now, a slew of new transmittable diagnostic messaging systems is putting corporate aircraft operators ahead of the game when it comes to responding to squawks.

No peripheral piece of the maintenance puzzle, FalconBroadcast “is kind of a backbone” for Dassault Falcon Jet’s future maintenance diagnostic efforts according to Geoff Chick, the OEM’s vice president of customer service. The satellite-based system resides on EASy-equipped Falcons – 2000, 900, and 7X series craft fitted with Honeywell’s Primus Epic system.

Although FalconBroadcast works with VHF too, “You really need [to be linked] to a satcom system to take full advantage” of its capabilities — espe-

cially in oceanic or remote location operations says Randy Corey, Falcon Jet’s manager of customer service administration and operator advisory board coordinator.

So confident is Falcon Jet in the setup that it’s part of the airplane as delivered. “We let [customers] try it free of charge for nine months,” says Chick. “The renewal rate is 80 percent,” and the system is operational on almost 150 Falcons as of press time.

Textron Aviation’s entry into the real-time market is LinxUs and it’s on the Citation M2, Cj3+, Sovereign, Latitude, and CX+, all aircraft certified within the last three years. LinxUs employs a Garmin GSR56 Iridium satellite receiver to transmit data while in flight and a Garmin GDL59 Wi-Fi unit to do so on the ground.

This new-breed of diagnostic messaging is both fast and flexible.

“Let’s say we’re in a Sovereign+ and are flying at 40,000 feet from New York to Chicago,” says Michael Vercio, Textron Aviation’s vice president for product support. “Half-way through the trip, the pilot gets a CAS message in the cockpit saying he’s got right wing anti-ice failure.





Vercio says, “All the information that occurred from that failure ... can automatically be transmitted via Wi-Fi to the Internet to a number of locations. He could have emails go directly to his maintenance control system (in the form of an email), and they come to us — the OEM — so we can monitor the issue. It could also go to a centralized location where that customer, or that company, could go in and see the data real-time.”

The point: no one’s left in the dark. Communication of the problem, and how to go about fixing it, is complete and completely transparent. There may be a failure on board, but there’s no failure to communicate.

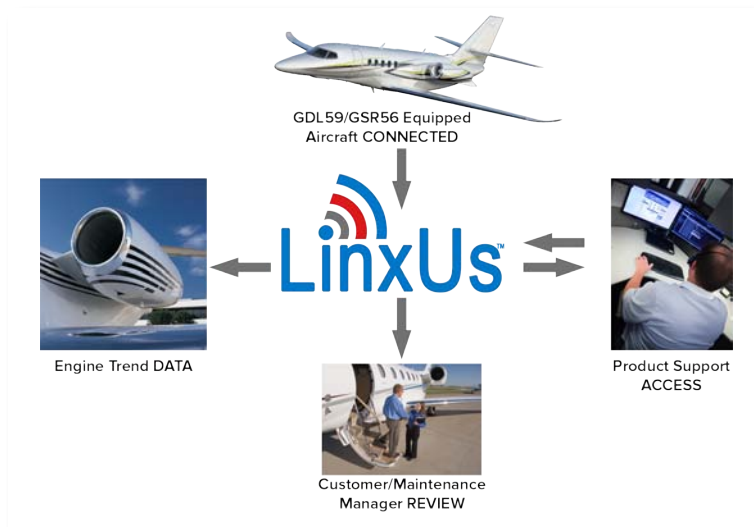
That email that the technician gets names the fault, indicates the root cause, the flight parameters, and provides a direct link to Textron support.

With FalconBroadcast communication of “the data is cleansed, manipulated, and presented in a very user-friendly and intuitive format from Dassault’s own servers on the ground,” says Chick. “It’s not just raw data coming through. It’s presented in the Dassault Falcon Customer Portal in an extremely easy-to-use report.” If the operator wants to that information is pushed to his smartphone in the form of an email. The report shows

INFORMATION

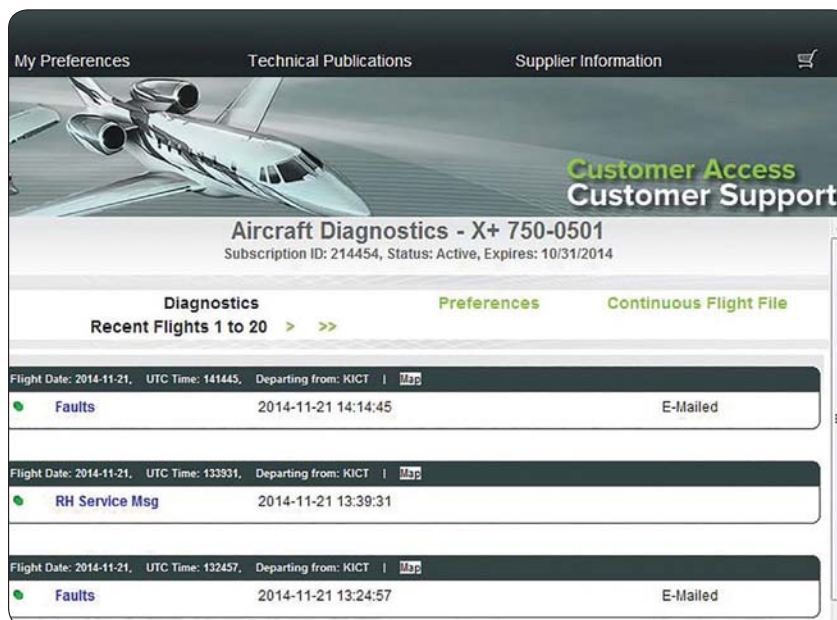
CAN automatically be transmitted from this Citation Sovereign+ via Wi-Fi to the Internet to any number of locations.

TEXTRON AVIATION



TEXTRON AVIATION'S

LinuxUs employs a Garmin GSR56 Iridium satellite receiver to transmit data while in flight and a Garmin GDL59 Wi-Fi unit to do so on the ground.



up in real-time, with a more comprehensive run down available via Falcon Jet's Customer Portal.

Embraer Executive Jets' entry is a health management system that senior manager of service and support solutions, Andre Kovacs says reduces operator manpower while boosting productivity. It too is pegged to either satellite or Wi-Fi transmission. In place on the new Legacy 500, and to a lesser degree the Phenom, Kovacs says, "We have already seen gains in terms of getting information from these downloads [so as to] speed up the analysis for troubleshooting."

Not all that long ago, Embraer had to dispatch a mechanic to the field to troubleshoot. Now, the

diagnosis has largely been done ahead of time. The technician's job when he reaches the diverted aircraft or AOG may well have changed. The mission nowadays could be to install the appropriate part, a part that he probably already has in his possession — courtesy of diagnostic messaging.

Embraer Executive Jets — for a period of time — offers the system free on the Legacy 500. Kovacs says fleet managers' response to the health management system has been good.

BEYOND DIAGNOSTICS

Technology has a way of carving out new territory, testing old assumptions. And so it is with business jet diagnostic messaging.

Predictive maintenance isn't new, especially among commercial carriers. But it's just beginning to gain

traction among bizjet operators. Identifying and replacing components before failure is a never-ending quest, it's success dependent "on the system and the equipment," says Chick. "There are indications from certain systems that by themselves, or when combined with other indications, give you a very clear direction as to something that might be about to fail."

Falcon Jet's Corey picks up the conversation: "The modern airplane is predicated a lot on timing." Take a typical valve. How long does it take to open or close? "The architecture of the fault history database and the EASy cockpit" possess "the potential to flag equipment which is decaying, that's not 100 percent healthy, such as a valve. Where a valve may move slow, it's still moving." He says a diagnostic message that it's not performing 100 percent, despite the fact the system is airworthy, might spark closer scrutiny.

The upshot says Corey: Now you can manage that component on a more scheduled basis, he says, "as opposed to an AOG or a break on the road."

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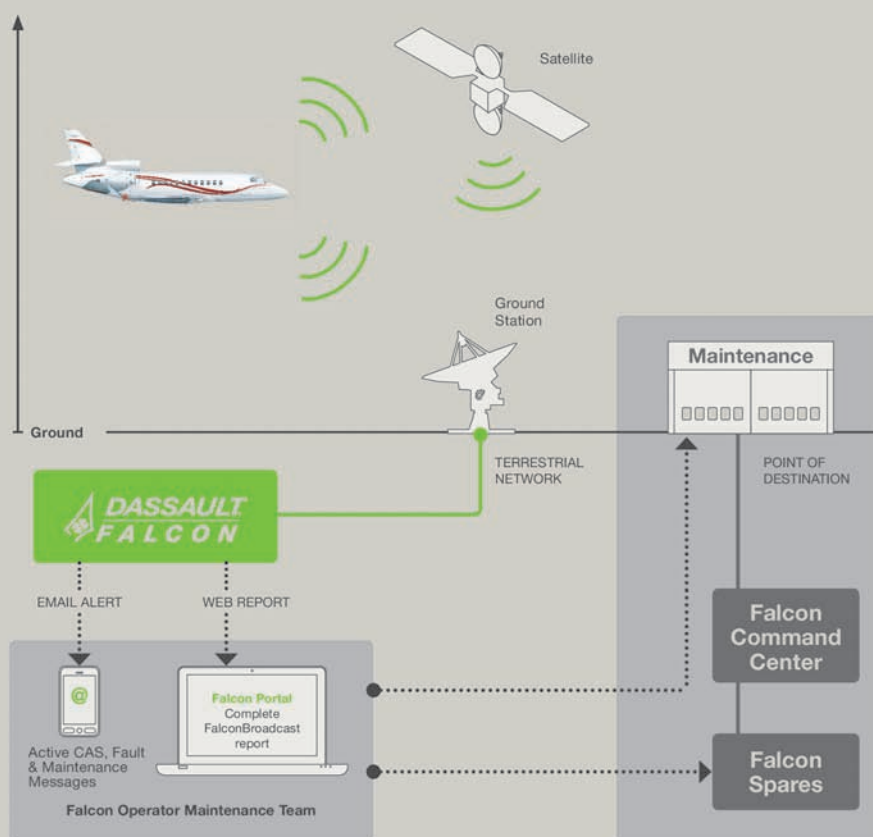
The word *potential* is the key. “We’re still learning,” says Embraer’s Kovacs. “Trend [analysis] is still a bit far at this moment. We need to get more deeply into the mechanical machines, like

generators, gearboxes, and things like that ... This [trend analysis] is happening more strongly with large-sized commercial aircraft. And we’re trying to learn with them.”

THE FALCON

Broadcast system is on EASy-equipped Falcons — 2000, 900, and 7X series. The OEM installs it free for nine months to show operators the value it provides.

FalconBroadcast: How it works



Auto Transmission

Auto Transmission of Current leg Report:

- 10 min before Landing
- When the “CHECK STATUS” (7X) CAS message is active at least 30 seconds in flight
- When a WARNING (red) CAS message becomes active in flight.

Manual Transmission

Manual Transmission of Maintenance report whenever the pilot pushes on the “EVENT” button.



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PROPJET DIAGNOSTIC MESSAGING

If business jet OEMs are still learning from airlines about the predictive potential of diagnostic messaging, OEMs, such as Textron Aviation are learning from pure jets. Tony Balestracci, the company's vice president of global customer service, says he "would anticipate eventually" adding

Linux to the company's King Air line of propjets.

For now, Daher, builder of the popular TBM line of single-engine propjets, is taking a measured approach to data downloads. The OEM's TBM 900 has a completely new electrical system, an important component of which is fault-loading capability, says Charles Holomek. He's Daher's vice president of customer support for the Americas. Over 80 percent of the planet's TBMs operate in the Americas, some 500 aircraft.

Data collected from the TBM's fault-detection system is downloadable on the ground via laptop.

Daher's approach is to take advantage of ground-downloadable data while focusing on fine-tuning its check intervals says Holomek. "We've changed our inspection program to optimize the maintenance intervals. We used to have an inspection program that called for a check every 100 [flight] hours. Then there were more extensive checks at 300 hours and 600 hours. We've evolved the inspection program so that now you do a check every 200 hours or 12 months, whichever occurs first."

How long it takes for real-time diagnostic messaging to reach the ranks of smaller turbine aircraft remains to be seen. But with the pace of technology as fluidly fast as it is, don't blink. **AMT**

DAHER'S MAINTENANCE facility in Pompano Beach, FL. With its electronic fault detection system the inspection program has evolved so that now you do a check every 200 hours or 12 months, whichever occurs first.



JEROME GREER CHANDLER is a two-time winner in the Aerospace Journalist of the Year competition's Best Maintenance Submission category; he won in 2000 and 2008. His best-seller 'Fire and Rain' chronicles the wind shear crash of Delta Flight 191 at DFW. Chandler's passion for aviation safety is more than professional. It's personal. Two of his relatives have perished on commercial airliners, one of them in the infamous Braniff Electra crash of 1959.



NBAA2015

BUSINESS AVIATION CONVENTION & EXHIBITION

NOVEMBER 17, 18, 19 | LAS VEGAS



YoPro Networking Reception

Tuesday, November 17 | 5:30 p.m. – 7:00 p.m.

Las Vegas Convention Center

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CULTURE SHOCK

Until accident investigation organizations take the role of maintenance as a serious contributor to safety, occasions to improve the safety culture in all transportation modes will become lost opportunities

By Stephen Carbone

In January I took part in an author's panel at a New York aeronautical college; we discussed our books – in my case, a novel – and talked about the industry's future. One student asked about why recommendations aren't more strictly enforced. I explained, using examples of similar accidents occurring under related causes, why recommendations are repeated.

I said, "Recommendations aren't enforceable. We're duplicating our mistakes, ignoring lessons of accidents past. In other words, we are not learning."

Ron Donner emailed me an article from *The Daily Telegraph*, a British daily newspaper; he asked me what I thought of the story. My original notion was: Ron and I have known each other



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for years; he should know better than to ask my opinion on ... anything.

The article was on British Airways flight BA762, an Airbus A319-131 that took off from — and immediately returned to — Heathrow airport on May 24, 2013; its short flight due to the separation of both engines' fan cowls during take-off roll; that amounts to four cowls departing the aircraft simultaneously. The fleeing cowls damaged the #2 engine's fuel line, resulting in an inflight fire.

A lesser point: the unnamed *Telegraph* writer was naïveté, naming phantom issues that the report never mentioned. Why's this problematic? Average people don't read accident reports, instead relying on news articles. Asiana 214, Malaysia Air MH370, Germanwings 9525, etc. played out for weeks in the media; daily news accounts brimming with allegations and opinion — not facts. It's like comedian Steve Martin said, "Do you want to mess with your child? Teach him how to speak wrong." We end up

with an uninformed public who can't trust technicians and pilots. It's also why aeronautical students don't understand why recommendations don't work.

The greater point: I referred to the original Air Accidents Investigation Branch (AAIB) report on the incident: Special Bulletin (SB) S3/2013, published Dec. 10, 2014. The AAIB investigates in accordance with Annex 13 of the Convention on International Civil Aviation. Accident reports don't assign blame; they give accurate event summaries and recommendation(s).

ACCIDENT REPORT

The AAIB report ignored the sensationalistic reporting of the *Daily Telegraph*; no mention of alarmed passengers, absentminded technicians or fatigue. It detailed the airliner's damage following the fan cowls' departures; the harm was extensive, as can be expected, but fortunately not enough to threaten its safe landing.



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The report reminded me of the student's question: why aren't recommendations more strictly enforced? In SB S 3/2013, the AAIB wrote Safety Recommendation 2013-011: "... that Airbus formally notifies

operators of A320-family aircraft of the fan cowl door loss ... reiterates the importance of verifying that the fan cowl doors are latched prior to flight ... latches." This impotent recommendation did nothing;

the lessons learned amounted to nothing; air safety gained nothing.

The AAIB said the A319-131 was fresh out of maintenance; Flight BA762 was its first flight. We're led to believe the pre-flight was uneventful ... except for the simple fact several people failed to notice the open engine cowl. The AAIB recommendation: send a memo to mechanics saying, essentially: Close all cowl before flight.

I'm not making this up.

SAFETY RECOMMENDATIONS

Not to be outdone, the European Aviation Safety Agency (EASA) distributed Safety Information Bulletin #2015-15 on Aug. 31, 2015. In addition to ambiguously pointing to alleged similar behavior by 'several operators', EASA wrote two recommendations (summarized): (1) all operators should amend pre-take-off procedures to alert pilots about open cowl, and, (2) amend the cowl opening/closing procedures. Again, not making this up.

An unlatched wing engine fan cowl doesn't sit snug against the engine; its center-of-gravity dictates it hangs noticeably away from the engine, visibly making the engine 'bulge' when seen from the front or back. The latches aren't recessed; they hang straight down and are obvious from the side. Since "nothing unusual" occurred during pre-flight, how did the first officer miss four open engine cowl during his/her preflight walk-around on this aircraft's first-flight-of-the-day in broad daylight? There's also no mention in either report of whether or not the crew reviewed the logbook to assure all maintenance items were signed off. I could make at least five recommendations just on the Operations side and another six for the Airworthiness side, from training to revisions for both General Manuals.

It is vital to identify stark critical errors in both maintenance and operations; in this case, unlocked engine cowl proved to be one problem. But accident/incident investigation doesn't stop there because the real cause is always below the surface; that's where the AAIB and

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EASA fell on their swords; they punted on first down.

MAINTENANCE FACTOR

What were the cultural anomalies for Maintenance and Operations at British Airways or even the 'several operators' that have seen this problem? This was not an accident, yet the seriousness of the incident demands a thorough review, one where the findings will proactively prevent a recurrence. Either the investigators chose to overlook important discrepancies or they were unfamiliar with how all divisions in an airline work.

Before 2001, the NTSB did not have FAA-certificated aircraft maintenance accident investigators; maintenance issues were delegated to engineers who never turned a wrench. I was hired into the NTSB because (former) Member John Goglia demanded they employ an FAA-certificated A&P technician/investigator who not only understood maintenance/engineering issues, e.g. task cards or poorly written manual instructions; but had good exposure to the day-to-day problems facing certificate holders, specifically an airline. He understood that every certificate holder, from Mom and Pop repair stations to international airlines, have cultures. As a result these cultures can raise safety concerns.

When I'd interview mechanics after an accident, my goal was to ascertain the conditions of the job, e.g. employee shifts, flight schedules. These gave clear insight

into other factors affecting safety. It's obvious to me the AAIB and EASA lack this important insight.

Until accident investigation organizations take the role of maintenance as a

serious contributor to safety, occasions to improve the safety culture in all transportation modes will become lost opportunities and aeronautical students will continue to ask, "Why?" **AMT**



STEPHEN CARBONE is an avid writer of aviation fiction; his first novel *Jet Blast* has appealed to mechanics, pilots, air traffic controllers, etc. by giving accurate depictions of the accident investigation process. A former airline

mechanic, he has been involved in many aspects of commercial aviation and went on to investigate major aviation accidents for the NTSB. A member of ISASI, Stephen holds a Master's degree in systems safety from ERAU. His weekly blog can be found at: <http://jetblast.tateauthor.com>

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A TRIP TO THE DOC'S OFFICE

Doc arrived in pieces on trucks and trains in 2000; the restoration work waxed and waned because of a variety of issues including the 2008 recession.

Doc's Friends was formed in 2013 to continue the restoration process.



By Charles Chandler

In early September our hard working Senior Editor Barb Zuehlke sent an email asking if I was one of Doc's Friends. My initial reaction was "HUH" followed by a quick reply of tell me more. I followed a link to some media releases about this B-29 Superfortress restoration project going on at Wichita, KS. Doc is a beautiful B-29 named after one of Snow White's seven dwarfs. This article is about the dreamers and romantics and hardworking designers, engineers, builders, pilots, maintainers, owners, and operators that are the heart and soul

of our industry. We often get caught up in the challenges of worldwide competition: the mergers, consolidation, and restructuring, labor contracts, new procedures, new technology, customer demands, regulatory changes, and day-to-day life. We sometimes forget why we work in this crazy industry. Doc is a story that reminds us of the human side of our industry.

For us aviation history buffs the B-29 was one of those aircraft that represented true innovation in aircraft design. The structures, systems, arma-

NEW PART...

Distribution

VOLUNTEERS ARE
prepping the engines
for the first engine run
on Sept. 18 at Dwight D.
Eisenhower Airport in
Wichita, KS.

ALL PHOTOS COURTESY
OF CHARLES CHANDLER



ment, and avionics were exponentially different from the B-17s and a test bed for that technology that would become standard for post war aircraft. The technological innovations included a huge new airframe with green house windows up front and blister windows on the side, electrical-operated components, and new Wright R-3350-57 Cyclone engines delivering 2,200 horsepower per engine, new 13-foot propellers, a new pressurization system for crew compartments, centralized gun controls, and a new high-lift wing design. This wing design



CHARLES CHANDLER
began his aviation career as a junior mechanic for American Airlines and retired after 27

years of service. Charles Chandler has a Master's of Science degree in adult and occupational education with a major in human resources development.



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was critical because it had to provide the lift for 20,000 pounds of high explosives and the fuel load necessary to make it across the vast Pacific to targets in Japan. These classic bombers were built by many that left the farms and fields of Kansas to build 1,644 B-29 at the Boeing Plant in Wichita. One of those Rosy the Riveters was an 18-year-old young lady named Connie Palacioz. In 1945 she helped build Doc and now at 90 is part of Doc's restoration crew.



ABOVE: A VIEW from the forward green house windows.

RIGHT: PROJECT manager T.J. Morrow.



After a lengthy service life Doc was decommissioned and like so many others flown to the bone yard at the China Lake Naval Warfare Center Weapons Center in California. While there the Navy pilots used Doc for target practice and the starlings, wrens, and rats had their way as well. Then in 1987 a group of dedicated aviation fans led by Tony Mazzolini turned an obsession into a plan to restore the Doc to that unimaginable airworthy status.

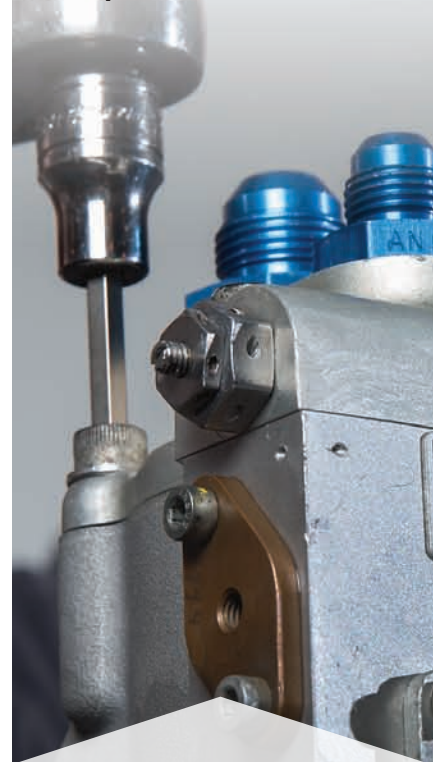
The B-29 Superfortress was designed with a specific purpose: To fly high and far and carry large loads of munitions in order to reduce the enemies' will to wage war against the United States of America. It was a sliverplate B-29 produced a short walk from where Doc sits that was personally selected by General Paul Tibbets that helped bring a dramatic end to the war in the Pacific. Not a frumpy cute little Disney character for sure. Doc's original engines were 3350-57, and the new engines are a mix of the 3350-95 and a 26WD off the old Douglas A-1 Skyraider single-seat attack airplane engines. Doc's new engines were manufactured by Idaho-based Anderson Aeromotive.

THE RESTORATION PROCESS

Doc's resuscitation began in the desert but according to Tom Bertels, a Doc's Friends board member and marketing steering committee chair, the challenges of desert weather and the lack of skilled

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THE INTERIOR of the B-29

maintenance technicians was a bridge too far for Tony. Doc needed a champion, a change of scenery, and some TLC from some new and old fans. The new home was Wichita, KS, an aviation manufacturing center with a huge pool of retirees that could be recruited.

Doc arrived in pieces on trucks and trains in 2000; however, the restoration work waxed and waned because of a variety of issues including funding challenges brought on by the 2007-08 recession.

In 2013 Doc's champion arrived, former Spirit AeroSystems CEO Jeff Turner quickly recruited a team of successful

Wichita businessmen and established a 501c3 nonprofit organization called "Doc's Friends." The board of directors included Charlie Chandler, Jack Pelton, Steve Clark, Lynn Nichols, Brad Gorsuch, Vic McMullen, Ron Ryan, Tim Buchanan, Jeff Peier, Esq., and Tom Bertels. The board began marshaling necessary resources and recruiting manpower to complete Doc's make over. Spirit AeroSystems asked one of its senior employees, Jim Murphy, to be its representative on the project. Murphy is a second generation Boeing employee and had retired after 30 years with Boeing and another 10 with Spirit. Another Boeing

THE B-29 is a big airplane, empty weight is 71,361 pounds, with a long slim fuselage (99.02 feet), thin long wings, (142.26 feet), a high fin (29.56 feet), and engines and props that appear to be too big for the wings.



ABOUT DOC'S FRIENDS

Doc's Friends is a 501c3 nonprofit board managing the restoration of the Boeing B-29 Superfortress known as Doc. The group was formed in 2013 and is led by retired Spirit AeroSystems CEO Jeff Turner along with other Wichita business leaders. Doc's Friends is committed to returning this World War II warbird to the air to honor previous generations, educate current and future generations and connect the world to the rich heritage of aviation. To donate, volunteer, learn more about the project, or check out additional photos visit www.b-29doc.com.



DOC WAS originally part of a squadron of B-29s known as Snow White and the Seven Dwarfs.

retiree, T.J. Norman, was recruited as project manager and these two made the perfect match for Doc's restoration. The restoration group now includes a board of directors, a great management team, and a squadron of aircraft polishers, tin benders, spark chasers, and wrenches including some of the original builders like riveter Connie Palacios.

When I called Murphy to ask for an interview and a visit with Doc he was rigging engine cowlings. This was a busy week for the restoration team because the first engine run was scheduled for 8:00 a.m. on Sept. 18. He agreed to fit me in on Wednesday for the interview and walk around.

I arrived at the Wichita, KS, Dwight D. Eisenhower National Airport around 10:00 a.m. and on the way out Murphy pointed to a vacant section of the airport and mentioned that the long-term plan for that space was to develop that area as an aviation museum displaying some of the famous, general, business, military, and commercial aircraft that had been produced at Wichita. Also, if all goes according to Doc's Friends' plans there would be home for the B-29 when Doc is not out on missions.

As we drove Murphy gave me the back story and chronology of Doc's restoration, including challenges and the successes. He makes it very clear

that the successes were due totally to the contribution of the many volunteers, like electrician Max Parkhurst, that spend their retirement days restoring Doc.

We drove past the Air Capital hangar and I saw Doc for the first time. My reaction and comments brought a chuckle from Murphy. He says many of his passengers are stunned and get a bit misty eyed the first time they meet Doc. Doc sits high on tall tricycle gears, polished beyond new, shining bright in the Kansas sun. The B-29 is a big airplane, empty weight 71,361 pounds, a long slim fuselage (99.02 feet), thin long wings, (142.26 feet), a high fin (29.56 feet), and engines and props that appear to be too big for the wings. With the green house front and the stinger in the tail, Doc looks almost like one of those dragons in video games or science fiction movies.

According to Murphy the work scheduled for the day was to pre oil the engines getting them ready for the engine run on Friday. A crew of engine mechanics was

AN AVIONICS technician is checking the radios before the engine run at Dwight D. Eisenhower Airport.

up to their elbows removing sparkplugs in order to "burp" the engines. Friday's engine run would be a very big milestone indeed; there would be lots of press sponsors, fans and volunteers, and a live feed for all on Doc's website: www.b-29doc.com. Turner would be in the left seat and Tony Mazzolini who had been waiting for this day for about 15 years would be in the right. Watching the video of the engine run up later, I saw TJ lean out the window and pat Doc on the nose for good luck and maybe to wake Doc up because he had been asleep for about 28 years. No. 3, 4, and 1 started on turnover. No. 2 was a little temperamental, but started after some pampering from the flight engineer; after all it is a radial.

As we continued our walk around, it was interesting to see innovations in the B-29, like the advanced electrical systems, avionics, blister windows, centralized fire control for guns, pressured cabins, and so on, yet the flight controls were dope and fabric. The engines were massive and the original four-bladed props were in perfect condition, not one nick or ding. There were a few oil drips in the pans.



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GENERAL AVIATION

T. J. Norman stopped work and joined us for the interviews, walk around, and tour inside Doc. As we walked Jim and TJ would point out projects that sponsors and key volunteers had completed. Early on they had discovered that the wing spar cords had corrosion and needed to be replaced. This is heavy structure work so Spirit AeroSystems stepped up and built new spar cords and the massive attaching hardware.

INNOVATIVE FOR ITS TIME

Inside the B-29 is an elegant, clean airplane as slim and trim as a Kansas greyhound, no wasted space, or excess weight in here. The B-29 was an electrical airplane and all the wiring and around 200 electrical motors had to be replaced or rebuilt and recertified. One surprise was that the B-29 is an "arm strong airplane," no hydraulics or electrical assist for the huge flight controls. This certainly speaks to the aerodynamics and balance of this airplane. The entire pulley assemblies and cables were new. The only hydraulics components were the brakes. Interestingly, the B-29 did not have nose wheel steering, it was controlled on the ground by brakes and engine throttles.

With the exception of the tail gunners, the crew compartments were roomy and should have been comfortable for members of the 73 Bomb group making the long hauls from bases on Tinian and Saipan in the Northern Mariana's to main land Japan and back. I had an opportunity to sit in the flight engineer's seat and scan

all the systems and engine gauges. The hatches were open and that predictable Kansas wind was blowing and you could feel Doc tugging at the tie down and you could hear that creaking and ole soft moan that airplanes make.

THE NEXT STEP

"After successful engine runs we will get our Airworthiness Certificate from the FAA," Murphy says. "We don't anticipate any problems because the FAA has been right with us through all of our major milestones. Once the certificate is issued, Doc's Friends will petition the U.S. Air Force requesting approval to operate Doc

from McConnell Air Force Base during the flight-testing phase. Doc's Friends' board of directors approved the launch of a Kickstarter crowdfunding campaign to help fund the costs of conducting the flight-testing phase of the program." Murphy expects that Doc could be flying by the end of 2015 and could be doing flyovers at the EAA event in Oshkosh, WI, in 2016.

After visiting Doc at Wichita and talking with Jim Murphy, T.J. Norman, and other volunteers like electrician Max Parkhurst, it reminded me just how great our American aviation industry is. And it reminded me how special our experiment-



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ABOVE: THE ENGINE CREW is prepping Doc's No. 3 engine for the engine run in September, the first since 1956. The new engines are a hybrid of the 3350-57 engines that were originally on Doc.

LEFT: T.J. NORMAN, project manager, and Jim Murphy, a representative of Spirit AeroSystems which manufactured some of the parts needed for Doc's restoration.

ers, designers, and dreamers are from the Wright Brothers and Charlie Taylor to Tony Mazzolini. My hope is that each technician that enters our industry recognizes that we have a long tradition of building and maintaining beautiful machines and that each has the opportunity to work on crews with the likes of Rosy the Riveter Connie Palacios or men like Murphy and Norman that dedicate their time to a classic like Doc.

The next time you are sitting in old airplane and the wind is blowing, listen for that song, the one that started at Kitty Hawk, that goes across the ramp in Wichita, and across the desert bone yards and can probably be heard on the international space station and one day beyond. It is that melody that connects all aviators and reminds us that we are most content when we are with our flying machines. **AMT**

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TO WASHINGTON, D.C., WITH LOVE

In September the Aviation Technician Education Council's (ATEC) board of directors and officers descended upon Washington, D.C., for its annual congressional fly in and board meeting



RYAN

GOERTZEN is the president of Spartan College of Aeronautics and Technology in Tulsa, OK.

He was named president of the Aviation Technician Education Council in April 2014. To learn more about ATEC, visit www.atec-amt.org.

FOR THREE DAYS, MEMBERS OF THE AVIATION Technician Education Council's (ATEC) board beat a path around the nation's capital to advocate for better policies to support aviation maintenance education. This "boots on the ground" effort is sorely needed: Aviation continues to experience rapid growth while at the same time a major crisis is looming around the ability to find and retain skilled workers.

ATEC'S MESSAGE ON CAPITOL HILL WAS CLEAR AND CONCISE CENTERED ON FOUR MAJOR INITIATIVES:

First, revitalize outdated FAA maintenance technical school regulations. In 2008, an Aviation Rule Making Advisory Committee (ARAC) provided 11 clear recommendations. The ARAC focused on removing the appendixes of Part 147 – notably the curriculum requirements – and placing them in operation specifications to make revisions easier. Making the rule more flexible would allow A&P schools to deemphasize outdated tasks and make way for advancing technology needed by industry. The

FAA has been slow to move on updating Part 147, so ATEC has enlisted Congress in the effort.

Secondly, make STEM a top education policy priority. Aviation maintenance education is a STEM career path and many of the council's member schools have greater than 90 percent placement in the industry. We need more students who see aviation maintenance as a pathway to a successful life. As a recognized part of the STEM community, an AMT career becomes a more easily understood part of that path.

Third, provide the FAA the resources to do its job. As Congress grapples with reauthorization of the FAA, the agency needs long-term, responsible funding so it can begin to prioritize critical tasks and meet the needs of its certificate holders. It is hard for any organization to be successful with no strategic funding plan.

Finally, ensure proper classification of aviation workers. The council has put considerable time into analyzing the standard occupational classification (SOC) system utilized by government agencies to capture the American workforce. When it comes to aviation maintenance

ATEC BOARD of directors (L to R) Gary Hoyle, Fred Dyen, Ronald Donner, Amy Kienast, Ryan Goertzen, Don Stark, Donald Gregson, Andrew Smith, Charles Horning, and Art Spengler (in front) were on hand to tour NTSB offices while in Washington, D.C..





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THE ATEC Legislative Leadership Award was presented to Rep. Bradley Byrne (R-AL).

ATEC INDUSTRY board member and *AMT* Magazine Chief Editor Ronald Donner met with Senator Amy Klobuchar (D-MN) to discuss support of ATEC legislative initiatives.



nance careers, the system needs help. Bad classification creates bad data and produces bad analysis. Based on this faulty system, the Government Accountability Office (GAO) reported the aviation maintenance workforce showed no shortage of skilled workers. A better structure is needed to help preserve the great aerospace industry and ATEC is committed to find these solutions.

LEGISLATIVE LEADERSHIP AWARD

While in Washington, the ATEC board presented its first Legislative Leadership Award to Rep. Bradley Byrne (R-AL). The award recognizes elected officials with long professional experience and deep personal commitment to technical education and skills training. As a former member of the Alabama Board of Education and chancellor

of the state's Department of Post-secondary Education, Rep. Byrne has committed a significant portion of his public life to the future of the American workforce.

FAA MEETINGS

While time on Capitol Hill was important, the ATEC board paid attention to regulators — visiting the FAA's Aircraft Maintenance Division (AFS-300) — while in Washington.

educational challenges faced not just in aerospace but in many technical training sectors. The void of middle-skills workers is negatively impacting growth and more must be done to educate students and parents that the pathway to a successful career is not always a four-year degree track.

INDUSTRY MEETINGS

Airlines for American and the Regional Airlines Association provided the board real insight concerning the importance of teaching voluntary safety programs to our students. The real education came when ATEC reported to these industry allies that there is no mention of safety or maintenance human factors required to be taught within the current regulations. After their initial horror subsided, representatives of both groups agreed to help correct this deficiency.

Whether one talks to an individual congressman, members of the industry, or "alphabet soup" partners everyone would say that something must be done to move things forward and update Part 147. Out of sheer necessity ASTM International has formed the F46 Committee to develop educational standards for aerospace personnel. I applaud this effort but also don't understand why the FAA has been unwilling to address Part 147. There are over 160 schools that stand ready to meet the educational needs of the industry if the FAA would just do its job.

ATEC accomplished a great deal in Washington, solidifying its place as the industry association for aviation maintenance technical education. We look forward to our mission in training the next generation of aerospace workers. To aid in this effort, I call upon industry to help push Part 147 rulemaking over center to allow adaptive and advancing technologies to be required in all Part 147 schools.

ATEC is a partnership of FAA-certificated aviation maintenance training schools. The council is dedicated to fostering aviation maintenance education and providing industry with skilled labor. To learn more, visit www.atec-amt.org. **AMT**

ATEC has been working closely with AFS-300 over the last four years to develop regulatory guidance and create a path for regulatory change in Part 147. A great deal of work has already been completed: Operations Specifications are now required in all Part 147 aviation maintenance training schools (AMTS), a mandated inspector training course has been developed in Oklahoma City, distance education is now a reality, and ATEC has worked with its membership and industry to draft regulatory guidance to bring about a Notice of Proposed Rule Making (NPRM).

ATEC is not alone in this belief that Part 147 must change or be bypassed with other educational processes. ATEC met with President Jennifer McNelly of the Manufacturing Institute and Executive Director James Brown of the STEM Education Coalition. Both had tremendous knowledge of the



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WHAT IS YOUR ORGANIZATION'S SERVICE CULTURE?

The unique customer service culture of any organization is described by a combination of characteristics aligned with one of four customer service culture profiles: Insider, Technical, Market, and Customer



By Christine Hill



CHRISTINE HILL is executive vice president of ServiceElements, a Phoenix-based firm specializing in people-development and customer service training for aviation professionals. For more information visit www.serviceelements.com.

EVERY AVIATION-RELATED ORGANIZATION, from an airport to a charter management company to a flight department to an OEM to an MRO (and everything in between), has a *customer service culture*. The unique customer service culture of any organization is described by a combination of characteristics. Certain characteristics align with one of four customer service culture profiles. Ultimately, our organization's total customer service culture is a combination of all four profiles, though usually one cultural profile is more dominant than the others. The concept of customer service culture can be applied to an entire company, to a location, or to individual departments within that location.

Over the years, Gene has been a part of or worked with many different organizations within aviation: charter management companies, corporate flight departments, flight planning organizations,

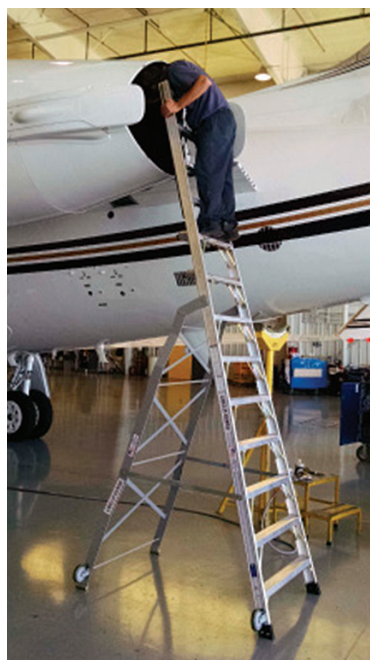
and airports. Gene's breadth of experience has given him exposure to many different cultures within aviation, but there seem to be consistent patterns in the culture of competitive companies. Gene's observations are captured below, in the explanation of the parameters that define a true service culture.

TECHNICAL SKILLS AND RELATIONSHIP SKILLS

First, both technical skills and what we might call "relationship" skills are part of every excellent organization's service culture. Twenty years ago, a mechanic, line services employee, or pilot might have thought that as long as they possessed the technical skill to do their jobs, then they were assured of a job. Today, that is no longer enough. Customers (and employers) do expect that a trained professional has excellent technical skills; but they



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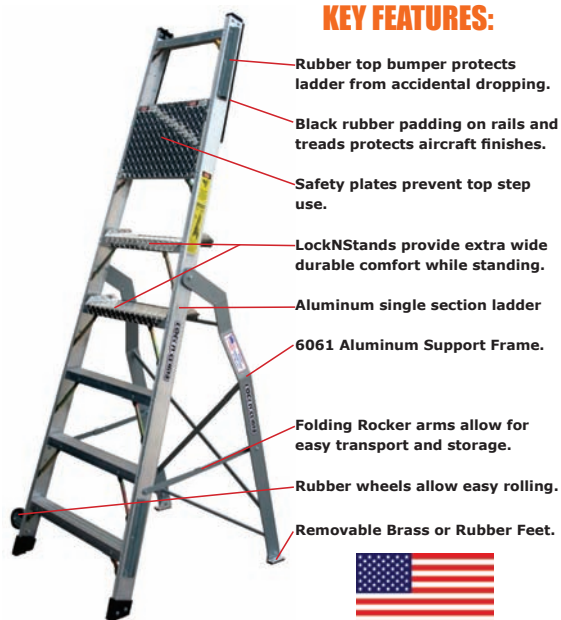


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Chad Doehring
Operations Manager
Duncan Aviation
Lincoln, NE (LNK)



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-Jet aircraft technician

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also expect effective, friendly communications — what is referred to as *'relationship skills'*.

Second, competitive aviation companies understand that the culture of service delivery happens both outside and inside the organization. Many of us instinctively understand that we must apply technical and relationship skills during the delivery of service to our paying customers, but outstanding companies understand that those same skills are needed when delivering services within its own organization (to team members). Thus, the second dimension of a service culture directly speaks to the effectiveness of service delivery to external and internal customers.

Technical and *relationship* skills must be applied to both *internal* and *external* customers. When these skills are related to our organization's (or loca-

Customer culture that is sensitive to relationships and communications with the external customer. An organization that ranks high in this quadrant believes in and works hard for the relationship with the external customer.

THE FOUR QUADRANTS

Insider's Culture

The first customer service culture profile is called the Insider's culture. The *Insider's* culture pays attention to internal customers and the relationships between and among them. But what exactly does this mean?

An organization that pays attention to the relationships between and among internal customers is basically interested in making sure that the people who work within that company (the employees) have productive, positive relationships. The description of an MRO that is a ServiceElements' client will be helpful in describing the Insider's culture. (The name of the MRO will be changed so as not to put the organization on the spot, even though the example is complimentary). Employees at "Best MRO" regularly receive training in areas related to conflict, communication, teamwork, and customer service. Leadership/management at BEST MRO regularly asks employees for suggestions on operations, and whether there is anything that management can do to improve the MRO's service and work environment.

Problems do crop up at BEST MRO, especially between departments, but employees have learned that miscommunication is part of every organization. The key for every BEST MRO employee is not to take miscommunications and disagreements personally but to focus on the larger goal of creating a positive workplace, which is something everyone can agree upon.

BEST MRO is not a perfect organization, but the employees work to communicate with each other and to resolve conflict. Management has been proactive in its communications with employees and across departments. All of these are goals worth working toward, and all define a strong *Insider's* culture. A strong *Insider's* culture does not mean the absence of problems; it simply means that people work together to solve them.

Technical Culture

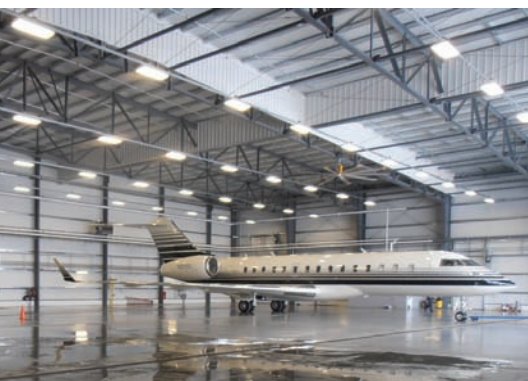
Technical proficiency within an organization has to do with the knowledge, skills, and abilities (KSA) of those who work within that organization. Do they



tion's or department's) internal and external service delivery, we can assess it by looking at the culture on the Service Culture Quadrant (See diagram).

The first customer service culture profile is called the *Insider's* culture. The Insider's culture pays attention to internal customers and the relationships between and among them. In a word, the Insider's culture is about teamwork. The second profile is called the *Technical* culture, which relies on the technical capabilities of employees. Aviation-related companies often have strong technical cultures, because employees have high levels of technical knowledge, skill, or ability and rely on that for organizational survival. On the other hand, the third profile, which is *Market* culture, relies on assessing the external customers' needs and mobilizes or finds the technical capabilities necessary to meet those needs. The fourth and final quadrant is the

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The Power of Comparison

Culture Type	Leadership	Management	Employees
Insiders			
Customers			
Technical			
Market			

Is everyone on the same page?

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have the requisite KSA to execute, technically, on delivering the product or service that the organization promises to provide to its customers? If so, then the *Technical* culture within the organization is likely strong, provided that two other elements exist: training and effective standard operating procedures (SOPs). Training is critical so that everyone, from line services to customer service representatives, can grow their expertise and keep up with

Within aviation, there is a natural tendency to rely on real and perceived technical capabilities for organizational, departmental, or group survival.

current developments in the field. Effective standard operating procedures are developed by expert people and ensure efficiency and consistency.

Within the aviation industry, there is a natural tendency for employees and managers to rely on their real and perceived technical capabilities for organizational, departmental, or group survival. This “reliance” on technical expertise is related to the history of aviation, which is very much associated with technological advancement and the highly skilled individuals who work with that technology. Maintenance technicians fix massive, intricate engines and instrument panels that enable flight. Pilots fly impressive airplanes with complicated instrumentation to measure speed and distance. The technical expertise that created the aviation industry continues to influence every organization associated with it, whether that be an FBO, an MRO, an airport, or an OEM. The perception that technical

expertise built the industry and will carry it into the future is the dominant theme — even today. If we look, for example, where most organizations in the industry spend their training dollars, it is in the area of technical training.

Indeed, a strong *Technical* culture is a prerequisite for success in the aviation industry. Even for those who support the industry but do not fly planes or fix them — flight planners, line services, customer service representatives — there is an expectation that they carry a greater understanding and appreciation for the technical complexities which make flight possible. Despite all of this, while *Technical* culture is a necessary component to success, alone it is not sufficient — even within aviation. A disproportionate emphasis on the *Technical* culture means that a department or organization is too inwardly focused.

Market Culture

The *Market* culture contrasts with the *Technical* culture in one main respect: it is *outwardly* focused on the customer and external constituents rather than inwardly focused on the talents of the people within the organization. The KSA of individuals within the organization are used as a tool to respond to what the customers want or to shape their perceptions.

Naturally, then, *Market* culture driven customer service organizations are also very responsive to customer inputs and perceptions, particularly as they pertain to the technical aspects of whatever product or service is offered. Thus, issues related to design and delivery become central. *Market* driven service cultures have mechanisms in place to gather this feedback or track it, and they deploy the necessary resources to address any problems, concerns, issues, or needs. *Market* driven cultures are innovative, as they strive to provide new services or product features to gain that competitive edge.

Another feature of the *Market* culture that is very relevant to the aviation industry is the focus on numbers and the bottom line. Managers and leaders of *Market* driven cultures are very results oriented, and they are sometimes obsessed with numerical results that measure everything from profitability to customer service ratings. Consider the various industry ratings that appear in magazines and online. These lists of “the best” are not only a lightning rod of controversy and discussion, but they become a goal toward which aviation companies strive. It is not uncommon for Market-driven managers to do everything in their power to move their organiza-

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tions up the list in such publications. The winners on these lists proudly advertise their placement on marketing collateral and website banners, because it is an indication of beating the competition. The popularity of such lists is a testament to the power of the market to shape organizational action.

In the end, every company within the aviation industry should pay heed to the market. However, obsession with the market may skew management action and wreak havoc on employee morale. We must remember that industry lists and quarterly profitability statements are short-term indicators of market success, but these indicators are susceptible to manipulation and fleeting customer attitudes and perceptions. Thus, like every other culture we have profiled, there are characteristics of the *Market* culture that we must nurture within our organizations, but those characteristics must not be the sole focus of our attention.

Customer Culture

The *Market* culture and *Customer* culture are both focused on the external customer, but the difference lies in the nature of that focus. The *Market* culture seeks to discern technical wants and needs of the customer; the *Customer* culture seeks to understand the feelings and perceptions of customers through effective interpersonal communications. Perhaps there is a relationship between the two, but there are important differences, from a customer service standpoint. Consider the powerful truth of the following point: it is not whether you solve a customer's problem in exactly the way they want it to be solved (technical solution); what is important is that the customer feels like you are doing all you can to address their problems and that you are sensitive to their situation (relationship oriented solution).

Consider a customer who is angry because his aircraft maintenance is not finished on the promised date. The customer demands that the maintenance be completed immediately. Now, this demand may be impossible to meet. From a *Market* culture perspective, if we are not able to solve the problem immediately, we have, technically, failed to meet the customer's need. The *Market* culture would predict that our failure to finish the maintenance immediately will soon be reflected in lower customer ratings and profitability. Luckily, a good dose of *Customer* culture will almost guarantee that ratings or profitability will not plummet. In fact, if we play our cards right, the result may be quite the oppo-

site. The *Customer* culture recognizes that we may "smooth" situations if we address the relationship side of customer interactions. Research on customer service shows that we can win the customer and actually increase satisfaction and loyalty even if we do not solve the problem immediately — as long as the customer feels like we are a) listening to his complaints and concerns empathetically, and b) making every effort to provide alternatives and possibly compensation in other areas. This example points out how important it is to make sure every employee is trained in the finer skills of communications, relationships, and human behavior. For these are the areas that define the effectiveness with which an organization deploys the power of the *Customer* culture.

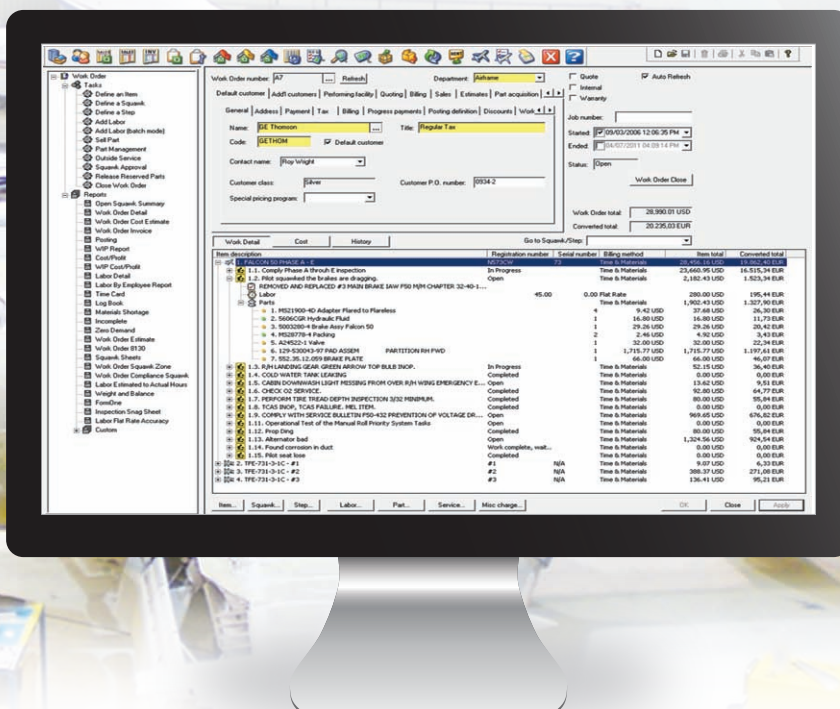
At the end of the day, customers make their judgments based on feelings and emotions that are shaped by the organization's efforts to build relationships with them. Technical results are important, but every successful professional knows that bottom line results are, in the long-run, dependent on the quality of relationships that one is able to build with customers. That is the power of the *Customer* culture.

A BALANCED SERVICE CULTURE

In this article, we have established that every organization has a customer service culture. There are four service culture profiles that we covered: *Insider's* culture, *Technical* culture, *Market* culture, and *Customer* culture. Every department or organization in every industry has a unique service culture that is a blend of each of these profiles. In most organizations, one profile may be more prominent than the others. The key to a successful operation and happy customers is finding a balance among all four cultural profiles. Aviation-related organizations tend to stress the *Technical* culture, which depends on the technical knowledge, skills, and abilities of their employees. But such an emphasis often overlooks the relational aspect between people (inside and outside the organization) that so often differentiates excellent companies from simply average ones.

Truly excellent organizations consciously seek to understand themselves — and the service culture profiles are an effective way to gain that understanding. With this understanding comes an honest assessment of cultural strengths and weaknesses, which in turn leads to purposeful improvements that create lasting competitive advantages. **AMT**

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PART 147 NPRM COMMENT PERIOD OPEN *By Ronald Donner*

The regulation that governs operation and curriculum of aviation maintenance technician schools has not seen any substantial change since 1962.

On Oct. 2, the *Federal Register* published a notice of proposed rulemaking (NPRM) soliciting public feedback on an amendment to 14 CFR Part 147, the regulation that governs operation and curriculum of aviation maintenance technician schools. Part 147 has not changed for more than 50 years, yet both aircraft technology as well as teaching and learning processes have changed drastically.

The deadline to submit comments is December 30, 2015, however the Aviation Technician Education Council (ATEC) plans to file an extension request to ensure time for a thorough analysis of the proposed rule as well

as proper coordination with industry allies.

Most of us would agree a change to Part 147 is very much overdue. According to the FAA, amendments are needed because the existing curriculums are outdated, do not meet current industry needs, and can be changed only through notice and comment rulemaking. In the NPRM the FAA states the proposed amendments would modernize and reorganize the required curriculum subjects in the appendices of the current regulations. They would also remove the course content items currently located in the appendices and require that they be placed in each school's operations specifications so they could more easily be amended when necessary.

Everyone is encouraged to review the proposal and provide meaningful com-

ments. Visit www.federalregister.gov/articles/2015/10/02/2015-24841/aviation-maintenance-technician-schools and click on the green button that says "Submit A Formal Comment."

AMTSOCIETY CHANGES

As you are aware, over the past year *AMTSociety* has transitioned away from a traditional membership organization to one that only offers Inspection Authorization refresher training. *AMTSociety* has become the training arm of *Aircraft Maintenance Technology* magazine. There no longer is an annual membership dues structure for *AMTSociety*.

People wanting to take one of our Live IA Refresher Training events simple can go to the *AMTSociety* website and register. The

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same thing holds true for those wanting to take online training. The new online training course is nearly complete and will be accessible before the end of 2015 on the AMTSociety website: www.amtsociety.org.

A schedule for the 2015/2016 period live training events has been set. There will be three locations offered. Registration will be open soon.

2016 LIVE IA REFRESHER TRAINING EVENTS

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Millennium Center
2301 Sullivan Rd., College Park, GA 30337

Denver, Colorado:

Friday, January 22, 2016
The Summit Conference and Event Center
411 Sable Blvd., Aurora, CO 80011

Kansas City, Missouri:

Wednesday, February 10, 2016
Holiday Inn KCI Expo Center
11730 N.W. Ambassador Dr., Kansas City, MO 64153



CUPERY RECEIVES MASTER MECHANIC AWARD

Bob Cupery, founder, CEO/president, and head of quality assurance for Aircraft Window Repairs recently received the Charles Taylor Master Mechanic Award for his 50 years in the industry.

Bob has a long background in aviation including the United States Air Force; Northrop University; and BSBA University of Redlands; an aircraft mechanic with Northwest Airlines, flight engineer/director of maintenance, international quality manager at Northrop, Northrop Rice Aviation Board of Advisers, and lectures throughout all of the United States and Europe.

At Northrop Corporation Bob worked in the Marketing Department as senior customer relations representative where he coordinated all visitors coming to the facility, organized material to be presented to customers, represented the company at special events, and interfaced with corpo-

rate officers. Bob also worked as service engineer, investigated aircraft and ground support problems submitted from customer countries and assigned responsibility to correct the problem. He's contributed numer-

ous aviation industry articles to professional journals.

Bob says of the importance of aircraft windows, "As a mechanic, you need to look at the windows, not through them."

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REPLACE YOURSELF

Whatever the future holds, the industry must build its workforce now. Before you take your skills and experience down the golden road — help establish a pipeline of young talent.

DON'T TAKE THIS PERSONALLY, BUT IF YOU ARE reading this, there is a good chance you will retire in the near future. It's simply a matter of demographics. Based on this magazine's own survey data, more than three quarters of readers are over 50. Retirements plague the aviation industry; over the next two decades, operators, maintainers, and manufacturers will need to fill the experienced work gaps.

That's not all. Businesses will need to fill new positions created by expanding markets. Boeing's 2015 Pilot and Technician Outlook, forecasted that the global commercial aviation industry will need more than 1 million new workers — 558,000 pilots and 609,000 maintenance technicians — to meet unprecedented demand between now and 2034.

The Aeronautical Repair Station Association's (ARSA) 2015 Global Fleet and MRO Market Economic Assessment, shows the demand for both cargo and passenger services will grow steadily over the next two decades. Pushed by technological enhancements and the replacement of aging fleets, maintenance providers will need well-trained men and women to keep pace.

Whatever the future holds, the industry must build its workforce now. Before you take your skills and experience down the golden road — help establish a pipeline of young talent. How can you (daydreaming about fishing trips or golf outings) help?

Don't undervalue your knowledge or services — someone is interested in what you do and how to do it right. Recognize talent wherever you find it. Encourage and praise younger folks for any interest expressed or shown in technology of any kind. Acknowledge and talk about the good in aviation and your career, not merely your dreams of retirement.

Reach out to elementary, middle, and high schools as well as technical colleges and universities. Visit classes, bring examples of your work and show off your skills. Go to career days, host field trips, and give demonstrations. Do what it takes to engender the enthusiasm you experienced in your earlier years by being around younger people and their curiosity — it takes one person's interest to spark a protégé.

Get involved with allies fighting for better workforce training policies. In 2015, ARSA and its colleagues at the Aviation Technician Education Council (ATEC) joined the STEM Education Coalition's Leadership Council. Enhanc-

ing science, technology, engineering, and math education has become a popular cause over the past several years, and policymakers have to recognize that technical skills are STEM skills. You and your company can also take

Do what it takes to engender the enthusiasm you experienced in your earlier years by being around younger people and their curiosity – it takes one person's interest to spark a protégé.

part; learn how at www.stemedcoalition.org.

Take some lessons from our allies at the Manufacturing Institute (www.themanufacturinginstitute.org) whose Dream It. Do It. initiative provides a variety of guides and resources.

Keep in mind you are doing this to find your replacement! Maintenance providers have struggled for years to find and retain qualified workers, but need to be more aggressive than ever to build healthy benches of technical talent. ARSA launched AeroJobs.org, a web-based recruitment tool that will help the aviation community find technically skilled applicants, but it is your knowledge, skills, and talent that keep the aircraft safely circling the globe.

You may have earned a retirement — but there's work to be done before you follow the golden path. **AMT**



BRETT LEVANTO is director of operations for the Aeronautical Repair Station Association (ARSA). He graduated from the George Washington University in 2004 and earned a Master of Public Policy from the College of William and Mary in 2009. For more information visit www.arsa.org.

P&W: Geared Up and Ready to Go for the GTF

In anticipation of operators receiving their PurePower® Geared Turbofan™ (GTF) engine powered aircraft, Pratt & Whitney has been hard at work preparing a strong support network for customers, including global GTF engine training programs and facilities, a network of maintenance providers, dedicated field representatives, enhanced predictive analytics, a global lease engine pool, and an expanded Global Operations Center.

To date, more than 1,600 days of PW1000G engine family training have been delivered to more than 600 students. Over the next five years, the annual training volume on all Pratt & Whitney models is expected to double to more than 25,000 student days per year.

Pratt & Whitney and its OEM program collaborators, MTU and JAEC, have been initially selected to maintain the PW1000G engine fleet. Global facilities will be tooled, trained and ready to support operators of this next generation engine.

In addition to the more than 100 field representatives around the world, Pratt & Whitney will dispatch a team of



highly experienced field personnel to support GTF engine operators and ensure service readiness.

Pratt & Whitney's leading big data analytics enables optimization of customers' in-service experience by maximizing time on-wing, minimizing service disruptions and tailoring intelligent work scopes for fleet and maintenance planning. Pratt & Whitney is also placing GTF lease

pool engines globally, including four regional storage locations to keep engines close to customers around the globe.

Enhancements are being made to Pratt & Whitney's Global Operations Center (GOC) as a key focal point of Pratt & Whitney's Customer Support Organization. Currently, the GOC provides 15,000 technical solutions and handles 50,000 customer

interactions per year, nearly all completed within 24 hours.

Pratt & Whitney is preparing to support Geared Turbofan engine customers in the manner that all Pratt & Whitney commercial engine customers have been supported for the past 90 years, with highly technical expertise and services that no one else can provide.



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COMPLIANCE VS. SAFETY: HOW TO WORK (SAFELY) AT HEIGHTS



WORKING FROM
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Compliance means meeting the industry's minimum safety requirements. A safety-based approach starts with getting the worker to where they need to be, and choosing the right approach from there, not taking a good tool and using it for every application.

By Brad Lawrence

FOR MANY YEARS NOW, WORKING safely at heights has been at the forefront of issues that regulators and inspectors review for job site safety. Recognizing that even relatively small falls can result in devastating injuries, lost production, and larger fines, employers are more likely than ever to look for different options for fall protection solutions to keep workers safe. In an effort to simplify this goal, however many employers get sidetracked by setting oversimplified goals intended to meet the letter of the law.

How to provide safety for workers at height usually starts with evaluating the applicable legislation — the “when do we need fall protection” question.

Typically the default height given by federal (OSHA) or regional regulations is cited as the rule, when in fact, it is only

a starting point or a minimum requirement. If the only target is to be “tied off above 6 feet,” the employer is missing the point.

They are aiming for “compliance” rather than “safety,” and workers may not be getting all the protection they need.

A safety-based approach looks beyond the minimum requirements to see what is truly ‘safe’ for a worker to be doing. Just because OSHA says fall protection is required above 6 feet, does not mean that a fall from 5 feet is perfectly safe.

RISK OF INJURY

Anyone who has ever slipped on an icy sidewalk can verify that there is a risk of injury even at height “zero,” if someone happens to fall awkwardly. As workers get higher above the ground, the energy

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LIFTSAFE FALL

Protection offers several different models of fall protection equipment, including this engine access stand.

LIFTSAFE

involved in a fall increases, as does the potential for a more serious injury.

When there are any additional risks, more stringent requirements need to be considered.

When evaluating any elevated work, the minimum height for fall protection must be considered, but for work situations near or even below that height, there are often many opportunities to work safer. With toolboxes, equipment, or other hazards near where a worker may fall from a short

distance, there is an increased risk of injury for even a short fall.

A proper assessment of the task is required to deter-

mine what risks there are for the employee during the task, including getting to or from the work area.

Once the risks are more fully understood, then a more organized approach to finding solutions can be used.

The standard hierarchy of solutions is based on keeping things as simple as possible:

- Review of process — is there another way to do the task?
- Barrier between hazard/worker

- Active travel restraint/restriction system
- Active fall arrest system

REVIEW THE MAINTENANCE PROCESS

Too often, tasks are just done the way they've always been done. Taking a couple minutes to see if a given task could be performed in a different way that does not involve being at height is the first step. Remote technologies have come up with many ways maintenance workers are able to do things remotely. From light-bulb changing baskets on a painters' pole, to using chains for overhead valves, new innovations are constantly being developed to help make some tasks much easier, quicker and safer. More recently, small remote controlled drones are being used with cameras to allow inspection of hard to see/access areas with workers safely on the ground. Based on this initial inspection it can be determined if more time-consuming hands-on work is required.

Compliance-based objectives seek only to see if fall protection is "needed" for a certain job, whereas a safety-based approach looks to see if it can be done another way, which could be both safer and easier/faster.

Reviewing the job process should be done at regular intervals to see if there are any new

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technologies or approaches that may now make things easier.

WHAT IS THE SIMPLEST SOLUTION?

If the work must be done with a worker at height, the next simplest solution is to provide a safe work area, with a fixed barrier between the worker and any potential hazard. This could be a fixed or mobile work platform with guardrails to prevent the worker from being able to accidentally fall from the work platform.

Typically the default height given by federal (OSHA) or regional regulations is cited as the rule, **when in fact, it is only a starting point or a minimum requirement.**

Setting up a safe platform for an aircraft can be a large undertaking however, so grouping of similar jobs is another approach. Where changing a wiper blade may not be worth bringing out a scissor lift, if five small jobs can all be done at the same time, then it makes more sense.

The use of a stable work platform with guardrails provides the worker the simplest solution for working while at height, effectively simulating on-the-ground conditions. Many situations however utilize a mobile platform, but then require a worker

to lean out, or climb up on the rails to reach the work area. Often the use of an “approved” platform is being confused with using the “appropriate” tool for the job. A safety-based approach starts with getting the worker to where they need to be, and choosing the right approach from there, not taking a good tool and using it for every application.

FALL ARREST VS. FALL RESTRAINT SYSTEMS

Where the work is in an area where a flat, stable platform is not possible, the next step is to try to provide a system that will get the worker to the area, but prevent them from being able to fall by incorporating an active restraint system. Custom access ladders or even some horizontal lifeline systems can be set up so that workers using them are able to reach their work area but can NOT fall.

Working from a custom ladder, the worker has a restraint system to keep them from falling.

Use of “pre-engineered” lifeline kits can be useful to solve specific problems, but again, caution must be used to not try to apply one solution to too many different problems or it may not fit. A restraint lifeline may work well along the wings of a large aircraft, where workers cannot fall, but on a smaller plane, the same system and lanyard would allow the worker to fall.

As we move from a barrier to a restraint system, the worker has greater responsibility to ensure

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they are wearing the harness, and actively secure to the system. The system must be set up so that when working, the range of motion does not allow the worker to ever be in a situation where a fall is possible. This ability to fall is the critical distinction between fall arrest, and fall restraint — despite the two terms being commonly interchanged as if they were the same, they are not.

In cases where workers must be at height, and need the freedom to move around and will have the ability to fall, a fall arrest system is employed. Fall arrest systems are far more complex as they must consider a worker's free-fall distance, clearance, energy, and more. These systems require the most input from end users, as they must not only be designed, inspected, and operated properly, but subsequent rescue is a mandatory requirement for use of a fall arrest system. If a worker can fall, there must be a way to safely get them to the ground.

Fall arrest systems alone are a broad enough topic for discussion, but from a safety perspective, fall arrest must not be 'fully' designed (taking into account the end location of a fallen worker) but be paired with rescue, as having one without the other is

often a symptom of just trying to meet a compliance target.

Too often the task of overhauling 'working at heights' at the workplace is a highly intensive, time-consuming process, and the appeal of simplifying it all with a single line in the sand (at a certain height) is tempting. Unfortunately, this can lead to situations where workers may still not have the right tools for the job, or are working in an unsafe condition despite attempts to meet a false compliance target. A safety-based approach is admittedly more time-consuming, involving evaluating each task, but has the more enviable target, which is to ensure the job is being done safely. **AMT**



BRAD LAWRENCE, P.Eng., is senior engineer (fall protection and safety audits) of Liftsafe Group of Companies. He has been a critical member of the company since 2007 and manages the Fall Protection Division of Liftsafe Fall Protection Inc. As an active participant on the CSA Standards Committee for Fall Protection Solutions, he utilizes his extensive experience to assist in developing fall protection standards throughout Ontario. For more information visit www.fallsafetysolutions.com.

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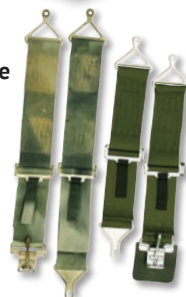
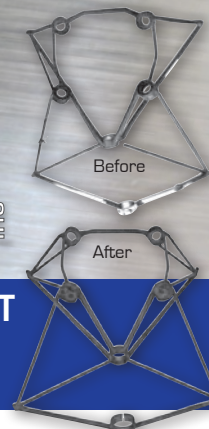
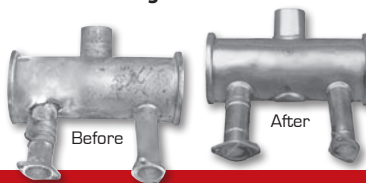
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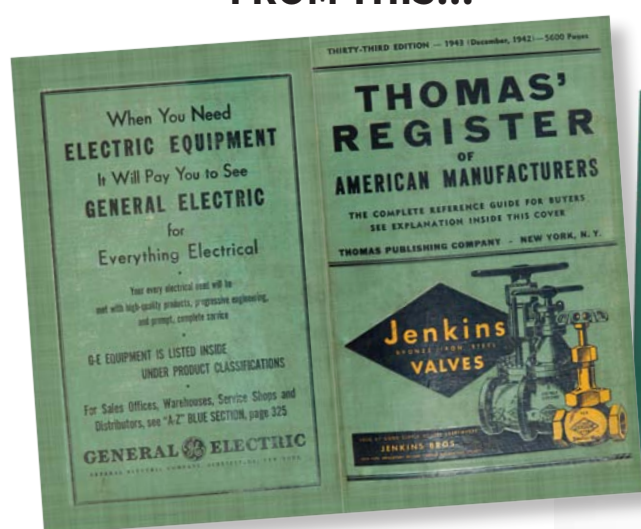
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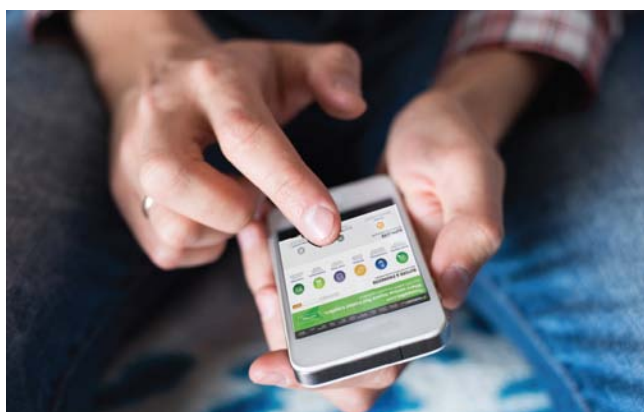


...TO THIS.

HOW MANY OF YOU HAVE used the Thomas Register? The answer may depend on whether you are a boomer or millennial. Most boomers in virtually any industry have at one time or another seen or used the Big Green Book, previously known as the Thomas Register of American Manufacturers. I can't recall when I first opened one — it's been awhile.

A little research showed the books were first published in 1898 and at its peak was a 34-volume, 3 section buying guide offering sourcing information on industrial products and services, including aviation and aerospace.

But the Big Green Book has also succumbed to modern technology and the Internet, in a really good way. Now an online platform only for researching suppliers and products and called ThomasNet.



com, I was recently given a demonstration of ThomasNet.com and we searched for many suppliers of aerospace products and services. It's a very powerful system with numerous features.

The Supplier Discovery application allows you to quickly get a short-list of suppliers specific to certain products. And, it also has the ability to issue a request for information (RFI). Other interesting search functions were a Diversity application

for those of you searching for a minority-, women-, or veteran-owned company, a Certification application, Custom Quotes, and a Product Sourcing application.

Certainly not the Big Green Book of yesterday — check it out at www.thomasnet.com. You may just find it useful when researching potential suppliers and product sourcing. **AMT**

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DFW INSTRUMENT MAKES \$10,000 TOOLING DONATION TO AEA

DFW Instrument Corp. recently partnered with Rennsteig Tools, a German tooling manufacturer, to launch the latest crimp technology into the U.S. market

The AEA Educational Foundation accepted a gift of \$10,000 in Rennsteig Aviation Tools from DFW Instrument Corp.

The tool donation includes an assortment of Rennsteig crimpers, strippers, cutters, and specialty dies used in avionics installations. Students attending future avionics classes at the AEA's Dan Derby Center for Professional Development will have an opportunity to use the state-of-the-art German-engineered tools.

DFW Instrument Corp. recently partnered with Rennsteig Tools, a world-class tooling manufacturer based in Germany, to launch the latest crimp technology into the U.S. market. The Rennsteig tooling line is staged to bring the aviation industry to a new level with the quality products.

"The AEA Educational Foundation and its training courses are focused on providing avionics technicians the best training available and educating students on the latest technology to increase their work productivity and produce reliable results," says James Zollo, owner of DFW Instrument Corporation. "DFW Instruments' donation of the Rennsteig Aviation tools is a perfect opportunity to support the AEA training centers efforts while also allowing the



students a hands-on learning experience with the newest crimp technology available that will make their job easier and ultimately change the aviation industry."

"As a longtime supporter of our training efforts here at AEA headquarters, DFW Instruments provides another outstanding example of their generosity and industry support with the donation of Rennsteig's new hand tools to the AEA Educational Foundation," says Mike Adamson, executive director of the AEA Educational Foundation. "These tools will become an essential part of our basic and advanced avionics installation and integration courses

at AEA headquarters and will provide students with an opportunity to work with the latest in crimp technology."

The AEA Educational Foundation was founded in 1990 to enhance, promote, and secure the future of aviation and the Aircraft Electronics Association by furthering the education of students, technicians, and members of the AEA.

DFW Instrument Corporation based in Addison, TX, has been serving the aviation industry for more than 20 years. For more information visit www.dfwinstruments.com.



RECOGNITION MATTERS —

Be sure to read *AMT's* November/December issue

Aircraft Maintenance Technology (AMT) magazine's November/December issue will recognize 40 individuals under 40 years of age from the aircraft maintenance industry for their contributions to the industry and a "job well done." It is not a ranking, but rather a listing of individuals who have shown initiative, a capacity, or have made an impact to the aviation maintenance industry.

Whether you work in general aviation, business aviation, airlines, MRO, rotorcraft, military, or education, *AMT* will acknowledge you or your colleagues for dedication to the aviation industry.

Criteria for selection included such things as job commitment, industry involvement and contribution, achievement in his or her position and innovation in his or her field. While no candidate may possess all criteria, we are looking to reward those who deserve recognition for their efforts.

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PIFER RECEIVES CHARLES TAYLOR AWARD

Richard Pifer, co-owner of Piper's Airmotive in Waterford, MI, has received the Charles Taylor Master Mechanic Award for his 50 years in the industry. Pifer's Airmotive has been on the Oakland/Pontiac International Airport for 40 years. Patrick Ryan of the Detroit FSDO presented the award after an air show at the airport in August.

Pifer is a licensed A&P with Inspector Authorization. For 30 years he was a licensed Designated Mechanic Examiner and holds a Repairman Certificate for solid-state electronics. He is a commercial pilot with instrument, multi-engine, and seaplane ratings; he has experience as a flight engineer on DC 6's and DC 7's with approximately 8,500 hours/TT. As a former FAA Accident Prevention Counselor he has spoken on safety at various industry events.

His background in electricity goes back to the 1960s when he was in the automotive electric and automatic transmission business.

WEINBERG CAPITAL GROUP ACQUIRES AVIANOR WHEEL & BRAKE DIVISION

Weinberg Capital Group and its portfolio company, Aero 3, Inc. have acquired the Wheel & Brake Division of Avianor. This marks the second add-on acquisition for Aero 3 in 2015. In August, it acquired Griffin, GA based Accessory Overhaul Group.

Aero 3 is a holding company formed in 2012 to acquire AeroRepair Corp. and Hemico Inc., sister companies headquartered in Londonderry, NH, with a second facility in Indianapolis, IN. Based in Montreal, Canada with an additional facility in Calgary, Avianor W&B is the second largest independent wheel and brake maintenance facility in Canada, with capacity to overhaul over 10,000 units per year. Avianor W&B is an FAA and EASA certified 145 repair station that specializes in the repair and overhaul of aircraft brakes and wheel assemblies.

U.S. INKS NEW AGREEMENTS WITH CANADA, EASA

On Sept. 15, the Federal Aviation Administration (FAA) signed agreements with two international regulatory partners, the European Aviation Safety Agency (EASA) and Transport Canada (TCCA) that

allow the authorities to rely on each other's regulatory systems. The agreements will eliminate duplicate processes, get safety enhancing equipment installed on aircraft more quickly, and save time and money for both industry and the regulatory authorities involved.

Strong partnerships are a key to consistent safety standards around the world. Based on more than a decade of FAA cooperation with EASA and over 15 years with TCCA, the agencies have established confidence in each other's regulatory systems. Rooted in that confidence, the new safety agreements allow reciprocal acceptance of the majority of Technical Standard Order (TSO)-approved articles. This change benefits U.S., Canadian, and European aerospace industry organizations by eliminating the need for applications, additional validation, and administrative review by each party.

The agreement with EASA also facilitates acceptance of the classification for basic Supplemental Type Certificates (STCs). An audit process will ensure that technical classifications continue to meet established criteria and that standards are being met. More information can be found at: http://www.faa.gov/aircraft/air_cert/international/bilateral_agreements/baa_basa_listing/

ELLIOTT AVIATION TO BRING GARMIN G5000 EQUIPPED HAWKER TO NBAA

Elliott Aviation, the industry's leading Garmin retrofitter, plans to bring an Elliott Jets owned Hawker 400XP with a full Garmin G5000 installation to the annual NBAA Business Aviation Convention & Exhibition, Nov. 17 – 19 in Las Vegas, NV. The aircraft will be available for viewing at the indoor static location. In addition, Elliott Aviation already has seven confirmed sales of the system.

The installation will be the first ever dealer installation of a Garmin G5000 in a Beechjet 400A or Hawker 400XP. The G5000 installation will provide Beechjet/Hawker 400XP customers an estimated 250-pound average weight savings, new LCD displays, new autopilot, touchscreen controls, WAAS/LPV, synthetic vision, XM weather, and ADS-B compliance. Elliott Aviation is offering customers a 15 day guaranteed downtime for the complete retrofit and onsite training.

"Beechjet and Hawker 400XP operators have been asking for a complete retrofit and now we're able to offer them the best possible solution," says Conrad Theisen, director of avionics sales for Elliott Aviation.

Certification of the system is expected in the first half of 2016.

CLAY LACY AVIATION AWARDS \$10,000 IN SCHOLARSHIPS

Clay Lacy Aviation has awarded \$10,200 in scholarship funds to 24 students enrolled at the Aviation Center (AV-Center), an aircraft mechanics school located at Van Nuys Airport and operated by the Los Angeles Unified School District's (LAUSD) Division of Adult and Career Education. Recipients were selected based on their higher education goals, academic achievements, and community involvement.

"We are excited to help develop the next generation of aircraft mechanics and attract more high-skilled, high-paying jobs to Los Angeles," says Clay Lacy Aviation President and CEO Brian Kirkdoffer. "Aircraft maintenance is one of the most important jobs in the aviation industry. This program is ranked among the top in the nation and enables graduates to land great jobs working on private, commercial, and military aircraft."

The scholarship funds will be awarded in this fall to help students cover the costs of tuition, books, tools, and certification exams. Clay Lacy Aviation has a long history of hiring graduates and donated two iconic business jets (a Learjet and Gulfstream) to the school in 2014. The scholarship program was announced last February at the groundbreaking ceremony for the company's new 6-acre development at Van Nuys Airport.

Offering both day and evening classes, the AV-Center recently reinstated its night program, which was eliminated in 2012 due to LAUSD budget cuts. Evening classes started on Aug. 19, 2015 and are still open for enrollment.

"Clay Lacy Aviation's annual scholarship fund is another example of its generous contributions to aviation education spanning over

four decades," says Elizabeth Penuela, assistant principal of operations at North Valley Service Area of Adult Schools in the Division of Career Technical Education LAUSD.

For more information, call North Valley Occupational Center at (818) 365-9645 Ext. 401, 326, 327 or East Valley Skills Center at (818) 759-5841, or visit www.nvoc.org.

DAHER APPOINTS EXEC AERO AS THE U.S. TBM SERVICE CENTER

Daher appoints Orlando, FL-based Exec Aero LLC as the TBM service center serving TBM customers based in Central Florida, and for all visiting TBM aircraft to the world's "capital city" of entertainment parks.

Exec Aero was created by former employees of Flight Express Inc., a cargo and courier company.

"We selected Exec Aero because its team showed all of the positive attributes for great customer service, which was confirmed by the many years of experience in this sector," says Charles A. Holomek, vice president customer support for the Americas of Daher's Airplane Business Unit.

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"In addition, the company's base at Orlando Executive Airport (KORL) is close to the SimCom training center, which is our partner for TBM training. This creates the possibility for pilot-owners and operators to service their aircraft while they attend training courses."

Nathan T. Marler, Exec Aero's general manager, says the relationship with Daher began in 2012 when Exec Aero repaired its first aircraft from the TBM turboprop family. "We had a good look at the aircraft and decided it was definitely something different," he explains. "We've carried forward our passion and pride for the TBM, and are now pleased to offer more support as a TBM service center."

"Our close proximity to Daher's U.S. headquarters at Pompano Beach Airpark allows us to work closely with the company on all aspects of factory support and service to TBM owners — both during and after business hours, along with our AOG [aircraft on ground] program," he adds.

PRATT & WHITNEY RENEWS JOINT VENTURE FOR CUSTOMER TRAINING CENTER IN BEIJING

Pratt & Whitney has signed a 15-year renewal for its joint venture agreement between United Technologies Far East Ltd. and the China Aviation Supplies (CAS) Holding Company to support the Pratt & Whitney Customer Training Center located in Beijing, China.

The Customer Training Center has been in operation for more than a decade and has provided tailored customer technical training courses regarding Pratt & Whitney and V2500 engines for more than 14,000 students based in China, Russia, Singapore, Thailand, and Korea. This is the equivalent of 300,000 hours of training. Pratt & Whitney and IAE International Aero Engines AG engines power a fleet of more than 1,200 aircraft in China and are recognized as a technology leader in engines for narrow body aircraft.

"Providing Chinese aircraft operators with high-quality and thorough aviation maintenance training is critical to the success of our aviation industry," says Li Hai, president and CEO of CAS. "As the industry continues to grow through the integration of new technologies like the GTF engine, demand for this type of training will only increase."

"Our Customer Training Center in China is a key component of our strategy to ready customers before receiving their GTF engines, as we strive to bring training as close to our customers as possible," says Mary Ellen Jones, vice president, Commercial Engines Sales, Asia/Pacific, and China, and member of the joint venture board of directors.

STUART JET CENTER (KSUA) BREAKS GROUND ON STATE-OF-THE-ART HANGAR

Avfuel-branded FBO Stuart Jet Center at Witham Field — recently named Florida's General Aviation Airport of the Year by the Florida Department of Transportation — broke ground for its new, state-of-the-art hangar. It is expected to be completed in early 2016.

The 24,000-square-foot hangar facility will complement the 250,000-square-footage of existing hangar space, along with more

than 15 acres of lighted and secure ramp space. The hangar is sized to accommodate aircraft up to Global Express and G650, and will be wind-coded to Miami-Dade specifications for optimum safety.

The facility will include an additional 3,750 square feet for office space. Interested professionals will be able to lease the office areas from Stuart Jet Center.

The operation provides its guests with a slew of amenities for passengers, pilots, and aircraft, including: Avfuel Contract Fuel, AVTRIP points, passenger and pilot lounges, car service, expert concierge service, a conference room and lounge, flight planning and tracking, WiFi, shower amenities, expert line technicians, aircraft detailing, and so much more. Visit Stuart Jet Center in Avfuel booth C8816 at NBAA to learn more about its services and dedication to aviation.

AOPA ANNOUNCES NEW 2016 FLY-IN LOCATIONS

The Aircraft Owners and Pilots Association (AOPA) will host four regional fly-ins, all in new locations, for 2016. AOPA has selected the following dates and locations for its 2016 AOPA Fly-Ins:

- May 21 Michael J. Smith Field (MRH) in Beaufort, NC
- Aug. 20 Bremerton National Airport (PWT) in Bremerton, WA
- Sept. 17 WK Kellogg Airport (BTL) in Battle Creek, MI
- Oct. 1 Earnest A. Love Field (PRC) in Prescott, AZ

"We've been overwhelmed by the success of the AOPA Fly-Ins, so we're excited to bring them to brand new locations, with new seminars, social events, and activities for 2016," says AOPA President Mark Baker.

Since the AOPA Fly-Ins began in 2014, more than 27,000 people have attended and more than 4,000 aircraft have flown in to a dozen events in 10 states. The 2016 events will be the first AOPA has held in North Carolina, Michigan, and Arizona. Previously AOPA has visited California, Colorado, Georgia, Indiana, Maryland, Massachusetts, Minnesota, Tennessee, Texas, and Washington.

The 2016 locations were carefully selected from among numerous detailed proposals submitted by airports nationwide. AOPA has hosted a fly-in at its Frederick, MD, headquarters for the past two years, but has decided to visit a different mid-Atlantic location in 2016.

"We wanted to be able to visit another fun airport within reach of the greater Washington, D.C., area and meet folks who might not be able to make it to Frederick," says Baker. "So for 2016, we'll spend a weekend in North Carolina instead. But we also know our members enjoy coming home to headquarters, so we'll definitely return to Maryland in the future."

CORRIDOR SOFTWARE TO ADD INTEGRATION WITH ALLTITE CALIBRATION SERVICES

Continuum Applied Technology and Alltite announce development of a new integration to provide synchronization of Alltite calibration data through CORRIDOR Aviation Service Software.

Alltite offers a unique calibration solution that answers the specialized needs of the aviation industry. With multiple mobile

and fixed A2LA accredited/NIST traceable labs, Alltite offers cloud-based documentation for electronic, pressure, torque, dimensional and force calibrations. CORRIDOR is an enterprise application developed to streamline all aspects of aviation maintenance and service. It is comprised of integrated modules, among them the Tool Crib Module, which provides tool crib management, including usage and calibration tracking.

CORRIDOR customers using the CORRIDOR Tool Crib Module (available in Version 11) will have the ability to download any calibrations performed by Alltite, including links to Alltite's calibration certificates, into CORRIDOR's Tool Crib Module. This new process eliminates data entry, scanning, and file uploading for calibrations.

"Each calibration performed by Alltite is available through their online software. We felt there was a great opportunity to improve efficiency and ensure quality in the tool room through integration with them," says Jason Buhro, director of software engineering for Continuum Applied Technology. CORRIDOR's Alltite Integration will be available with its next release (11.3.1), due in mid-October.

PLANE DYNAMIX ACQUIRES ART MATTSON'S FAA STCS FOR PIPER CHEROKEE UPGRADES

Plane Dynamix has acquired Art Mattson's line of FAA approved airframe and engine STCs for Piper PA-28 series aircraft.

"Art was synonymous with improving Cherokee performance and safety and we are thrilled to be able to bring his creations back to the Piper community," says Dan Benedix, Pilot Partner, Plane Dynamix.

"I'm very excited to have my father's legacy carried on by someone with a great passion for aviation," Pam Mattson says.

Whether a Cherokee pilot is looking to save fuel, increase top speed, or climb out a little better on those hot days and short runways, Plane Dynamix's family of engine and airframe modifications will provide an array of performance improvements to PA-28 series airplanes.

Benedix says that many of Mattson's popular STCs are available for immediate shipment. These STCs include:

- Gap seals, which improve the laminar air flow over the wing and stabilator.

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- Engine upgrade certificates that provide the industry's only unrestricted 10-horsepower upgrade for the Lycoming O-320.
- Propeller tip modifications for the Sensenich propellers. This mod reshapes the tips to reduce drag and increase the propeller blade's efficiency.

He also says that Mattson's line of Vortex generators and stabilator tips for improved wing and stabilator performance are also available for pre-orders, with anticipated delivery dates in early December of this year.

ROLLS-ROYCE CELEBRATES 100 YEARS IN INDY

Amid fighter jets, World War II planes and helicopters — all powered by Rolls-Royce engines — more than 5,000 people gathered at the U.S. Postal Service hub at Indianapolis International Airport to look back at the company's history.

"We've reached 100 years of service here in Indianapolis," says Marion Blakey, president and CEO of Rolls-Royce North America. "What started out as a small automobile shop in Speedway in 1915 has evolved into the main U.S. hub for Rolls-Royce."

Local operations for Rolls-Royce, which recently announced a nearly \$600 million investment in Indianapolis, began as the Allison Speedway Team Co. in Indianapolis in 1915. It was purchased by Rolls-Royce in 1995.

Allison was heavily involved in manufacturing for America's war effort in World War I and World War II, which began a long tradition of producing engines for aviation. Today, Rolls-Royce has customers in more than 120 countries, which includes more than 380 airlines and leasing customers.

Rolls-Royce employs 4,000 people in Indianapolis. Of those, about 1,050 work in production and 1,400 are engineers.

FAA ADMINISTRATOR SIGNALS SAFETY EVOLUTION

Speaking at the Flight Safety Foundation's Newsmaker Breakfast at the National Press Club in Washington, D.C., Federal Aviation Administration (FAA) Administrator Michael Huerta announced the next step in the FAA's continuing evolution of working with those it regulates. The FAA developed the new Compliance Philosophy to enhance its ability to find safety problems before they result in an incident or accident, use the best tools to fix those problems, and then monitor the situation to ensure that no new problems develop. This approach recognizes that most operators comply with the rules and use safety management systems to identify hazards. They then assess the risks from those hazards and put measures in place to mitigate the risks.

The Compliance Philosophy challenges the status quo. The FAA wants safe operators, not operators who inadvertently make a mistake and then hide it because they're afraid they will be punished. Based on cooperation and trust, it encourages an open and transparent exchange of information and data between the FAA and industry. The Commercial Aviation

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Safety Team (CAST) successfully used this approach to reduce the risk in U.S. commercial aviation by 83 percent over 10 years.

"The FAA's Compliance Philosophy helps the FAA and industry to use critical thinking to work smarter and more efficiently to get to the bottom of potential safety problems," said Huerta. "It's about finding a problem, fixing a problem, and making sure it stays fixed."

Huerta stressed that the FAA will continue to have zero tolerance for intentional reckless behavior, inappropriate risk-taking, repeat failures, falsification, failure to fulfill commitments, or deviation from regulatory standards. The FAA will continue to vigorously pursue enforcement action in these circumstances.

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SPANNER SOCKET KIT

Alberth Aviation has designed a new Main Wheel Spanner Socket Kit for the Global Express. A low-profile design allows for one person use and operation. Lock bolt site holes used with the included flashlight make align-



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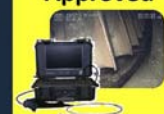


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