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Matt Adamson's 1965 Twin Comanche PA-30

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INTERNATIONAL COMANCHE SOCIETY, INC.

LETTER FROM THE PRESIDENT

The 2017 ICS Convention in Cleveland, Ohio, is over along with the annual meeting of members and elections. I have succeeded Av Shiloh as your president. Av has done an incredible job for the past two terms and deserves the sincere thanks of all ICS members.

ICS has many challenges ahead as our average membership (and pilots in general) and aircraft continue to age. We must become more efficient as an organization (cut costs). We must improve our product (keep our members educated/proficient, aircraft airworthy, and parts available). We must be relevant in a changing society (i.e., higher costs, fewer aircraft/airports, changing family priorities, technical challenges). I need everyone's help and thoughts on what ICS should be doing to prepare the organization for the future. While I eagerly await any comments or suggestions, I have asked some of our former Presidents to join me in creating a Strategic Plan that will ultimately provide your Board of Directors with guidance for the next five years.

So let's talk about Cleveland for a moment. What aspect did I like best? Answer: A full day of seminars from Comanche vendors talking about things technical and operational — Popular Grove Airmotive discussing engine overhauls; Tiffin Aire discussing propeller maintenance and overhauls; Electroair discussing electronic ignition; mt-propeller USA discussing MT (naturally) propellers; STC LLC discussing their efforts to obtain an STC that would allow Comanches to install the Trio 3-axis autopilot currently on

Comanche*Flyer* Submission Guidelines

All members are encouraged to submit articles for publication in the *Comanche Flyer*. If you have an article about a maintenance event, trip, piloting technique, or anything else pertinent to Comanche ownership, please share it with your fellow members.

For those with access to the Internet, please submit the article via e-mail, preferably in Microsoft Word. You may also include the article in the body of your e-mail message. Include your full name, as you would like it published, and your ICS number.

Please attach digital pictures, if applicable, in jpeg format. For best results, use the highest resolution setting your camera will allow. Photo files under 500 kb in size typically do not reproduce well.

Although submissions are reviewed for technical accuracy, the information in this magazine is meant for reference only. Any modifications, alterations, or major repairs to U.S. aircraft require FAA-approved data as a basis for beginning work, and as such should not be based solely on information contained in this magazine. The International Comanche Society does not endorse any piloting adverse to published FAA regulations.

Submissions are subject to editing and revision unless specifically requested to be published as submitted. The right is reserved to publish or not, any submission.

Deadline for all submissions is the 20th of the month, approximately 40 days prior to month of publication.

Send to: Melissa Frisbie, Managing Editor at CFeditor@outlook.com

Articles and photos may also be sent via U.S. Mail to:

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over 3,000 experimental aircraft ($7000 plus install); Heritage Aero discussing maintenance; and SkySurance addressing the problems of older pilots and underinsuring. Videos of each seminar are ready to view on the ICS website. Be sure to check them out.

And, as always, there was the pleasure of meeting, conversing with, and learning from fellow Comanche enthusiasts.

AirVenture has come and gone. ICS will be at each of the upcoming AOPA fly-ins. We are making plans to return to Sun 'n Fun next April with a hospitality tent similar to what is done at AirVenture.

September and October are just around the corner. They present some of the best flying weather in North America, so please consider attending one of the Tribes' activities. Make an effort to host an event or invite fellow ICS members for a regional lunch fly-in. The friends you make now will be the ones you think about calling for help when you have a maintenance issue.

And before I forget, the 2018 ICS Convention will be hosted by the European Tribe on 14-19 Aug 2018 in Scotland. Start saving now for what should be a once in a lifetime adventure.

Go fly!

Pat Donovan

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California Barnstormer Barn Find

by Matthew Adamson

After graduating from college and getting established with a new job, I finally decided it was time to start looking for a cross-country airplane. My first thought was a Mooney fixer upper. I was enticed by a fast, economical machine that was quite cramped. My dad used to own an F model and I thought an E model would be the bird for me. One day, we were finishing up the annual on a customer's 172 when Dad called me into his office. He said that he found the plane. He showed me a few inches of dust that were hiding a Twin Comanche. My eyes widened as I almost immediately talked myself out of costly twin ownership. Nevertheless, it was love at first sight!

I immediately started researching the Comanche series. In our years of salvage, maintenance, and restoration, we weren't well versed in "Tribal knowledge," let alone an elusive twin! We've always had Cherokees and Apaches, but a Twinkie?! I bit the bullet and became an ICS member to see exactly what I was getting into. ICS not only led me to proceed with caution, but also made me feel a lot more comfortable about buying this bird and understanding what makes the PA-30 unique. This research helped us immensely when it came to resurrecting N7626Y. Although I've only been an ICS member since the beginning of 2017, I feel like there is a true fellowship amongst the society. The *Comanche Flyer* as well as TIPS helped me pinpoint what to look for when it came to purchasing the Twin, and having an electronic copy of the manuals was a wonderful bonus!

N7626Y had spent its life bouncing between a few owners in Indiana and Illinois until 1989 when it moved to California. Once in California, the previous owner took her to an avionics shop in 1990 before its last annual in 1991. So to put things into perspective, the airplane had waited my entire life to go flying again. The owner of

Spirit

COVER STORY

Our 200kt grins from tailwinds.

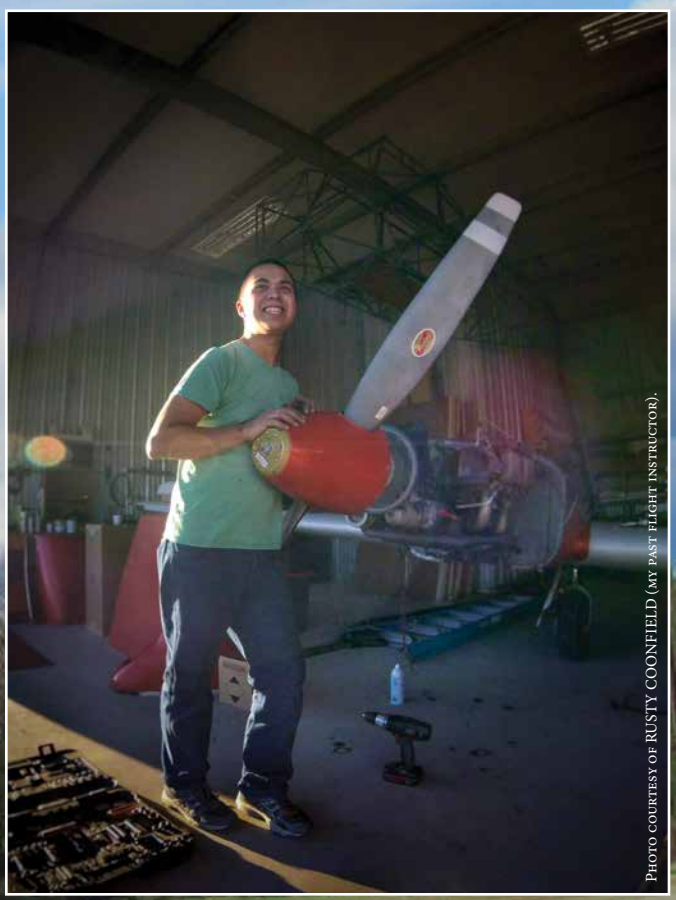

Photo courtesy of Rusty Coonfield (my past flight instructor).

the airplane had kept it hangared in Georgetown, California, which is a 30-hour drive from our airpark outside of Little Rock, Arkansas. Thankfully, a friend of ours recently moved to California and was willing to check out the twin for us. He met with the owner and took lots of pictures inside and out. From there, we prepared our trip as I mailed the guy a check and officially became a Twin Comanche owner.

In preparation for the trip, we developed a list of tools and equipment to take with us to get the airplane airworthy and ferried back to Arkansas. Wrenches, jacks, a brand new Bogert bungee tool, compression tester, oil and filters, as well as every other anvil and socket in the shop was packed into the truck to head west. The drive seemed never ending. We were met with washed out roads and construction zones through several parts of the drive, but finally, we made it!

I was excited and anxious and nervous about my new bird. Was she going to cooperate? Did she want to fly again? Are we possibly going to drive back and make a second trip? Being in the aircraft salvage business and reading NTSB reports for fun, my dad and I have seen plenty of unlucky stories, and never want to make one of our own. Our shop's #1 policy is: Don't make the evening news.

N7626Y, in fact, did want to fly again. After we unloaded most of our shop into the cold Georgetown hangar, the work began. Greasing the gear, replacing ancient hoses, changing the tires, swapping the spark plugs, servicing the brakes, draining the fuel, and trying to stay warm were some of the many things that were well under way. We ran through our checklist and made sure the airplane was prepared to wake up from a long nap.

After several days of working tirelessly on the Twin, she was ready. The #2 engine roared to life almost instantly. The #1 wasn't as anxious, but eventually woke up and made that unique sound a Twin Comanche makes. I'm pretty sure my ears were out of place because of how wide my smile became. We had an airplane!

So now the ultimate challenge arose: getting the airplane home. Georgetown, California, is northeast of Sacramento which has its fair share of terrain and elevation hurdles. We decided to take the southern route which is essentially fly the valley and then over Interstate-40 eastbound. Once we departed Georgetown, our first stop to make was Lancaster, California. The airplane flew beautifully. I was amazed at how smooth and easy to handle the Twin Comanche is! We made it to Lancaster without issues

and once again checked everything over. From Lancaster, we made it to Barstow/Daggett, California, before the sun decided to set.

The rest of the trip was over entirely too soon. After departing Daggett, we made Holbrook, Arizona, just in time for lunch. We walked to the local Denny's for some food and a little exercise. Once topped off with fuel, we caught a nice tailwind before refueling in Tucumcari, New Mexico. The line guy at Tucumcari said, "You just don't see that many Twin Comanches anymore," and I started smiling from ear to ear again.

Once we took off from Tucumcari, the tailwinds were better than ever, which is a rare occasion for us. At 9500', we had a groundspeed of 197kts. I remember looking at ForeFlight and seeing the typical 6-hour drive from Oklahoma City to Lonoke, Arkansas, was merely an hour and fifty minutes! The 30-hour drive that had taken us to the airplane was far less enjoyable than the 10-hour flight home.

Now that the airplane is home, more work continues. I decided to make a few updates as well as go ahead and overhaul the engines. The original 1965 paint is coming back to life with a lot of rubbing compound and even more elbow grease. I can't begin to express how thankful I am for the people who helped make this dream come true. Jennifer, Kevin, Dylan, and my father all made it happen. I plan on keeping 26-Yankee since it is such an incredible airplane with lots of character.

As a side note, I have always been the kid obsessed with airplanes. Growing up, my father (while serving in the Air Force) started his own airpark and FBO in central Arkansas (Country Air Estates, 1AR9). Ever since I was big enough to hold a wrench, I found myself in the hangar playing with airplane parts or getting stuffed into tailcones to replace antennas. Dad has certainly been a positive role model and inspiration in my passion for aviation. When I turned 15, Dad and I resurrected a Cessna 150 that I used for flying lessons and soloed on my 16th birthday. My father, my brother, and I have all soloed C150s on our 16th birthdays (1980, 2003, and 2008 respectively). All three of us have A&Ps (Dad and I also have Inspection Authorization) as well as own a few airplanes. My brother has a Piper Colt Project, I have a Cessna 150 taildragger project in addition to the new Twin, and Dad has a plethora of airplanes and parts.

I bought the Twin Comanche as a cross-country machine. Being in the salvage industry and buying/selling game, the Twin can make an easy hop anywhere to physically inspect a prospective airplane. Also, we have family all over the country, and the twin makes it fast and easy to get halfway across the country before lunchtime. My aunt lives outside of the Chicago

Quadruple checking engine #2.

area, and with grandparents in central Pennsylvania, it's hard to beat the speed and fuel economy of a TwinCo to see them for a weekend. Plus, I enjoy the peace of mind having two engines for an added margin of safety and redundancy. We recently sold our Cherokee Six, and even though it was roomy, it didn't offer the speed or economy we wanted. Finding N7626Y was an alignment of opportunity, necessity, and the yearning for an adventure as well as the pursuit of tailwinds and smooth skies.

Photo courtesy of RUSTY COONFIELD (my past flight instructor).

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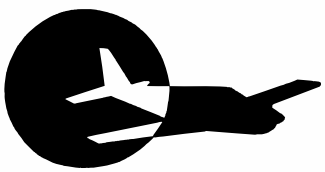

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From the Comanche Website Maintenance Forum

ELECTROAIR ELECTRONIC IGNITION PROJECT

I am almost done with the "heart transplant" on my 180. After the debacle of an overhaul that started back in September, and had to be redone in January, I am very excited to get reacquainted with a new and improved old friend. So far this has been REALLY expensive vs. what it should cost (I will address this in a separate post), but I figured what's another 3 AMUs at this point, so I ordered the Electroair STC'd Electronic Ignition.

This is a HIGH QUALITY KIT! The only complaint is that the supplied thumb drive that had all of the documentation on it crashed after the first use, but they have all of the documents online at their website so no big deal. The only additional things needed to complete the install are a 2 amp and 10 amp breaker, a toggle switch, and plumbing fittings to tap into the MP line. It has four main components. The trigger mounts in lieu of the rt mag, the brain box and MP sensor mount under the panel, and the coil box mounts to the firewall. My biggest issue was finding space behind my panel to mount the brain box and MP sensor (I have lots of remote mounted stuff behind the panel already). Otherwise, it is very straightforward, but I would say an average install on a Comanche is probably more like 8-10 hrs, not the 4-6 they quote. I haven't fired the engine yet, but should be able to when I get back home next week.

In case you haven't been following, this is the first fully STC'd electronic ignition available for the certified fleet. It is essentially the Jeff Rose ignition system that has flown thousands of hours in many experimental applications, holding several altitude and speed records in aircraft ranging from EZ types to RV types and others. It is now available for the 4 cyl Lycoming powered singles primarily [the six cylinder unit is approved and in production now – Ed.]. For us, it is now approved for all PA-24-180s regardless of the prop installed (recent amendment to the STC adding Hartzell Props). The system still keeps the existing left mag as backup in the event of total electrical failure. The EI has a spark advance authority up to 40 degrees before TDC, so as the charge density in the combustion chamber becomes less, it advances the timing so that the peak pressure matches closer to the start of the power stroke, not after the stroke is partially completed, which is what happens with the fixed timing setup we have used for so many years. This more optimized spark translates into more power at altitude and greater efficiency. As all of you know, this follows my eternal quest that I embarked on over 6 years ago of maximizing the performance and efficiency of the 180. I hope this adds to the efficiency of this fine aircraft.

I will post again when I have some real flight results on this system. Let's hope it is all it is cracked up to be.

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154 kts true at 9000 feet. Altimeter 30.06, temp +2c ... on 65% power 20.3"/2300rpm, 8.8 gph. Although I am still working on a few issues, the EI is very noticeable in its performance gains. So far so good! I'm happy with the Electoair system. 10.5 hrs and counting!

That is impressive. How much speed do you think it netted you? Does it seem to run smoother? Do they have plans to get one approved for a 540? [Already done. - Ed]

Nice! Any chance the 6 cylinder crowd will be able to join in the fun, i.e., approval for the O/IO 540s?

I don't know what the future holds for the 6 cyl STC'd version. They do have experimental kits for the 6 cyl Lycs and Cont. A quick call to them might shed some light on that. They are great folks to talk too, and they were very good at helping me through a couple of minor issues.

Thank you for your suggestion. I contacted Electroair and they are working on an STC for the 6 cyl market. They hope to have it by Oshkosh time. I have gotten on their email list to receive updates and will provide any meaningful updates to this forum.

I realize that it is not approved for the IO-320s at this time ... is there any reason that you might be aware of why that couldn't eventually happen?

It is approved for some 320s already. I would call them and ask about adding the PA-30 to the STC. I don't know if the VR would give the unit fits, but they can probably set it up for one.

Those are amazing numbers for a Comanche 180 though I know yours benefits from a number of enhancements. From a purely economic point of view, what is the cost benefit? Under the same conditions what was your fuel burn before the install? I'm really interested in the system because my typical flight is 585 nm, and I generally run at 9,500 ft or higher because of the terrain involved.

If I recall, a similar system called Lasar was never an economic success because fuel economy improvement was marginal.

Have you seen increased lead fouling with the electronic ignition? I'm running all the bottom plugs off of the electronic ignition as they recommend. They also suggest no fine wire plugs. If I use the standard heat range plugs in the bottom they start fouling in 25-30 hrs. At that point they all look ugly with lead and are beginning to fail. If I use the hotter plugs on the bottom, I can get at least 50 hrs before they foul but have found I really need to clean and gap the plugs at each oil change (30-40 hrs) to ensure I can make it to the next oil change to avoid fouling. I'm running the gaps at .030 as directed on the massives and I'm running Tempest plugs?

I have not had any issues. 180+ hrs now and no issues. I am running the recommended REM37BY plugs (tempest brand) with the crab claw electrodes. They are all on the bottom plug positions and I am running fine wires on the top powered by the mag. I do run lean and the engine is tight, but my lead deposits are no more than they were with two mags, which is to say minimal. I usually operate in the 9-12K altitude area, and turn 2200 RPM so power settings are not real high. All my CHTs are in the optimum range of 370-400 on 99% of all flights except on the coldest of high altitude letdowns. I really don't see how the spark advance would add to a lead fouling issue but stranger things have happened.

Your CHTs are interesting. I presume that they are that high because of the speed mods. Most of mine run 325-330 DF. Do you have Dave's cowl? I'm running Tempest Massives. I haven't seen the claw design you refer to.

My top plugs are standard Tempest Massives and rarely require cleaning. I like to run at the same altitudes, but 2400 RPM.

The cleaning is so easily done that I consider it a minor annoyance. Now that I've gone electronic I'm not going back. I like the high altitude performance and economy too much.

T210 ... not sure what your CHTs were before the Electroair ... I assume the same. Zach is obviously a 180 and I'm a twin, but with about the best baffles that time and effort can produce, I'm closer to his temps than yours and that was before I put the LoPresti cowls on. Typically, I run 350 to 380F... just another data point.

There is discussion on the other Forum about Electroair Ignition and the newly granted STC for the twin.

A question: If the single can have both magnetos replaced by a dual Electroair Ignition system, why does the twin have only one magneto replaced on each engine?

I have long thought that the time had come to get rid of antiquated magnetos so I am pleased about this STC. From the reports the engine does seem to run smoother with this mod.

The singles only have one mag replaced. The left mag remains as a backup as the electronic ignition is not self-generating in the event of an electrical failure. I still like the system very much!

My CHTs were lower with my old engine. It was a Lyc factory overhaul that only lasted 1380 hours before the bottom end was found to be worn out. My new limits rebuild runs a bit hotter cht wise, but cooler oil temp wise. It has new Lyc cyl. And my plane does have Dave's cowl, but when I put it on, I didn't see any real change in CHTs from where they were. The old engine would run 340-380 on all cyl on all but the most arduous hot climbs, or extended cold letdowns.

If on the single, the Left remains as a backup in case of Electrical Failure; I assume the same is the case for the Twin. So as the engine runs smoother on the Electronic System, on both the Single and the Twin, is the Left Mag kept switched off during flight and only switched on in an emergency?

The system is the same single or twin. The mag stays on as normal, but

it is basically firing for not as the electronic spark advances beyond the set timing of the mag. If the electronic goes offline, the engine just reverts to the mag sparks with the resultant loss of performance and smoothness.

Any chance this will support an LIO engine?

I spoke with Electroair a few months back ... yes ... LIO was to be included. Their website *electroair.net* shows a Oct '12 revision to the STC ... but the tech guy told me, at that time, that the LIO was in the pipeline with the twinco authorization that has since been achieved. I haven't confirmed it but that was the way they were approaching the IO/LIO issue. I'm about 50 hours away from having 500 hours on my mags and intend to install when we get close to the 500-hour mark.

I don't see any reason why not. I think all that would be needed is a reindexing of the trigger by the folks at Electroair. Might be worth a call to them.

I'm a bit away from 500 hours but had the same thought as Jim so—early in the project—maybe 2013 annual or 2014 more likely. I've been following this enhancement with great interest. Thanks for breaking new ground, Zach.

I am preparing to overhaul my IO320 C1A's on my twin Comanche in about a month. One of the upgrades I am considering is the Electroair ignition. Any suggestions or comments since the last post here on your satisfaction with it now that it's been on your plane for a few years?

I have had family illness issues that have not allowed me to put the hours on the airplane that others have with this system. My early indication is "YES, DO IT!"

At altitude with little wind effect, I saw as much as 14 NMPG flying WEST to Portland. I'll go back out there this weekend to retrieve it after 5 months with John van Bladeren ... my goal is to have an airplane that can go non-stop from WI to Ft. Meyers, FL, non-stop ... with nacelle tanks and the EI ... if the wind gods are good ... should have an hour in reserve.

Good system ... phenomenal preliminary results.

It is great to hear that you have been so happy and highly recommend EI. I am almost certain I am going to add it to my Twin this summer during overhaul. I hope family things are improving for you and you are able to get back in the air soon.

If you have C1As I'm guessing you are turboed. If so, you won't see significant gains while your MP is over 24", but you will see a hotter spark and no flashover at higher altitudes. It will also start easier and run smoother at all rpms. If you don't run with much boost, you should see some serious gains in efficiency/power at lower power settings. I still love mine, and several friends have put them on their Comanches and love the results as well. Great system that has been all but trouble-free since working the bugs out after installation. Put the 1300$ it costs to overhaul your left mag towards the EI system and the price starts to look a bit more reasonable. Add in the performance gains and fuel savings and you will quickly pay for the system based on operational savings alone.

Thanks for the reply and thoughts. You are correct, my plane is turbo and I have not heard the comment on the fuel savings being significantly less for the turbos at altitude. We typically fly between 10k and 17k so I appreciate your sharing that. It still sounds like a good system to add. I appreciate your comments. I think I am going to proceed with the upgrade ... I'm looking forward to seeing the results!

[Editor's Note: According to Mike Kobylik, President of Electroair, they are a fully certified Electronic Ignition System for four and six cylinder Lycoming and Continental engines. All Comanches & TwinCos (with the exception of the 400) qualify for the installation.]

These postings are provided for informational purposes only. The views expressed in these postings represent the opinions of individual Comanche owners and have not been vetted by the ICS technical committee.

As a responsible pilot and aircraft owner, you should always seek advice from an experienced, trusted source, such as your A&P or CFF-trained CFI, before applying any of the techniques or recommendations presented in these postings.

The postings are printed as they appeared. Due to space considerations, sometimes only selected posts have been published.

The Write Stuff

by Gloria Smith Zawaski

I just got back from Comanches Rock Cleveland *and have a column due! What to do?*

I know! I'll write about what I said at the Awards Banquet. What? You didn't know that I spoke at the convention? Well, it came as a surprise to me too.

Awhile back Bob Williams, North Central Tribe Chief, had asked my husband, Alex, and me to speak at the convention. What an honor! But there were few potential difficulties: I don't know very much about Comanches, and Alex rarely speaks. We batted around ideas, like recounting our trip to Siberia, but when Bob answered my email query about what he wanted us to talk about, he said he wanted us to explain how to write an article for the *Comanche Flyer* that people would read … and maybe even enjoy. Who would ever want to hear about a topic like that—and at a banquet dinner no less?

But Bob insisted. Alex warmed to Bob's idea. After all, if we were going to speak about writing, Alex would be off the hook. Now, no one has taught me more about airplanes and flying than Alex, but his contribution to the articles for this publication is mainly limited to editing, which he does mostly by rolling his eyes to varying degrees.

Here, in a large nutshell, is the gist of what I said.

I learned how to write so that people would read back when I was a television advertising copywriter for a Madison Avenue Agency. You had to learn quickly—if you didn't, you were fired.

My first account was L'eggs pantyhose, and my first assignment was to announce the pantyhose's new feature: a cotton crotch. Do you remember a little rabbit hopping across the screen saying "I have cotton where it counts?"

When I left New York City, I brought one client—KLM Airlines—with me. I wrote a lot of brochures and even did a history of the Fokker. Too bad I had no particular love of airplanes and no plans whatsoever of being a pilot at the time. Life takes mysterious turns. I'd love an assignment like that now!

While I was comfortable writing television or radio scripts, when it came to longer pieces I was terrified. Even though I majored in English and spent a year teaching high school English, I couldn't find my way through a decent paragraph. Yet I really wanted to be a journalist.

I began to contribute short pieces to the local paper. It took a long time because I struggled with each and every word. This inefficient approach netted me so little that my accountant thought it best to call my work an "avocation."

When I went through a rocky divorce, I had to give up being precious with every word. I begged my editor to assign more articles. And then came my break. Someone backed out of doing the annual Fishing Guide. I said I'd tackle it. I was hooked.

To this day, that compilation of articles about a subject I knew absolutely nothing about remains my all-time favorite writing project. I went up to Roscoe, New York, on the Beaver Kill River and talked to everyone from guys tying flies to a woman who taught fly fishing on the lawn of Central Park to New York women.

Organizing my thoughts was always my biggest challenge. In fact, organizing most things is a major hurdle in my life. So, at a writers workshop I attended, I asked the teacher how to write more efficiently. He said if you're stuck, make a "Top Ten" list. (Years later I ran into him and thanked him for his advice. He

MIHTIANDER / 123RF STOCK PHOTO

told me that people's attention span had gotten shorter over the years. A "Top Seven" list would now have to do.)

So here are Seven Suggestions that can give a little oomph to your writing.

1. **Kill the critic within.** I have always been plagued by a harsh internal critic who won't let me put pen near paper without belittling everything from my subject matter to my sentence structure. I think my internal critic is actually a memory of Mrs. White, a grammar school teacher who would make us diagram sentences to illustrate subject, verb, and object. If someone made just one little mistake, she would stab the blackboard with her chalk; shards would fly off in various directions. How do you shut this critic up? Start by setting a deadline and sticking to it. Tell yourself you absolutely must be done writing at a certain time—no ifs, ands or buts (especially not beginning your sentences, unless you want to make hardliners like Mrs. White turn over in her grave). Give yourself a few days to edit. Once you get going, your critic has a harder time keeping up with you.
2. **Keep it short and simple.** Less is more, is more or less what I'm trying to say. It's easy to get tripped up on a lot of extra words. No one needs the whole story, just your perspective on it. Once I interviewed someone for a feature story (not for this magazine), then proceeded to lose my notes. (I told you I'm not terribly organized.) I couldn't imagine calling back and admitting my guilt, so I tried to remember what was said. It worked. I learned then and there that what stands out during an interview is probably what other people will find interesting too. I try to write in one sentence what my "angle" for the story will be. I keep that sentence in mind. If I want to add something that is off the subject, I try to resist. I don't always succeed, but I try. For example? Not … My Trip to Alaska, but … Seven Things I Wish I Thought About Before Flying to Alaska.
3. **Show … don't tell.** Think twice about writing in order to deliver a message. Most people, myself in particular, don't like to be "told" things. Instead of … "It's important to use checklists" followed by a recital of accident statistics, recount how you forgot to check the tank for water during preflight and then heard the engine sputtering over the Rockies … your reader will get the picture!
4. **Stay active, not passive.** Instead of … "The airplane was flown by my son and me" … "My son and I flew the airplane." Not "We took a walk on the beach," but "Once we heard the sound of the waves crashing, we couldn't wait to get to the beach."
5. **Have fun with it.** If you're struggling to finish and resenting every word, you can be sure your reader will be suffering too.
6. **Do what works for you.** People always told me to write and write and then go back to edit. I've also been instructed to never, ever begin writing without first creating a solid outline. I've never created an outline (although I would if I thought it would help me.) Instead, I write notes on a piece of paper; then I use color highlighters to designate what goes first (yellow), second (orange), or third (you get the idea).
7. **Have good snacks available.** Writing is a lonely job, and you deserve to reward yourself. If you're smart, you'll stick with healthy snacks. But if you're lucky, you'll have some chocolate chips on hand.

Although I didn't address this at the convention, there's another factor that's been instrumental in my writing for the *Comanche Flyer*. I am deeply grateful for the support I received from Past President Av Shiloh. His encouragement has played a vital role in my writing this column. Thanks to Av, I was introduced to all of you. Av affirmed my writing, and so have you. Not only has he been a good friend, but he's also a good writer. It's one of many things he excels at … like leadership, for example. He's also a good editor. Coming from a writer, that's saying something!

I look forward to working with President Pat Donavan in a new era. Pat has a hard act to follow, but then … who's following? Pilots have a way of discovering new destinations and new routes. I look forward to the ICS journey under his wing, but I'll always fondly remember how Av cheered my takeoff. Thanks, Av—I couldn't have made this journey without you!

NOTE: *If you read me, I'd like to hear what you have to say. Just drop me an email at* wordsmith@citlink.net.

Comanche Flyer

Needs your Stories, Tips and Tricks!

Share your Comanche Knowledge with your Fellow ICS Members

Do you have a good technical tip or overhaul story you can share? What about a flying experience or recent instructional experience where you'd learned a lesson from which all pilots could benefit? Maybe a trip you took in your Comanche that you'd recommend to others. We also desperately need in-flight photos of your Comanche to feature on the cover of the *Flyer* (needs to be at least 1 MB in size to print well). Anything you can share that would be helpful to fellow ICS members, we need you to send in your information!

You don't have to be a writer by trade, just put your thoughts down and tell your story – it will be edited, if needed. Below is a list of regular columns in the *Flyer*, and a few new ones that have been suggested (the word count provided is only an average to help guide you).

Cover photo/Comanche Spirit – Not only do you get to have your Comanche on the cover of the *Flyer*, but we like to feature the owner so ICS members can get to know you better. You can fill out an owner questionnaire and the editor will write a story about you, or you can submit your own. Average length is 1,000 words.

Letters to the Editor – Send in your comments about an article you read in a past Comanche *Flyer*. Or you can also send items of interest you'd like to share with other Comanche owners that may not be long enough for an article. Really, we'd like to hear from you!

Technically Speaking – We like to feature technical information you have found useful in maintaining your Comanche. Maybe it was an ongoing problem that you finally found a solution or you want to warn other owners of an issue that occurred with your airplane. Anything technical is featured in this column. Average length is 500-1,200 words.

Maintenance Q & A – Do you have a question regarding maintenance on your Comanche? Send it in and we'll have our Technical Directors suggest some solutions. As questions come in and a reader has an alternate solution, they can send them in as well. This would be an ongoing format for maintenance discussion.

From the Logbook – If you have a trip that you'd recommend to other members, or a particular "adventure" you've taken in your Comanche that you'd like to share, this is the column! We have featured trips in story and journal formats. Average length is 1,500 words.

Product/Vendor Information – Did you have a good experience with a vendor that you'd like to share or have you recently purchased a product that you'd recommend to other ICS members? The best information that most owners get is from others who have experienced it, so share with us! Average length is 250-750 words.

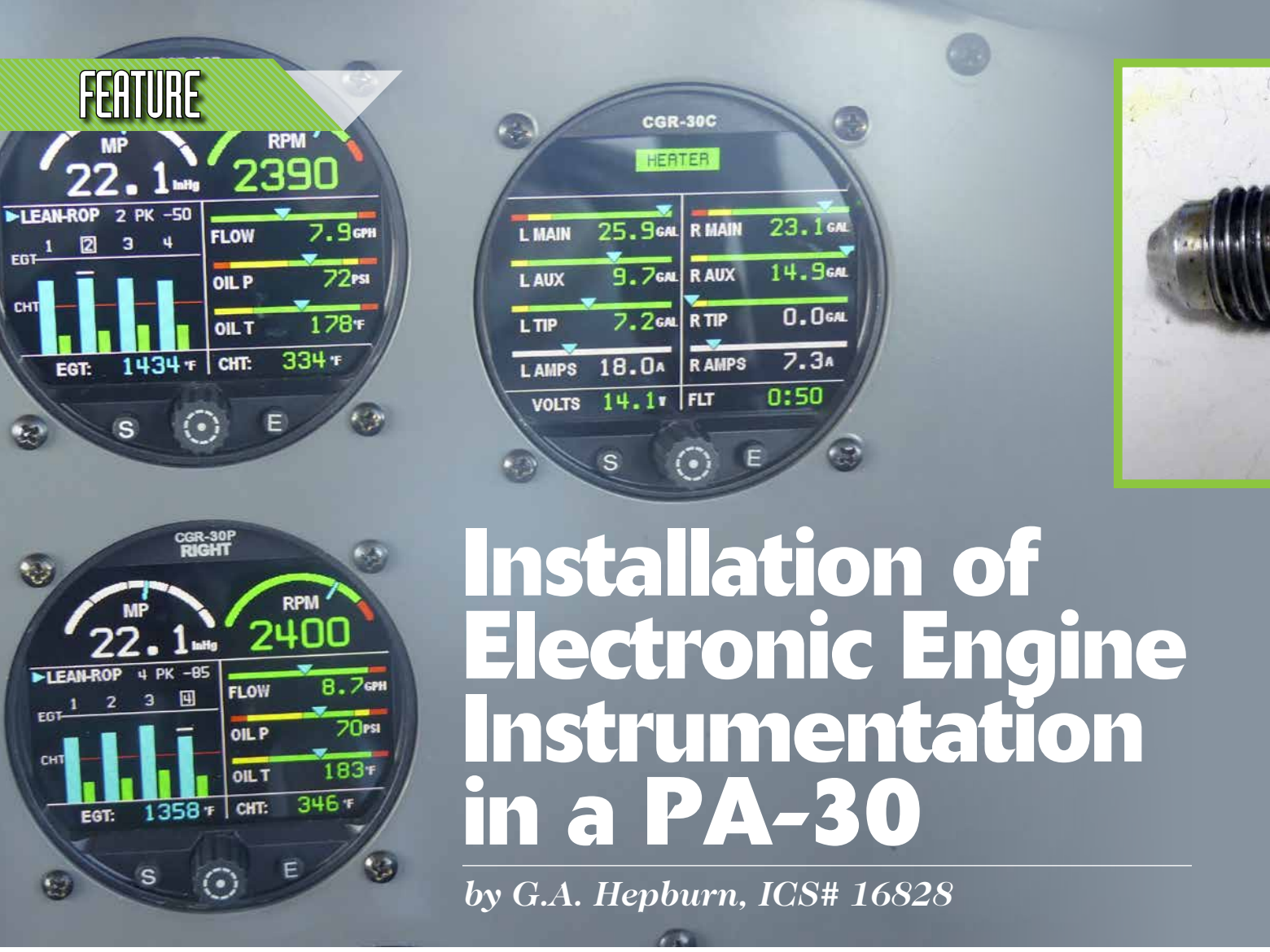
Fly-In Reports – A pretty popular column, but we don't see the experiences some of the tribes are having. Send us your story. We'd like to hear how your Tribe is getting together and sharing the camaraderie. Average length is 250-500 words.

Best of the Flyer – This is an easy one. If you know of an article in past *Flyer*s that you found useful and you think needs repeating, send a copy and we'll reprint it.

If you have a story that you don't feel fits into any of the above categories, send it anyway. Most issues include feature stories and we'd like to hear from you. What do you enjoy learning or reading about in the *Flyer*? Do you have something you can contribute? We'd like to hear from you!

Send your contributions and ideas to Editor Melissa Frisbie at *CFeditor@outlook.com*, or 1716 Canvasback Dr., Johnstown, CO 80534.

FEATURE



Installation of Electronic Engine Instrumentation in a PA-30

by G.A. Hepburn, ICS# 16828

In December 2009, I performed a major upgrade to the pilot's side panel of my Twin Comanche, replacing the HSI with an Aspen EFD 1000 Pro. This change included replacing the original equipment panel metalwork with a custom panel provided by Ron and John's Comanche Service.

Following the change, I had a "glass cockpit" on the pilot's side, but the co-pilot's side was virtually unchanged from the original, although a Shadin Digiflo fuel computer had replaced the "fuel flow" gage, an Alcor multi-engine EGT indicator had been added, and the original plastic overlay had been replaced with a unit by Aero Enhancements, which is no longer in business.

At the time, I looked at upgrading the engine instrumentation, but the unavailability of digital instruments approved as primary replacements, and availability of funds proved deterrents.

At Sun 'n Fun 2015, the Electronics International CGR-30P product caught my eye. This is essentially a single engine analyzer, but it is approved as a primary replacement for all of the original engine instrument functions. EI and JPI, by this time, had instruments designed specifically for twin applications, but price continued to deter me from pursuing these solutions.

EI now markets a "CGR-30P Twin Combo," comprising two CGR-30Ps and a CGR-30C cluster gage replacement, at an attractive price, especially since there was a $300 factory rebate for each instrument. This solution allowed primary replacement of all the original engine instrumentation for about half the price of the twin-specific products. I decided to go ahead with this approach. Of course, the right side panel would now need replacement, as the panel cutout for the original cluster gage was not suitable for the 3-1/8" diameter CGR-30C. Since I had already purchased the left side panel from Ron and John's, I was able to buy a custom-cut right side replacement for only $100 — surely one of the best deals in aviation!

Now I started getting into the detailed planning of the installation. EI provides a configuration worksheet for each instrument, on which you specify the indications required on each screen, together with the original white, green and yellow arc limits, redlines, and so forth. The CGR-30P has a

Clockwise from top:
A clearly improved right panel.
Piper special bulkhead union part.
Co-pilot side with new overlay.
Master caution & warning lights for the analyzers.
Custom panel with replaced metal.

primary screen and several secondary screens. On the primary, I specified manifold pressure and RPM as analog arc displays, EGT and CHT as a bar graph display, and fuel flow, oil temperature and oil pressure as horizontal bar indicators. This is where I encountered the first problem. You will recollect that my airplane had a Shadin Digiflo installed, which was approved under the Shadin STC for primary replacement of the original equipment fuel flow instrument. The EI STC provides for primary replacement of the original fuel flow gage (actually a fuel pressure gage) using a horizontal bar displaying fuel pressure. The actual fuel flow function, which is driven by an in-line turbine much like the Shadin fuel computer, is not, however, certified for replacement of any of the original functions. It is simply an add-on feature. After some mild arm twisting, EI agreed to place the fuel flow indication on the primary page, and the fuel pressure indication on the first secondary page. Their STC did not, however, permit the original fuel pressure function to be removed. This proved to be a problem because the fuel pressure plumbing on my airplane was long gone. There was nothing for it but to re-install this plumbing between the fuel distribution spider and the firewall. Two parts proved to be hard to get. There is a Piper special bulkhead union, Part Number 23319-00, which adapts a 1/8" diameter flared fitting on the engine side of the firewall to a 3/16" diameter line on the cold side of the firewall.

The 1/8" flexible line connecting the engine to the firewall is also not readily available. It turns out that Cessnas use a similar union in their oil pressure line, so I was able to procure two of these. I mounted them where the fuel pressure line penetrates the engine baffle and used a 3/16" flexible line from there back to the firewall. I also had to purchase replacement stainless steel lines to connect the fuel spider to the engine baffle. These are also a Piper special and contain a flow restrictor. They were available from Webco. When all was said and done, this replacement plumbing more than ate up the $900 factory rebate on the instruments.

The EI installation kit includes all the temperature and pressure sensors for the primary functions being replaced. The temperature sensors are installed on the engine, and I elected to locate the pressure sensors in the area behind each engine on the cold side of the firewall rather than on the engine itself. The most convenient place to pick up the P lead of the magnetos (from which RPM is sensed) is at the feed-through filters on the firewall. The instructions did not address this, but picking up the signal there has not given me any problem at all.

All these sensor signals are routed to a data acquisition module (EDC-33) located in this same area behind the engine. It is the large, rectangular, black module at the center of the photo above. From there, all that goes back to the instrument panel are power wires and a single serial communications wire.

The first step in the installation was to remove all the old wiring for the EGT and CHT instrumentation, the impulse lines for manifold pressure, oil pressure and fuel pressure, and the tach drive cables. At the end of this, I was left with quite an impressive pile of junk on the hangar floor. Next, you install the new sensors and associated plumbing.

I strongly recommend preparing detailed wiring diagrams of the new installation. The changes to the existing wiring are quite extensive, and some of the existing wires will probably be re-used for different purposes. When you do a count, you are replacing more than 40 data displays. EI provides 13 pages of wiring information, but it is generic. If your installation is to be maintainable, the airplane-specific details of the installation need to be recorded.

The resulting setup behind the engine is represented below.

Above the EDC-33 is the manifold pressure sensor. To its left, the cylindrical silver unit is the oil pressure sensor. I elected to install an optional shunt in each alternator output cable so that, for the first time, I would know what each alternator is contributing — you can see it below the oil pressure sensor. The module at the top right of the picture is an RFLM-4, which is used to interface the existing resistive fuel senders to the EDC-33. EI can also provide replacement magnetic fuel level sensors if your current ones are in poor shape. On the Twin Comanche, the fuel level signals are conveniently available on the wing terminal block located below the RFLM-4 (see Figure 11-69 of the PA-30 Service manual). The extensions of these signals back to the cabin are no longer required and can be disconnected. If you have tip tanks, as I do, the wiring for their senders is not routed through this area and has to be brought out to the RFML-4, but existing wires can be used for this purpose. I will not get into wiring details, but I can supply CAD wiring diagrams for my particular configuration in the form of PDF files to anybody who is interested.

The resulting right panel layout is shown with the article title on page 20.

I think you will agree it is quite a bit cleaner than the original panel. The CGR-30C provides a continuous

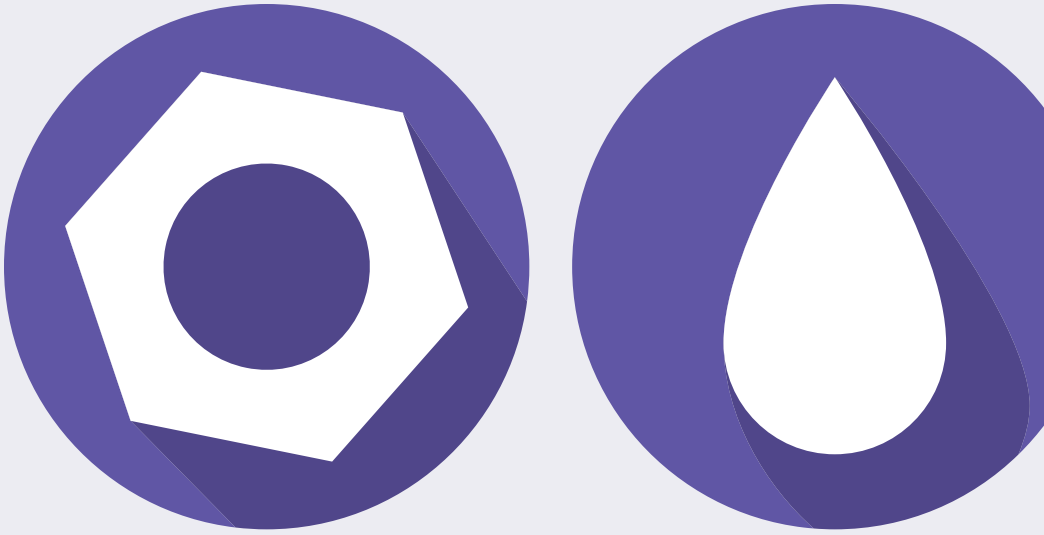
display of the levels in all three tanks in each wing, as well as alternator output on each side. The troublesome microswitches that connected the fuel gages to the appropriate fuel level sender are a thing of the past. I elected to add annunciation on three conditions that I felt were worthwhile — fuel pump status, tip tank selector status, and heater ON. Twin Com drivers, I'm sure all of you at some time have forgotten to switch off the heater and popped the over-temperature cutout, requiring removal of the nose cowl to reset it. Hopefully, this indication on the panel will make it more difficult to make this mistake.

The EI kit comes with a master caution and warning light for each analyzer. These are located on the pilot's panel, in his/her direct field of view. Yellow caution lights come on when any parameter moves into the yellow, and red warning lights indicate that a parameter has reached a red line.

The fuel flow measurement on each CGR-30P allows you to keep track of the amount of fuel left in each tank, based on integrated fuel flow. You simply have to be sure to change the tank selected on the CGR-30P at the same time as you change the tank selector. The GPS sends distance to destination to each CGR-30P, allowing it to compute fuel remaining at the destination. The CGR-30P can also send fuel remaining data to your GPS, allowing the GPS to perform a similar calculation. However, the Garmin GPS can only handle a single engine, so I connected the right CGR-30P to this function since the connection of the heater to the right engine generally results in slightly higher fuel consumption on that side.

What's next in the continuing saga of panel upgrades? In Canada, "traditional navaids" are being decommissioned fairly aggressively. In fact, I just received the proposed decommissioning plan. If implemented, there will be only three VORs left in Ontario. In the not too distant future, it will not be possible to get the aircraft on the ground in the event of a failure of my single Garmin GNS 530W. So, I am looking at replacing my old backup Narco 12D with a used GNS 430W. However, these things are still commanding about the same price as they did when they were new. A 420W would be ideal if anybody out there has one.

FEATURE



Minimal Maintenance

by Lew Garrison

First an acknowledgment: The principles described here have been used for maintenance of the aircraft in our hangar both by my predecessor IA (Bruce Burt) and myself, for many years. However, Mike Busch, A&P, IA has recently done a much more eloquent job of publicizing these methods. I urge everyone to read his columns and books.

At times owners and prospective owners ask about some component of an aircraft that is approaching an "official" time-between-overhaul (TBO) number. In almost every case I advise the person to ignore the TBO. In part 91, flying the number usually has no meaning. In most components of our airplanes, there is simply no justification for arbitrarily replacing/repairing/maintaining/overhauling based on hours or calendar time. Numerous studies support this idea, yet most general aviation A&P mechanics are either unaware of or unwilling to embrace this concept. Whether this is due to financial needs, habit or ignorance remains unanswered.

Let's look at the most common component in which a TBO recommendation exists, the engine. Our engines are generally rated as 2000 hours time between overhaul. Lycoming also recommends a calendar limit of 12 years, no matter the number of hours flown. Examine the reality of this situation: Your engine has 2001 hours on it, is approaching 15 years since the last overhaul (averaging = 135 hours per year), is using about 1 quart of oil per 5 hours (Lycoming permits much greater consumption), has compressions in the mid '60s, looks acceptable in a borescope inspection, has good oil analysis history, and runs and flies well. You could have it torn down, overhauled to new limits, and reinstalled. Or you could continue to fly the airplane with the engine past TBO. Now assume you need to take a trip in the next three months across the Rocky Mountains to Las Vegas. Which engine would you want to trust to fly your family behind? Which engine has the greater chance of failure? I guarantee the odds are much, much higher that the recently overhauled engine is more likely to fail. Engines, like the bulk of airplane components, have what a likelihood of failure graph that is called a bathtub curve. This simply means that a new, or newly overhauled component is much more likely to fail than one that has been performing its function well for quite some time. That initial failure rate is one "wall" of the graph of the bathtub curve. At some point in time, the likelihood of failure will again rise to form the other "wall" of the bathtub curve graph. By careful monitoring using modern methods, it is usually possible to determine when the likelihood of failure will again begin to rise. While no method or combination of methods can possibly prevent

every failure, an arbitrary number is not the answer.

These methods of minimal maintenance have been used since articulated by an RAF study in World War II. A later study was done for United Airlines in the 1960s by Matteson, Nowlan and Heap. Scheduled airlines, as well as the U.S. Department of Defense, use this method. Known as Reliability Centered Maintenance (RCM), it is the antithesis of the old method of using a TBO. "On condition" maintenance is related to and an element of RCM. A TBO assumes that a component starts off reliable and as time (calendar or usage hours) accumulates, the component becomes unreliable. Multiple studies show this not to be true. Many components, especially electronics and engines, have significant "infant mortality." On condition maintenance proposes to use methods and monitoring to determine when the likelihood of failure will increase. Compression tests, borescoping, engine analyzers and oil analysis are all methods to monitor engine health and thereby try and predict engine problems. Engine monitors can be highly effective in diagnosing an engine's health when properly interpreted.

Another significant element of RCM is the determination of risk to safety of a failure. In other words, if a component fails, is it a risk to flight safety? If it is not, it should be run to failure instead of being replaced or inspected excessively and repetitively. Consider that disassembling for inspection is also introducing a failure mode. An example of examining the risk to flight of a possible failure is a Comanche owner who came to me after spending a large sum of cash on his annual inspection. On the invoice I noticed almost $800 for replacement of landing lights with LED bulbs. I asked him if both had burned out before the annual? No, he replied, "both were working." The shop told him his were very old and, even worse, were not the latest technology. Technically both true, but Comanches have two landing lights (or a landing and taxi light, both of which can function as a landing light), so the failure of one is not a risk to flight safety. Landing lights should be run to failure, at least on Comanches. Now if you just wish to fly with the latest technology in lights this is fine, but this owner had been misled by an arbitrary (at best) recommendation. Another example is an owner with an approximately 10-year-old alternator that another shop recommended replacing due to calendar age. While I agree that the alternator is more flight critical than the landing lights, most times a Comanche can be flown to an airport before the redundant system (battery) is drained. And which alternator do you think is more likely to fail in the next 50-100 hours? Hint: it's not the new one just out of the box. In this case, an internal inspection of the alternator may be beneficial, but not an arbitrary replacement.

An additional important element of RCM is considering the possibility of maintenance induced failure. Many times when I work on an unfamiliar aircraft I find maintenance induced failures. Fortunately, most of these were not safety of flight issues, but some could have been. I have seen bungee cords that were just hanging in the compartment because they were installed incorrectly. At the very least I find stripped screws, incorrect fasteners, and improperly lubricated components. These were not done maliciously by the previous mechanic. The mistakes were honest mistakes made due to oversight, unfamiliarity, productivity pressures and distractions.

What I consider "maximal maintenance" just increases the likelihood of maintenance induced failures.

One note concerning "minimal maintenance." Airworthiness directives and other FAR required inspections and maintenance must be accomplished as specified by the regulations. I am not advocating skipping these tasks. In most cases, though, I do not recommend exceeding these inspections/maintenance requirements.

The "take home" message of this article is intended to be: Each owner must become the advocate for his/her own maintenance and pocketbook. Anytime your mechanic recommends work, run it through this algorithm: 1) Is it an airworthiness issue? Is it truly a safety of flight issue? Could you continue the flight safely if that component failed? 2) Is it based on some arbitrarily set number of hours or time? If it is, carefully examine those numbers to see if there is concrete evidence that this number is valid for your type flying — and not just recommended validity. Is there hard evidence that Lycoming engines become more likely to fail after 2000 hours or 12 years? If not, ignore the arbitrary number if legally able. 3) Consider the possibility of "maintenance induced failure." Is there a fairly good likelihood that this maintenance could make the aircraft less reliable or safe? By this, I am not demeaning your mechanic. Everyone makes errors and the more complex the task, the more likely an error or omission will occur. I see far too much very expensive, non-effective maintenance being done. Even worse, occasionally I see maintenance done that significantly deteriorates the safety of flight, and not because of incompetence or errors, but by replacing a reliable component with one untested and, ultimately, less reliable.

LETTERS TO THE EDITOR

Dear Mrs. Zawaski,

What a lovely writing style you have. In the July *Comanche Flyer*, I see you've applied it to such an interesting subject — makes me want to go back to read more of your work.

In this issue, you've hit on two subjects I've had experience with: 1) the UPSAT CNX-80, later called the Garmin GNS 480 after they purchased the company, and 2) the other is using an iPad in my plane.

I find the CNX-80/GNS 480 to have the most abominable operating system of any GPS there is. Yes, I've heard that some pilot-owners can whiz through the pages and functions of them, but for the casual operator the doggone thing isn't user-friendly.

A friend who bought one told me it was the greatest system out there. I wonder from what website he got this information. The fact is he never EVER learned how to use it properly.

Another plane I flew for a fellow that never got his private ticket, had one installed. I muscled through basic routes but never mastered the art of loading approaches, regardless of the desktop simulator and user manual.

In both of these airplanes, I brought along my trusty portable Garmin 496 and always flew with that unit. I understand Garmin discontinued the GNS 480 because most pilots couldn't use them. It certainly didn't operate logically like the rest of the company's avionics.

It seems that stepping up through the Garmin ranks with the portables, each newer unit operated in a similar fashion. To me, the Garmin operation seems logical. When stepping up to a Garmin 430/530, the operation seems so familiar. Since the 430 is the mainstay of the industry, very many pilots have learned to use it thoroughly.

Good luck with your 480.

As for the iPad, I borrowed one with a Stratus II and loved the features. The problem is, I need a way to mount it in my plane before I'd ever consider buying one. I can't fly a plane and hold so much as a smarty-pants phone in my hands. Friends have demonstrated wonderful features galore on the iPad, but your story cautions a newbie like me to be careful with the product lest the little airplane disappears at times as yours did.

I hope to read more of your articles in the future. Keep up the good work.

Mike Dolin, CFII
Comanche 250

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Hello Av,

I took my physical exam today by my personal physician, and everything went without a hitch. I had previously discussed the exam with him, and he was more than willing to do the exam. As my insurance would not pay for the exam, I was charged $100.00. The FAA exam by the local AME would have cost $90.00. Twenty-five dollars per year versus $45.00 per year ... not bad. I completed the course, passed the exam on the first try, and got my completion certificate. I hope this info helps with your article. Let me know if you need any additional info.

Enoch (Nick) Nicewarner,
ICS# 12698

Dear Nick,

Thanks for sharing your experience with BasicMed. I'm sure other members will benefit from your experience.

Best regards,

Av Shiloh

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Hi Melissa,

I had another interesting conversation with Zach Grant, resident maintenance guru:

Hi Zach:

Something's up with my pitot/static system. The problem is that my VSI (both analog and on the Aspen PFD), along with the altimeter, "jumps" when I'm flying in precipitation or wet clouds. This, of course, makes my STEC 55X autopilot practically useless en route (the "jumpiness" doesn't seem to affect the auto when it's tracking an ILS or LPV approach).

I'm guessing there's some kind of leak in my pitot/static system, but before my avionics guy starts ripping apart my airplane, do you have any experience or explanation why this is happening?

Tom LeCompte

Tom:

Flying in rain is a problem for these planes with the flush type static port, especially with the snubber plate in front of it. Water droplets collect and block and then move past the static ports causing erratic static pressure. I have seen it so bad that the static system has been rendered useless and alternate static must be used. In my plane I turn on the alternate static anytime I'm in rain simply as a mitigation measure. If you don't have an alternate static system, it is relatively easy to install with a T in the static line and a small Curtis valve. Just run it to somewhere under the panel that you can reach to turn it on.

When your autopilot is flying the vertical guidance, it is not relying entirely on the static pressure for altitude, so this issue doesn't affect it as much. — Zachary J. Grant, Technical Resources Committee

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Hello Zach,

I just finished reading your reply to the question about the use of checklists. Although I may take issue with some of

your opinions on the matter, I do have to point out a gross misstatement. You stated, "no MEL, everything installed must work, so no relief" with regards to an inoperative navigation light. Please reference FAR 91.213(d). This most certainly grants relief for this and other similar inoperative components. If it's not required to be installed and working per FAR 91.205, you are legal to take off provided you comply with the requirements stated in FAR 91.213(d).

I ask that you will provide a clarification in the next issue of the *Comanche Flyer*.

Regards,

Wayne Deer, ICS# 18935
ATP, CFI (ASEL, IA, AMEL)

Hi Wayne,

Maybe you are taking my statement simply at face value when there are certainly more layers and nuances to every situation. My example of a Nav light being inoperable is a situation that although not needed for daytime is, in fact, necessary if you check it. As per CFR 14 part 91.213d with no MEL, you as the PIC, unless you are an A&P and have done all the items listed in (3) i/ii, cannot legally go fly that plane. What must be done is a maintenance function. The switch must be placarded and the Nav lights must be removed or deactivated (a placard only in this case is an incomplete solution as you don't know what is causing the malfunction, and the power must be removed from the system). In the case of most single Comanches, the Nav lights are on the same breaker as the electric fuel pumps. If you pull and secure the breaker, you now have deactivated equipment that is required by the type certificate (electric fuel pumps) and thus, as per the very same reg, there would be no relief possible. I understand your position that there could be relief; however, there is no immediate relief. Now, had this been an "article," I may have gone into greater detail. However, this was a reprint of a previous email conversation that was printed in its original form and was not designed to be a catch-all discussion. There were further communications directly with the person with the query that are not shown in the column, and I stand by my position that checking things not pertinent to the flight can be severely limiting to the goal at hand, and that goal is to go flying.

Zachary J. Grant,
Technical Resources Committee

Lessons from the

There is no "HOPE" in aviation safety

by Steven B. Zaboji, ICS #12506, ATP, CFII, and MEI

The weather was terrible in the mid-Atlantic and the Northeast on the weekend of March 1, 2003. I was participating in my favorite biannual aviation event: the AOPA Air Safety Foundation's Flight Instructor Refresher Clinic (FIRC). I remember the weather being so miserable that during the breaks, participants were calling their respective airlines to get the latest updates on flight delays or cancellations. For me, living only three miles from the Sheraton hotel where the FIRC was being held in Reston, Va., giving up a weekend under these weather conditions seemed almost fortunate in a serendipitous sort of way.

As a flight instructor who has an active day job, I always enjoy the FIRC experience as it immerses me in the world of flying for two solid days. I particularly enjoy the camaraderie among the 100 or so flight instructors, especially when it comes to anecdotal discussions as they relate to aviation safety issues. Little did we know that while we were discussing accidents and weather-related mishaps, the real world on the outside was a meteorological death trap for straying pilots.

The late winter weather, low IFR, and icing ensnared a number of pilots that weekend, resulting in life-altering events. One of the accidents occurred in Leesburg, Va., in nearby Loudoun County, where a Socata TBM 700 piloted by a prominent businessman and low-time owner pilot, along with a highly experienced copilot and an attorney passenger, succumbed to the perils of a low IFR approach.

News of the accident was especially fascinating to me, because as a former tenant and long-time user of Leesburg Executive Airport, I was aware of the number of low IFR approaches in recent years that ended in fatalities.

Given the sensationalist nature of the media, it was no surprise to see them pounce on the TBM 700 accident. Within the aviation community, the accident tugged at our collective heartstrings and conscience, as we once again needed to examine the compounds in that crucible known as a tragic, untimely, and unnecessary accident. Just what are the meteorological, mechanical, environmental, and emotional dynamics that dramatically destabilize a flight and overcome a pilot's ability to survive?

Asking 'why?'

This flight had every asset needed to complete its mission successfully. Yet in spite of a world-class turboprop aircraft equipped with state-of-the art avionics for guidance and situational awareness, a pilot with a Ph.D. level of education, and an insurance company-mandated qualified flight instructor pilot in the right seat, they lost it all. They lost the airplane, the pilot's life, the copilot's life, the passenger's life, and the well being and stability of close and extended families. For everyone in the sphere of personal or business friendship, this accident represented a tragic and life-altering event. Even before the NTSB investigation began, the affected community's chorus broke out in that old accident spiritual: "Why?"

Reconciling the "why factor" takes on a scope that involves safety interests, financial interests, engineering interests, legal interests, and even political interests among others; yet, as in most cases, the official NTSB conclusion was "pilot error," and, although no one knows with absolute certainty what happened to the TBM 700, chances are more than likely that it was pilot error or maybe, more fairly, pilots' error.

I don't have a degree in aeronautical engineering, psychology, or any subject that could be considered relevant to this accident. But as a pilot, an occasional flight instructor, and a businessman with 46 years and more than 10,000 hours of flight experience, I don't think I would be out of line in expressing a few thoughts about this tragic accident. But before I get into the subject of this calamity, I would

Crash

like to share with you the reason that I felt compelled to write this article.

When I searched the Internet shortly after the accident, I stumbled across the *Loudoun County Reader's* Forum, where one of the first postings read:

I Love You Dad (03/02/03 at 8:24 p.m.)

"This tragedy that has just occurred with my dad will never be explained. All I can keep thinking is why did it have to happen? There are so many emotions that I feel right now...denial, hurt, and frustration, to name a few. I had the best dad in the world, and something out of my control took him away from me. I feel like I am left with nothing. He was the one I looked up to, he inspired me, he gave me advice... he is half of who I am. It goes to show that you don't know what you've got until it's gone! I love you dad, you'll be in my heart forever...I never thought I'd have to say these words so soon, but I know you're shining down on me from heaven. Now I know who my true guardian angel is, I love you dad!!!"

This was written by teenager Emily Byrd. Her dad, an attorney, was the passenger on the ill-fated TBM 700. Her poignant message tore at my heart, because her tragic loss was totally avoidable. Her cry of "why?" needs answers loud enough so that perhaps others might hear, heed, and prevent another "pilot error tragedy" like hers.

For the official findings on this TBM 700 accident, you can go online and find the official report dated March 1, 2003. Rather than review these details, I would like to discuss some factors that make up accidents. Perhaps when these are examined in the context of a tragedy such as the TBM 700 accident, we might – just might – change some of our emotional attitudes that portend in the process of any accident.

No room for hope

It has been said that every event in our lives is preceded by a process. A graduation is preceded by a process of study. A wedding is preceded by a process of courtship. A bankruptcy in business is preceded by a process of poor business judgments. You get the idea, and as a pilot, you also realize that a safe landing is an event that is preceded by a safe process of flight. Conversely, an accident is an event that is preceded by a process that departs a track of safety. The big question is, why do so many of us each year depart the track of safety? What tugs at us and makes us destabilize a flight, leading to utter destruction?

I would like to suggest that one of the major contributors to aviation accidents is hope. Our culture is one that continually markets hopefulness. Whether we are drawn to seek comfort in miracle medicines or wooed by the fortunes of Las Vegas or our state's lottery, we default to hope and summarily dismiss logic and science. I am not arguing a fallacy in being hopeful, but what I am suggesting is that there is no room for hope in the cockpit of an airplane.

You might want to imprint the acronym HOPE on the logical part of your brain. In the context of aviation safety, HOPE might stand for Horrific Outcome Per Emotions. How many times have pilots gone to the performance charts when faced with a decision on takeoff performance in a high-density altitude environment? And how many times did the book say, "It won't fly?" And how many of those pilots then turned to another page in the book listed under HOPE and found the performance figures on their virtual turbocharger? Aha! I think this takeoff will be okay! They default the takeoff to HOPE and away they go, all the way down the runway, until the next step in the HOPE process takes place and that is to pull

up, and guess what? HOPE it'll fly. By the grace of God most of us make it.

Why do airplanes run out of gas before reaching their destinations? Pilot error? Maybe. Pilot default to HOPE? Most likely. An airplane burns a certain number of gallons per hour, has a definite amount of fuel onboard, and travels just so many miles per hour. Winds add to or subtract from the airplane's range. Oh, so many things to calculate and update, and besides, we would really like to avoid a stop for fuel and lose all that time that we are saving by flying this neat airplane. It looks like by calculations it's going to be very, very close. Let's see, maybe we can extend the range of the airplane by filling the extra virtual tank labeled HOPE! Yeah, that's it; we are going to make it. And, by the grace of God, most of us do.

If you want to become an accident statistic quickly, just mix your Hope Operating Manual and Procedures with weather. HOPE your way around a thunderstorm. HOPE your way below minimums on an instrument approach. HOPE your way through icing conditions. HOPE your way through the perils of VFR around obscured mountains. The NTSB files are full of HOPE-related accidents.

But having said all that does not answer Emily Byrd's question as to why her dad is no longer here for her. By now, the NTSB, FAA, insurance companies, and lawyers have probably worked through their respective post-crash processes, and for most of us, their findings are obscured by time. I am not, nor is anyone else for that matter, in a position to know exactly what happened on that fateful day in Leesburg, but from my perspective I think a number of HOPE components were involved.

The flight

As the TBM flight was moving along routinely toward Leesburg, the pilot certainly learned of the weather at Leesburg and understood that it was down to raw minimums, if not actually below. A very simple and minimally inconvenient alternate would have been Dulles International Airport, a mere 9.2 nm away. This would be 20 minutes by car or about $30 by cab for an 11,500-foot runway, world-class lighting, ILS, and live controllers all the way to the tarmac. Having had a hangar at Leesburg, I know firsthand that getting in at your home airport is far more elegant than diverting to an alternate. I have been at that decision point many times when I flew into Leesburg, and I know what issues of completion, convenience, and machismo come into play.

However, while it was perfectly legal to shoot the approach under the reported weather conditions, the ATP-rated copilot could have set an example of aeronautical humility by offering an example of using all available resources to complete the flight safely by choosing a rich alternate. Radar tracks confirmed the unstable approach, and I suspect that the crew resource management process was more under the guidance of HOPE than the truth of airspeed, altitude, attitude, and a sense of presence.

It is sometimes said that our strength can be our weakness, and conversely, our weakness can be our strength. In the case of the TBM 700 pilots, their strength was an aircraft equipped to handle IFR with tremendous technological assistance. But perhaps the false comfort of the high-tech features and a possible lack of technical proficiency detracted from the serious nature of their intended approach. Being wealthy enough to buy a sophisticated aircraft is a strength few enjoy; yet that strength can turn into a weakness when the aircraft can so easily get ahead of its pilot (as did John F. Kennedy Jr.'s Piper Saratoga). Having the wealth to hire a copilot bodes well for perceived safety, but if the crew's aggregate skill set is awkwardly galvanized, critical flight progress will be at the mercy of a fatally flawed HOPE guidance system.

Emotional responses

After 46 years of flying, I must confess that most of what I have learned has been at the cost of traversing the border of aeronautical science and a state of HOPE. As I review my close calls, clearly every incident involved leaning just a bit too far toward HOPE.

Do you remember the first time you went up on a three-meter diving board? I bet you did your homework by talking to friends who made the dive before you. Your desire and peer pressure advanced the idea of making the dive, thereby preparing you for a paradigm shift that would then include having jumped from a lofty diving board. Flying is a never-ending walk up the ladder to higher and higher diving boards, and for all of the Emily Byrds in the world, we need to be 100 percent sure that there is water in the pool.

I work in the consumer electronics industry where I have personally witnessed the digital revolution. Digital technology also lives in aircraft, and its capabilities have brought us unbelievable mechanical reliability, clarity in our radio transmissions, a keen sense of presence in our navigation, and a satellite view of weather that is rendered with stunning resolution. I believe today's technology offers pilots an incredible amount of headroom for safety, but only if we don't let emotions of HOPE get in the way.

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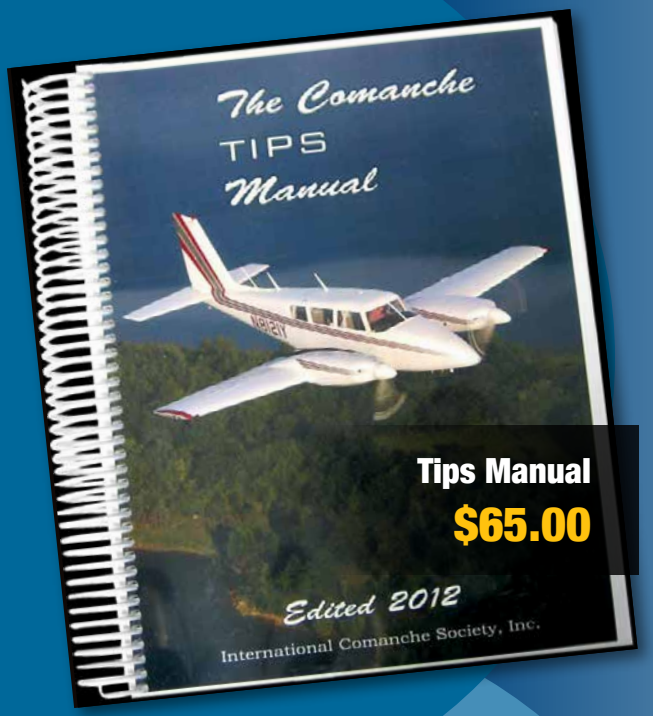

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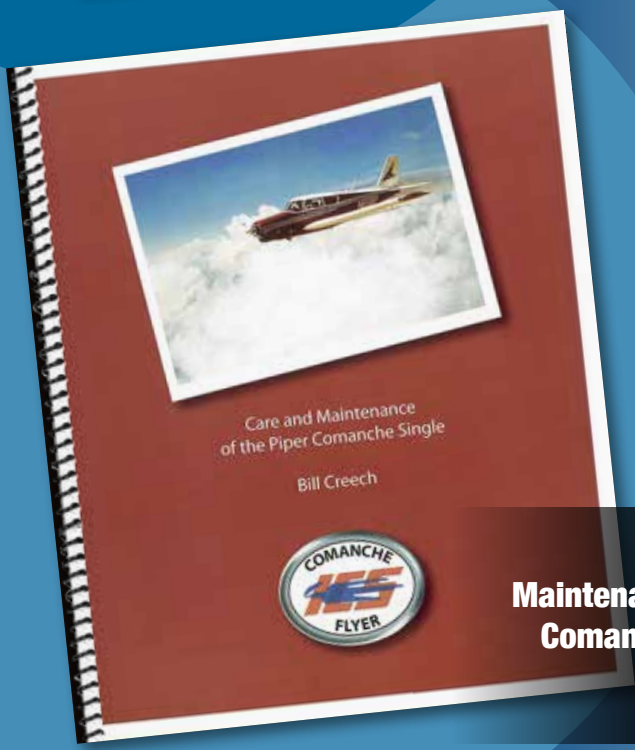

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ICS 2017 Annual General Membership Meeting

June 23, 2017 — Hilton Downtown — Cleveland, Ohio

2017 Candidate Election Results And Budget Approval

by Sally Williams, ICS Elections Committee Chairperson

Congratulations to those ICS members who participated in the electronic ICS 2017 Election. Casting your ballot electronically eliminated the necessity of mailing, organizing and counting paper ballots—a definite cost and time savings. However, as a reminder, our ICS Bylaws state in ARTICLE VIII, NOMINATIONS AND VOTING how we will decide the election of officers, accept the budget, and establish the quorum for the purpose of holding our Annual General Membership Meeting. This is why you were encouraged to cast your ballot as every vote counts. Electronic voting rapidly indicated the number of members who logged into the ICS website and voted, and through safeguards collected and tallied the ballot results. Thanks to ICS Webmaster Dave Fitzgerald for setting up the electronic voting on the ICS website. The ICS Elections Committee urges you to continue to take part in the future of ICS by casting your ballot in every election.

Following are the 2017 election results as reported at the ICS 2017 Annual General Membership Meeting on June 23, 2017 in Cleveland, Ohio. Please keep in mind that everyone did not vote on every candidate and/or issue.

BALLOTS RECEIVED: At the close of voting **130** of **1945** current ICS Members in good standing voted electronically resulting in **6.68%** of the current membership voting.

ELECTION OF OFFICERS

President, Patrick Donovan (Uncontested)
Total Votes: 126 of 130
96.92%
Total Votes: 4 of 130 *ABSTAIN*
3.08%

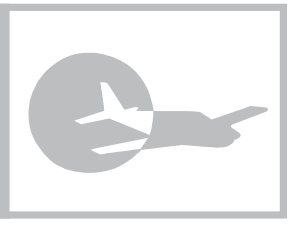
Vice President, Robert Williams (Uncontested)
Total Votes: 128 of 130
98.46%
Total Votes: 2 of 130 *ABSTAIN*
1.54%

Secretary, LaVerne Stroh (Uncontested)
Total Votes: 128 of 130
98.46%
Total Votes: 2 of 130 *ABSTAIN*
1.54%

Treasurer, Robert Berry (Uncontested)
Total Votes: 129 of 130
99.23%
Total Votes: 1 of 130 *ABSTAIN*
0.77%

Ballot Issue #1: Approval of the 2018 Operating Budget published on the ICS website and 2016 financial results as published in the June 2017 issue of the *Comanche Flyer*.

Total Votes: 116 of 130 *YEA*
89.23%
Total Votes: 0 of 130 *NAY*
0.00%
Total Votes: 14 of 130 *ABSTAIN*
10.77%



FROM THE TRIBE CHIEFS

EAST CANADA

August 11-13, 2017
Multi Tribe Fly-In
Québec City,
Ontario (CYQB)
Ottawa, Ontario (CYRO)

The East Canada Tribe is trying to get up and running again, after being in hibernation for several years. As part of this effort, a Multi Tribe Fly-In is being organized to Québec City and Ottawa, Ontario, on the above dates. The current level of the Canadian dollar, at $0.73 US, makes this a particularly attractive time for US flyers to visit Canada.

On August 11, you will fly to Québec City (CYQB) in time to meet downtown for lunch. You don't have to speak French to fly in Quebec, but you will certainly hear it spoken. Québec City is like a piece of Europe transported into North America. It is one of the oldest colonial cities in the continent, and the only one with a defensive wall still intact.

After lunch, we will spend the afternoon sightseeing and have dinner in the Old City.

The following morning there will be time for a little more exploration of the city before heading to the airport for a short 1-hour 15-minute flight to Ottawa, the capital city of Canada. We will use the Rockcliffe Airport (CYRO) which is home to the Canadian Aviation Museum. You can visit that before we all get together for the trip to our downtown hotel, located near the ByWard Market, one of the most popular tourist areas in the city.

The hotel is within walking distance of some of the major tourist attractions, such as the parliament buildings and the Canadian War Museum. This year is the 150th anniversary of the formation of Canada, so there are numerous special events happening all summer. Check them out at *www.ottawa2017.ca*.

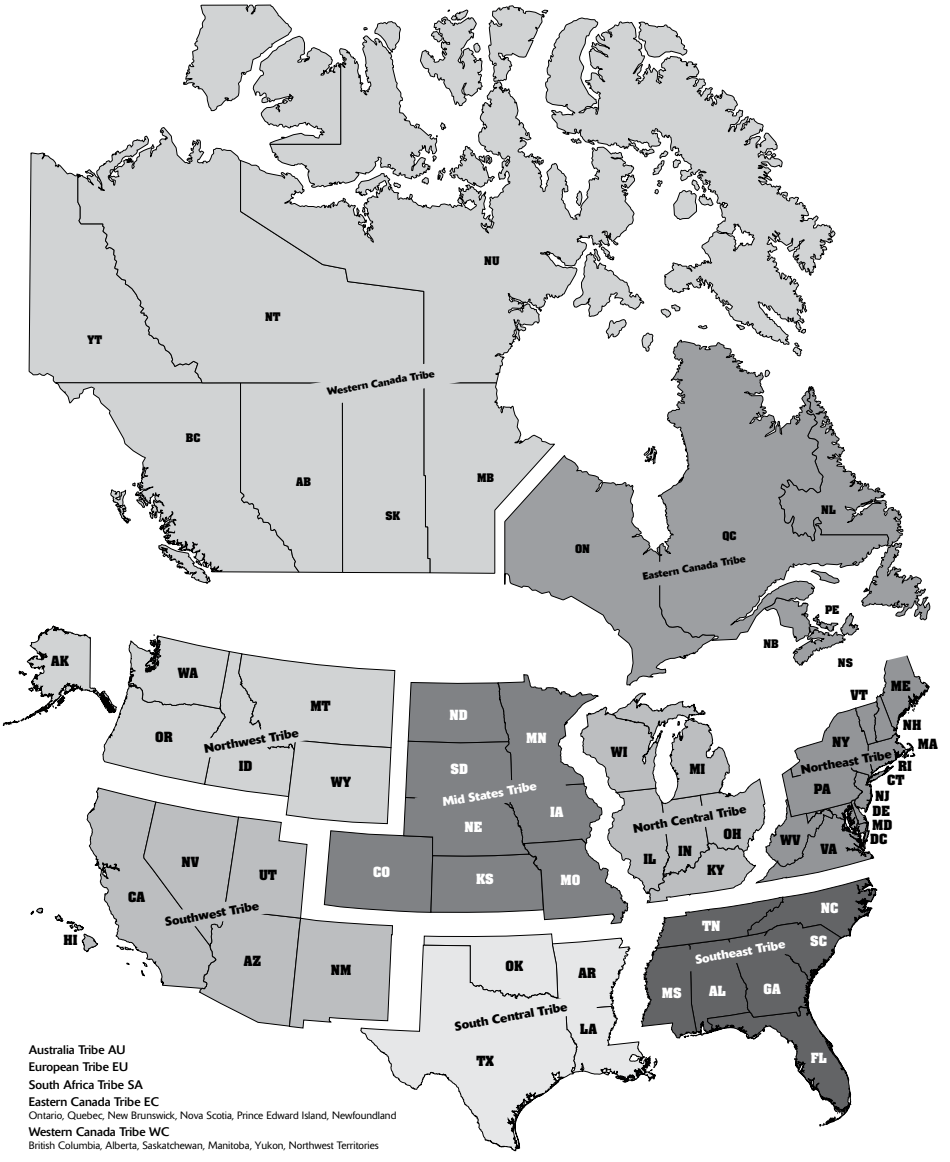
We will again enjoy dinner together at a downtown restaurant, and the next day will be set aside for sightseeing around Ottawa. On Sunday, we will spend more time looking around, then head out to CYRO for your trip home ... or stay another week!

You have to make the decision to participate in good time, as there are a few formalities that cannot be left until the last moment. For example, you have to obtain a CBP decal for your aircraft, and enroll in the CBP's eAPIS electronic manifest system. We have people who know the ropes on border crossing and will be happy to assist you in getting things organized.

Costs:

- There will be a landing fee of $17.00 US.
- Overnight parking at CYQB will be TBD.
- Hotels will be in the order of $100-$120 a night.
- You will need to purchase a US Customs decal for $27.50, and pay NavCanada's quarterly navigation fee of around $15.00 US.

REGIONAL TRIBE ORGANIZATION



- Avgas in Canada averages around $4.00 per US gallon.

Contact:

Al Hepburn, Assistant Tribe Chief – East Canada Tribe
Ph: (613) 687-4320
Email: *g.alan.hepburn@gmail.com*

EUROPEAN TRIBE

October 5-9, 2017 European Tribe Fly-In Bled, Slovenia

INFORMATION UPDATE

Hotel: Grand Hotel Union – Ljubljana, Slovenia

The hotel should be booked individually as soon as possible.

Contact for booking is as follows:

Marijana Kuhelj
Marijana.kuhelj@union-hotels.eu
Phone: +386 1 308 1071
Fax: +386 1 308 1908

For preferred rates, please mention "ICS Pilot Group" when booking.

Double-room rate (Oct. 5-9) is Euros 1,120 which includes B&B, Wi-Fi, use of swimming pool and gym, plus Welcome dinner on Oct. 5 and Farewell dinner on Oct. 8.

Single room cost is Euros 920 for the four nights with the same conditions as above.

NOTE: A total of 20 hotel rooms have been blocked until the end of August. All rooms should be booked by then (at the very latest) to guarantee a place which is limited to 40 max.

Program:

Thursday, October 5 – For those flying their own aircraft into Bled, arrival should be by 16.00 or earlier. There will be drinks and snacks available until leaving around 5 pm by coach for Ljubljana centre and hotel.

There are also scheduled flights to Ljubljana by Easyjet and Adria Airways from the UK and most other major airports in Europe. Those flying their own planes from the UK should clear customs in an EU airport en route; immigration and customs are not necessary in Slovenia. Airstrip is sealed runway 1100 meters. No instrument approach is available but cloud break, if needed, can be made at nearby main airport.

DATE	TRIBE	EVENT/LOCATION	INFO SOURCE/HOST
August 11-13	EC NE	August 11-13, 2017 Multi Tribe Fly-In Québec City, Ontario (CYQB) Ottawa, Ontario (CYRO)	Al Hepburn, (613) 687-4320 g.alan.hepburn@gmail.com
Aug 12	MS	Breakfast/Lunch Fly-In 10:00 am Rosecrans Airport St. Joseph, MO (KSTJ)	For restaurant count, RSVP: flyingmacs@aol.com
Sep 16	MS	Landing Restaurant – 10:30 am Keeter Center at College of the Ozarks – 11:30 am M. Graham Clark Downtown Airport, Branson, MO (KPLK)	For restaurant count, RSVP: 61comanche@earthlink.net
Sep 16 (17*)	NE	Lunch/Museum Fly-In Village Tavern William T. Piper Memorial Airport Lock Haven, PA (LHV)	Ron and Lynn Ward ronandlynn33@gmail.com Register at: *http://www.quietcornerbands.org/Forms/ICS-NE Flyin RegForm.htm*
Oct 5-9	EU	European Tribe Fly-In Bled, Slovenia	Jeff Hutchinson hutchinson48@gmail.com
Oct 14	MS	BBQ Dinner Fly-In – 5:00 pm, Cook Airfield Rose Hill, KS (K50)	For parking purposes, RSVP: smsgt2000@msn.com Four Comanches on field Camp out or Hampton Inn in Derby, KS
Oct 14 (15*)	NE	Lunch Fly-In Fiorertino's Lancaster Airport Lancaster, PA (LNS)	Ron and Lynn Ward ronandlynn33@gmail.com Register at: *http://www.quietcornerbands.org/Forms/ICS-NE Flyin RegForm.htm*
Oct 20-22		CPTP Comanche Training Lancaster, Texas (LNC)	Bob Cretney, *bob.cretney@lecwireless.com,* (214) 725-6584 Dennis Carew, *capt.carew@gmail.com,* (920) 749-9558, (920) 750-0129 cell George Richmond, *cptp-george@cox.net,* (402) 319-2813.
Oct 21	MS	Lunch Fly-In High Flyer Grille – 11:30 am Alton, Illinois (KALN)	For restaurant count, RSVP: pa24pilot@centurylink.com
Nov 11 (12*)	NE	Lunch Fly-In Arena's at the Airport Delaware Coastal Airport Georgetown, DE (GED)	Ron and Lynn Ward ronandlynn33@gmail.com Register at: *http://www.quietcornerbands.org/Forms/ICS-NE Flyin RegForm.htm*
Nov 12	MS	Lunch Fly-In Nick's Family Restaurant –11:00 am Jefferson City Memorial Airport Jefferson City, MO (KJEF)	For restaurant count, RSVP: flyingmacs@aol.com
Dec 2	MS	Breakfast/Lunch Fly-In Billard Airport Restaurant – 10:00 am Philip Billard Municipal Airport Topeka, Kansas (KTOP)	For restaurant count, RSVP: flyingmacs@aol.com

* Indicates rain day will be the following day.

** At these fly-ins we will attempt to set up Young Eagles Flights with the local EAA chapters. All attending Comanche pilots are encouraged to participate.

Those arriving via a scheduled flight should make their way to the hotel via bus or Taxi from the main airport about 15 minutes out of town.

This evening we will all meet at the bar for drinks and a three-course dinner at the hotel.

Friday, October 6 – Coach from hotel around 9 am to Bled Castle and Lake Bled; followed by a visit to Bohinj Lake and lift to Vogel at the top of the mountains for more sightseeing and a light lunch before returning to the hotel around 4 pm. Friday evening we take a short walk through the town centre to a restaurant for a typical local dinner and drinks.

Saturday, October 7 – Coach at 9 am to Postanja Caves, the largest of their kind in Europe. Cave tour is by special open train. After the caves, we will visit a nearby castle unique to the region. On the way home, we plan on stopping in Bistra to visit the Technical Museum of Slovenia which, in fact,is situated in beautiful grounds and features many cars, motorcycles, and other "gifts" given to General Tito at the time he ruled all the Bulkan countries before his death.

Saturday Evening is the Gala Dinner at the renowned five-star JB Restaurant,a short walk from the hotel.

Sunday, October 8 – Walk to a nearby Antique market and to the centre of town to explore the buildings and shops. There is also a unique food market with stands preparing different foods from around the world with all dishes set at Euro 5 per person. A great place for a light (or heavy lunch) surrounded by good pubs and lots to see. Sunday afternoon there is the possibility to visit the fantastic castle that overlooks the entire city; then take in a guided tour of the history of the city and castle before returning to the hotel for a group farewell dinner. Or for those that prefer they can make their own arrangements in one of the many local restaurants.

Monday, October 9 – Coach to Bled Airport and departure. I will check that fuel is available at Bled, which is the best place to refuel in the area.

IMPORTANT:

Please confirm your attendance and numbers when booking the hotel, and contact me at *Hutchinson48@gmail.com* if you have any questions. When the dinners, tours, coaches, and numbers, etc., have been finalised, I will advise any changes and the additional cost per head, which should then be sent directly to Peter Greenyer, as usual.

Looking forward to catching up again!

Best regards,

Jeff Hutchinson
Cell: +33 6311 85786
Hutchinson48@gmail.com

NORTHEAST TRIBE

Lunch Fly-Ins

September 16, 2017
Lunch/Museum Fly-In
Village Tavern
William T. Piper Memorial Airport
Lock Haven, PA (LHV)

William Piper Memorial field (LHV) is the home of the Comanche. Come and visit the Museum to see where our aircraft were built and enjoy a fine luncheon.

October 14, 2017
Lunch Fly-In
Fiorentino's Restaurant, Bar & Patio
Lancaster Airport
Lancaster, PA (LNS)

Lancaster (LNS) is a towered field in the heart of Pennsylvania Dutch country, with Florentino's excellent Italian restaurant.

November 11, 2017
Lunch Fly-In
Arena's at the Airport
Delaware Coastal Airport
Georgetown, DE (GED)

Once again we return to Coastal Delaware (GED), a popular location near the Atlantic coast. Arena's at the Airport restaurant is in the FBO. While at GED, visit the Delaware Aviation Museum and see the B-25 "Panchito" up close and personal.

*** At these fly-ins we will attempt to set up Young Eagles Flights with the local EAA chapters. All attending Comanche pilots are encouraged to participate.*

SOUTH CENTRAL TRIBE

Weekend or Saturday Lunch Fly-Ins

One of the most enjoyable aspects of owning and flying your Comanche is the ability to travel to Comanche functions and experience the camaraderie and knowledge of other owners. Some events are purely social, others include seminars (mostly technical and/or knowledge-based), and the remaining are a combination of both with attractions for the entire family. If it is difficult for you to attend a full weekend fly-in, you may find a Saturday lunch gathering with that same Comanche camaraderie of sharing flying stories, hangar talk, and lunch more to your liking. Make plans to attend as many of these events as you can. Whether your own Tribe or any of the other Tribes is hosting it, you are welcome to attend. The friendships you will make at these events will be lasting memories. And if you have a favorite destination in your region, think about hosting one of these events yourself. If not in your region, just contact the fly-in coordinator in that particular region and discuss it with him/her. Should you need a little help getting started and/or tips on organizing either type of fly-in, please contact Bruce Thumann at *bruce@contractbuilderssupply.com* or (713) 875-3056.

Tribe Email Updates

If you are not receiving the South Central Tribe's Fly-In and/or Tribe-specific email notices and would like to, please email Bruce Thumann at *bruce@contractbuilderssupply.com.* He will make sure to amend the SC Tribe email list to include your address. Most updates will be for upcoming events that will also be located in the ICS National Newsletter. Some, however, may be important last-minute details not appropriate for the National Newsletter.

SOUTHEAST TRIBE

South Carolina Breakfast Club

This is still a great low-commitment fly-in. We will continue to join the South Carolina Breakfast Club (for breakfast) on occasion. The meal is about $7.00—this is a well-organized event. If you have not been to one give it a try, they are a lot of fun. Here is the link: *http://www.flyscbc.com*. Hope to see you there.

Phillip Hobbs
ICS SE Tribe Chief
Matthews, NC
(704) 651-9417
Phobbs1@carolina.rr.com

TRAINING EVENT

October 20-22, 2017
CPTP Comanche Training
Lancaster, Texas (LNC)

Bob Cretney will host his annual Comanche Training Event in the Cold War Museum on the Lancaster Regional Airport (LNC), Lancaster, Texas, October 20-22, 2017.

The CPTP Course will consist of:

Friday – Systems Training Ground School in the excellent Cold War Museum Classroom at the LNC Airport.

Saturday – Hands on Systems Training with a Comanche on jacks.

Saturday & Sunday – Comanche Flight Training

Friday lunch will be Texas BBQ served in the Cold War Hanger, compliments of Aircraft Insurance by Duncan. Dinner on Friday evening will be at a local restaurant. Saturday lunch will be in the Taxiway Café on the Airport at LNC. Dinner on Saturday night will be a private affair at the Taxiway Café, sponsored by Aircraft Insurance by Duncan. It has been a real hit, as we are by ourselves, without the usual restaurant noise and distractions.

Hotel accommodations are pending.

Fees: $750.00 > Full Course
– $100.00 > if paid by October 1
$650.00 > Total with discount

$450.00 > Ground School only
– $50.00 > if paid by October 1
$400.00 > Total with discount

For registration, contact Dennis Carew:
(920) 749-9558
(920) 750-0129 (cell)
www.comanchetraining.com

For details, contact:

Bob Cretney
bob.cretney@lecwireless.com
(214) 725-6584

Dennis Carew
capt.carew@gmail.com
(920) 749-9558
(920) 750-0129 (cell)

George Richmond
cptp-george@cox.net
(402) 319-2813.

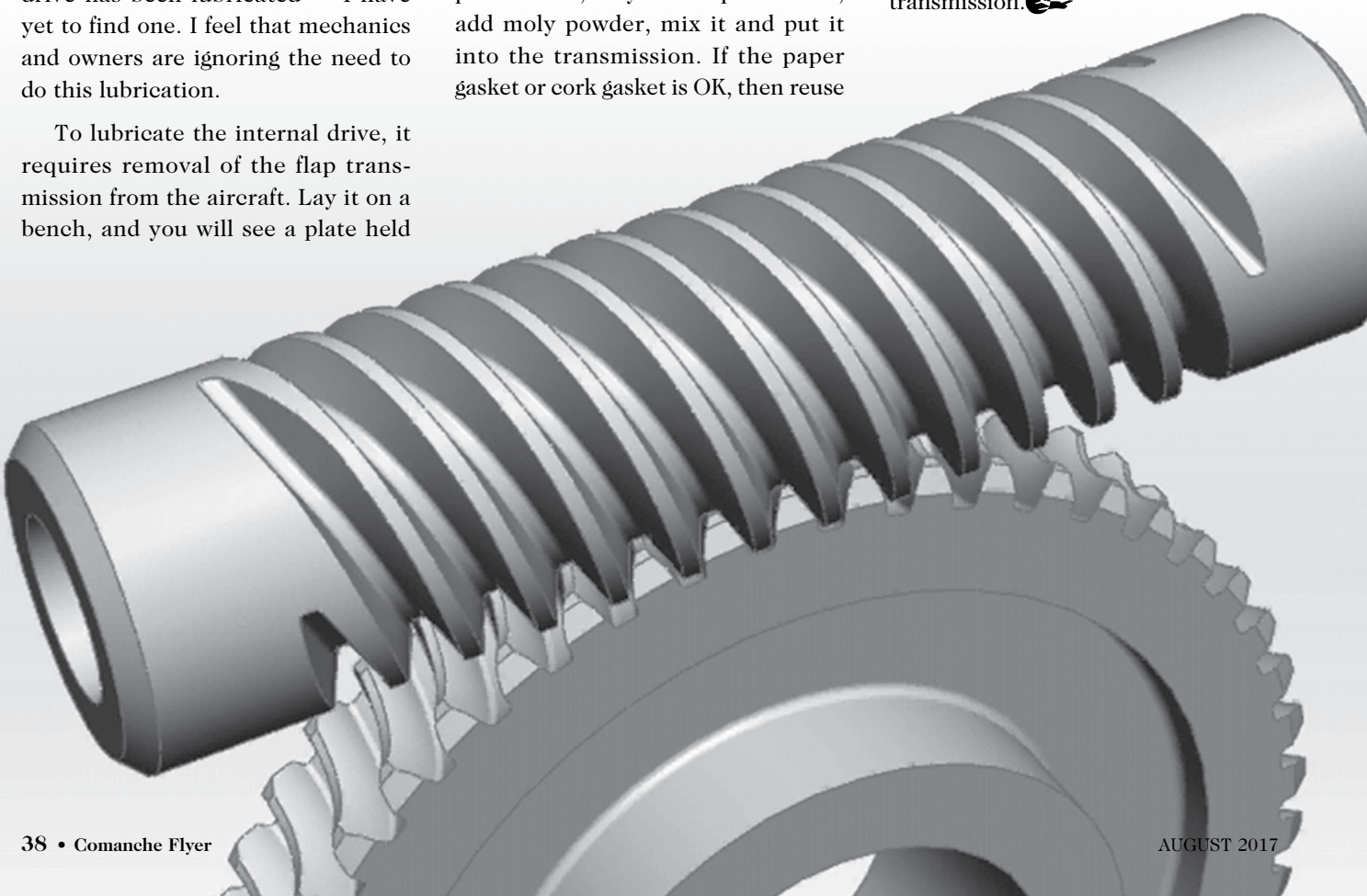
Maintenance of the Flap Drives

by Pat Barry

On the Twin Comanche, and any single with electric flaps, there are two worm drives in the flap transmission. One is external and is easy to lubricate when the floor is opened up at annual inspection time. The other is an internal worm drive, and I have grown aware that very few mechanics seem to be mindful of the fact that the internal worm drive even exists. I've made it a point over the past year or two to look for a log book entry where it notes that the internal worm drive has been lubricated — I have yet to find one. I feel that mechanics and owners are ignoring the need to do this lubrication.

To lubricate the internal drive, it requires removal of the flap transmission from the aircraft. Lay it on a bench, and you will see a plate held in place by 5 or 6 screws depending on model of transmission. Remove the plate, and you will see the internal worm drive. When I did this on my PA-30, the lubrication was dry and had the appearance of chocolate cake — granular, cakey, and lubricating nothing. I flushed out the dry lubrication with MEK (use anything that will dissolve old grease) and added the recommended lubricant with an additional 5% molybdenum powder. If the recommended lube is out of production, buy the replacement, add moly powder, mix it and put it into the transmission. If the paper gasket or cork gasket is OK, then reuse it. Otherwise, order a replacement through a Piper dealer or Webco. (I bought mine at Webco.)

This job doesn't need to be frequently done — service manual suggests 500-hour intervals. But I recommend that every owner have this reviewed since our fleet is fifty years old, and I'm guessing almost the whole fleet has never had this done. I've been asking mechanics if they are doing it, and I have yet to find a mechanic that knows that there is an internal worm drive in the flap transmission.



INTERNATIONAL COMANCHE SOCIETY, INC.

KEEP YOUR MEMBERSHIP GOING!

You know how valuable the International Comanche Society has been to you for helping you learn about and enjoy your Comanche airplane, both singles and twins, providing a high-quality magazine, and for the camaraderie you've experienced among your fellow members. Don't let your membership lapse or miss a single issue of *Comanche Flyer*! And for convenience, we are now offering multiple-year memberships! Fill out the renewal form below, and e-mail, fax, or mail it back to us, and keep enjoying the International Comanche Society!

PLEASE PRINT

Name: _____ ICS Number: _____

Address: _____

City: _____ State: _____ Zip: _____ Country: _____

Telephone: _____ Fax: _____

E-Mail: _____

Aircraft Model: _____ Based Airport Identifier: _____

Registration/Tail #: _____ Serial #: _____

Renewal Selection

U.S., Canada, Mexico*	UK, Europe, Asia, and Africa**	All Other Countries
☐ One year – $78	☐ One year – $104	☐ One year – $92
☐ Two years – $150	☐ Two years – $200	☐ Two years – $176

*Includes second-class mailing of the *Flyer*
**Includes $9 returned to the EU tribe for communications

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☐ **I would like to donate an additional $25 toward the ICS General Fund.**

YOUR SPOUSE CAN JOIN, TOO!

One of the beauties of owning and flying your own airplane is the quality time you get to spend with your spouse, traveling to new destinations or social events, and filling the memory book for years to come. Your spouse can also join the International Comanche Society for only $39.00! With a spousal membership, your spouse will receive a Membership Kit containing a folder, membership card, membership certificate, a cloth ICS patch, ICS decal, access to the popular ICS website and discussion forums, and voting rights! Simply fill out the form below and return it with payment to start your spouse's membership today!

PLEASE PRINT

Your Name: _____ Your ICS Number: _____

Spouse's Name: _____

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City: _____ State: _____ Zip: _____ Country: _____

Telephone: _____ Fax: _____

E-Mail: _____

Spousal Membership

☐ One year – $39 ☐ Two years – $78

PAYMENT INFORMATION (Please total all selections)

☐ MC ☐ Visa ☐ Check or Money Order

Credit Card Number: _____ Exp. Date: _____

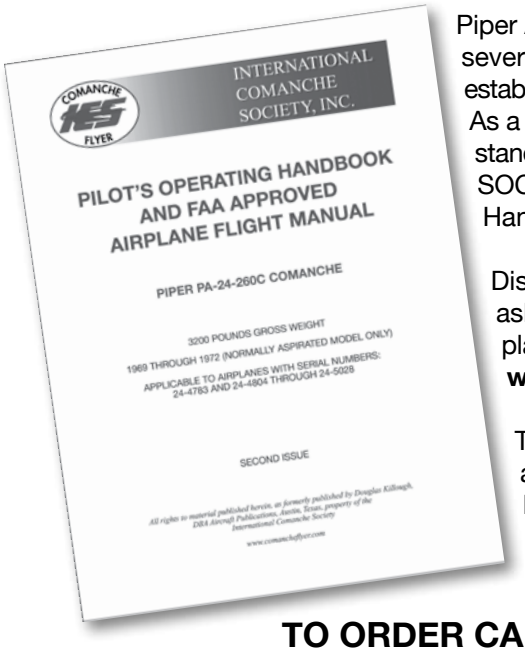
Amount Paid (U.S. Funds): _____

Authorized Signature: _____

Please mail to: International Comanche Society, P.O. Box 1810, Traverse City, MI 49685-1810.

PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL

"Formerly Published And Produced by the late Douglas L. Killough"



Piper Aircraft ceased production of the Comanche and Twin Comanche in 1972, several years before the General Aviation Manufacturers Association (GAMA) established specifications for the contemporary Pilot's Operating Handbook (POH). As a result, the Owner's Handbook published by Piper is incomplete by modern standards. Now available EXCLUSIVELY from the INTERNATIONAL COMANCHE SOCIETY, INC., through it's licensed agents, is the upgraded Pilot's Operating Handbook and FAA approved GAMA format Airplane Flight Manual.

Discounted to current ICS members at $75.00 each, plus shipping (must ask for ICS member discount and provide ICS membership number when placing order). **Available only through Webco Aircraft at 316-283-7929 or www.webcoaircraft.com. Available Bound or Unbound/Un-punched.**

There are SIXTEEN different GAMA format manuals available for the Piper Single and Twin Comanche. Please order your manual by "Manual Number 1-16" from the chart below.

TO ORDER CALL WEBCO AIRCRAFT AT 316-283-7929 OR WWW.WEBCOAIRCRAFT.COM. Specify "Bound" or "Unbound/Un-punched."

Order Qty	Manual Number	Model	Gross Weight	Year(s) Mfg	Flight Manual Report Number	SN Begin	SN End
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	02.)	250	2800	1958-60	997	103	2298
	03.)	250	2900	1961	1127	2299	2843
	04.)	250	2900	1962-64	1179	2844	3687
	05.)	250	2900	1962-64	1220 (FI)	2844	3687
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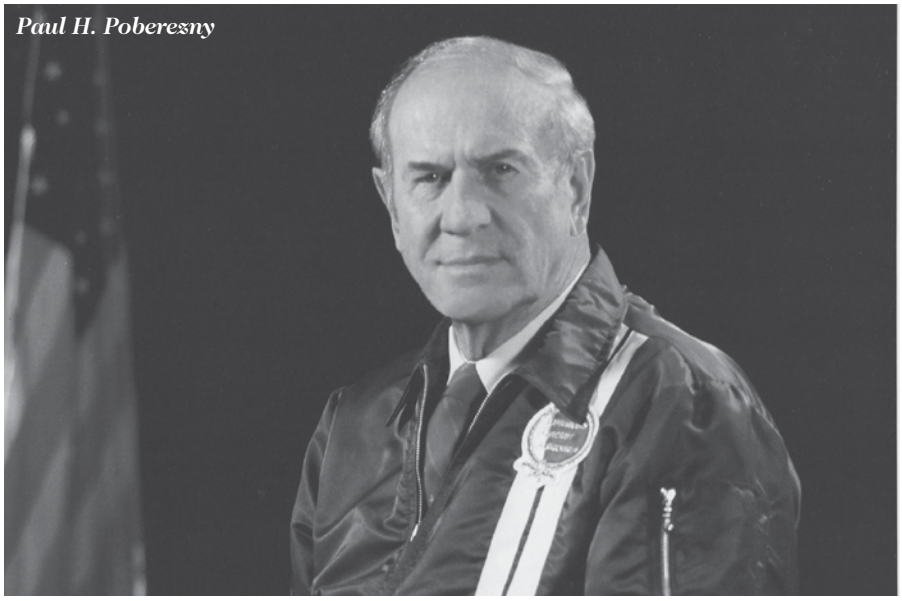
	12.)	400	3600	1964-65	1295	26-3	148
Twins:							
	13.)	PA30	3600	1963-68	1269	30-2	1744
				1969	1515	1745	2000
	14.)	PA30T	3725	1964-68	1269 (Turbo)	143	1744
				1969	1515 (Turbo)	1745	2000
	15.)	PA39	3600	1970-72	1605	39-1	155
	16.)	PA39T	3725	1970-72	1605 (Turbo)	1	155

(continued on page 42)

"Freedom to create and build … to dream … to fly."

by Pat Donovan, ICS President


Paul H. Poberezny

Freedom is something that is often taken for granted … until it is lost. Freedom is a precious gift that has been given to us by our forefathers and by all who served—and died—in wars fought in its name. Yet, there are those who would chip away, erode and destroy this most basic human right. Restrict our ingenuity and inventiveness.Take away our ability to move freely across our borders … to dull our senses and blur our view from the top.

For more than 35 years [now 55 years], EAA has carried this banner of personal freedom. We have persevered … and won many battles along the way. I believe that, in some small way, we have made a difference. 125,000 EAA members, speaking with a strong and unified voice, help keep the flame of freedom burning brightly. However, many challenges remain.We need your help to fuel that fire…to build stronger representation in governmental affairs, continue vigorous activities at the local level – through EAA's strong Chapter network – and further develop youth programs so that the aviation challenges of the future can be met with skill, talent and knowledge.

The price of Freedom is measured not in time but in commitment. Join us. ***Freedom is what EAA is all about.***"

While the quote above is by Paul H. Poberezny and directed to the Experimental Aircraft Association many years ago, the words apply to ICS, to general aviation, to so many aspects of our lives. Where the quote refers to Chapters, Tribes would be appropriate for ICS. Take an active part in your Tribe any way you can. Urge other Comanche owners to join ICS. You can make a difference.

FEATURE

Diagnosing Mental Illness, Medication and Certification

by Jerrold Seckler

Consider two patients. Patient A develops abdominal pain and visits his doctor, who notes the patient has a low-grade fever and tenderness localized to the lower right side of the abdomen. Additionally, if the doctor presses slowly on the lower abdomen and then suddenly lets go of the pressure, the patient winces. A CT scan or other imaging study is ordered and it's obvious that there is fluid surrounding the appendix, which is itself swollen.

The patient is taken to the operating room where the appendix is removed. When examined by the pathologist, the removed appendix shows the typical findings of acute inflammation. The next day the patient feels fine. This patient had a clearly defined anatomic condition that could be objectively demonstrated by physical examination, radiographic imaging and then confirmed by pathologic examination of the abnormal tissue that was removed.

He had acute appendicitis. Furthermore, this patient could have gone to any of hundreds of doctors and all of them would have reached the same diagnosis and recommended the same treatment.

Patient B, on the other hand, complains of feeling tired, sad, and sometimes out of control. He is having trouble sleeping. His work performance is suffering and he is drinking or smoking more in an effort to relax and "get a grip" on it. If he sees a doctor, the physical examination will be normal. Any lab or imaging studies will be normal as well. The patient has no objective evidence of any disease, yet he will be given a diagnosis.

What's more, that diagnosis might vary from doctor to doctor depending on how they interpret his subjective symptoms or how the patient himself explains them. The severity of the condition can only be based on those same subjective symptoms. Patient B is suffering from some sort of depression.

Why should this matter to pilots? The FAA is quite concerned about depression and other diagnoses that fall under the general category of mental or psychiatric disturbances. FARs 67.107, 67.207, and 67.307 list "mental conditions" and substance abuse issues that must result in the denial of a medical certificate. Because the diagnosis of these conditions are in large part highly subjective, how a given practitioner describes and classifies the condition can make a great deal of difference in how the FAA will react. Furthermore, the medications usually prescribed for psychiatric disturbances all work on the chemistry of the brain, modify behavior, and therefore are viewed with great suspicion by the FAA.

To add insult to injury, the conditions classified as "mental illnesses" vary with societal norms, which change over time. Yesterday's psychiatric condition is today's non-pathological lifestyle choice. For example, homosexuality was classified as mental diseases until fairly recently; and conditions that were previously classified as laziness, malingering, etc. are now bona fide mental "conditions" with specific diagnoses. In the classification of mental conditions, the only constant is change.

In an attempt to rationalize the methodology used to diagnose mental disorders, the American Psychiatric Association publishes a thick book called Diagnosis and Statistical Manual of Mental Disorders in an attempt to accurately describe a variety of conditions and what must be present to diagnose them. The most recent iteration of this series is Volume V and this Bible of Psychiatric Diagnosis is called DSM-V. This book is used in conjunction with the World Health Organization's "International Classification of Diseases" (ICD-11) as the standard for the diagnosis of mental conditions.

DSM-V is quite complex. Mental conditions are broken down into 20 major groups, including Schizophrenia Spectrum and Other Psychotic Disorders, Bipolar and Related Disorders, Depressive Disorders, Anxiety Disorders, Personality Disorders, Neurocognitive Disorders and so on. The diagnoses described are grouped according to age of onset, internal factors like anxiety, mood changes, and physical symptoms, as well as, external factors like disturbances of conduct, impulsive behavior, substance abuse and so on.

As you might imagine, the various groups overlap in many ways and this can lead to confusion in the precise classification of a specific patient. It is this uncertainty that makes the FAA uncomfortable. It is also why it can be difficult to get a Special Issuance (SI) for psychiatric diagnoses. In evaluating a diabetic or cardiac patient for an SI, the FAA has objective data to use in making its decision. Such objective data is lacking in most psychiatric situations and therefore psychiatric conditions are problematic when it comes to deciding who should be allowed to fly and who should not.

Let's consider some specific diagnosis and see how they can affect a pilot's ability to obtain or maintain a medical certificate.

Many psychiatric conditions are clearly incompatible with flying. Schizophrenia and disorders where the patient is out of touch with reality are clear examples. Patients who have a history of suicidal ideation form another group that will not, and should not, be medically certified. The crash of Germanwings 9525 in 2015, where the first officer locked the captain out of the cockpit, and flew his Airbus into a mountain, thereby simultaneously committing suicide and murdering 149 innocent bystanders brought this issue into clear focus. There is clearly a problem with these diagnoses, as medical ethics prevents a physician from divulging information about their patients, but if a pilot is diagnosed with a significant psychiatric disorder and fails to report it on his FAA medical application, there is a good chance it will not be discovered by the examiner. This issue of patient confidentiality versus aviation safety is a hot topic for certification and regulatory agencies worldwide.

Unfortunately, the majority of psychiatric diagnoses are not clear cut. When does sadness become depression? When does vigorous hyperactivity become mania? When does compulsive behavior, something that can be really useful for a pilot, cross into abnormally compulsive behavior? Generally speaking, the line between normal and pathological is drawn when the behavior in question begins to interfere with normal everyday activities. When feeling low makes it hard to go to work, or accomplish tasks or personal goals, or when compulsivity gets in the way of normal functioning, we call it pathologic. It's very important for pilots to be diagnosed accurately when they have complaints that can point to actual psychiatric problems. Situational sadness, for example, is not depression. Yet it is often treated as if it is. The problem for a pilot arises when he or she goes to a health care professional and is given a psychiatric diagnosis. This diagnosis will almost certainly come with a prescription for a sedative, a tranquilizer, or an anti-depressant, and at that point the pilot will run into major problems with the FAA.

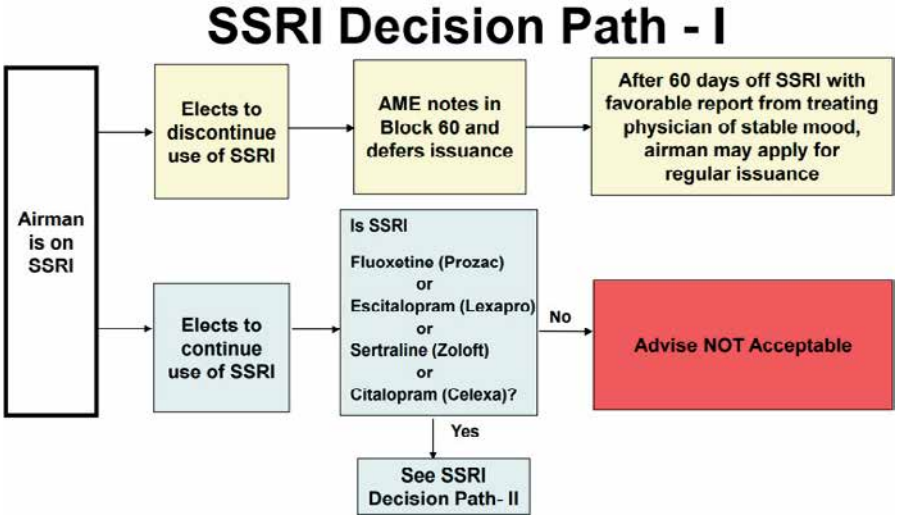
Briefly stated, most psychiatric diagnoses are disqualifying and an AME cannot issue a medical certificate. These diagnoses include: Adjustment disorders requiring medication, Attention Deficit Disorders, Bipolar Disorders, Minor Depressions requiring medication, Major Depressive Disorders, Personality Disorders, Psychosis, History of Suicide Attempt and Substance Dependence. While an applicant might be able to obtain a certificate via the Special Issuance Process, the AME is not allowed to issue the certificate to an applicant with any of those conditions, and those categories make up the bulk of psychiatric diagnoses.

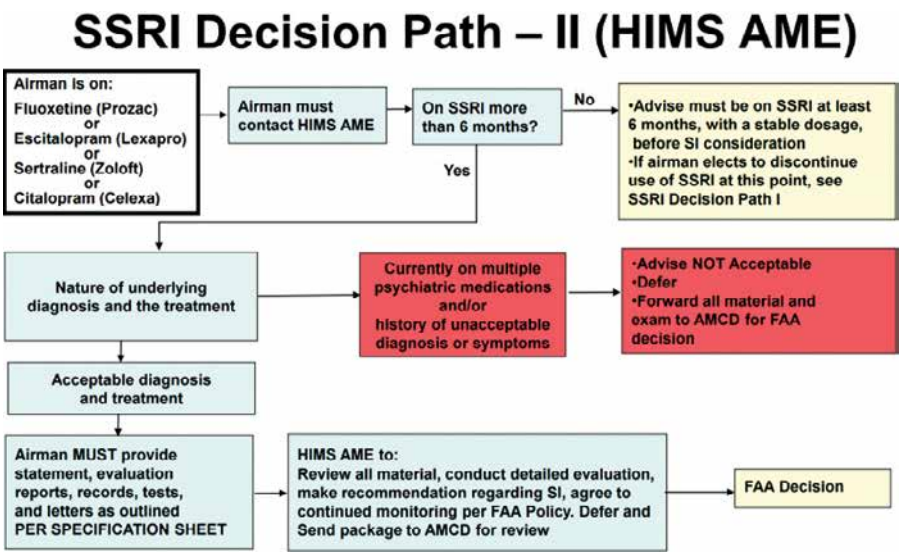
The real difficult part for pilots who have psychiatric issues is that while many psychiatric conditions can be fairly well managed with medications, essentially all psychoactive medications, with four specific exceptions, are not acceptable to the FAA. The FAA will not certify pilots who are taking sedatives, tranquilizers, antipsychotic drugs, antidepressant drugs

(with four exceptions), analeptics (nervous system stimulants), anxiolytics (anti-anxiety agents), and hallucinogens. The four exceptions are all in the antidepressant drug category and are specific SSRI (Selective Serotonin Reuptake Inhibitors). Serotonin is a chemical that is involved in transferring information between neurons (nervous system cells), and SSRI drugs increase the amount of serotonin available in the brain. These drugs are quite useful in treating depression, but because they increase the available serotonin levels in the brain, and since serotonin affects nerve cell transmission generally, they have potential side effects, including drowsiness, nausea, insomnia, diarrhea, restlessness, dizziness and blurred vison.

The four specific SSRI medications that can be approved by the FAA are: Fluoxetine (Prozac), Sertraline (Zoloft), Citalopram (Celexa), and Escialopram (Lexapro). But even here, there are conditions.

Below is the decision tree that an AME must use when evaluating an applicant on one of the "approved" medications:



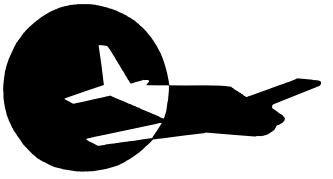


As you can see, getting approval when you are on an "approved" SSRI antidepressant is not for the faint of heart. It's time consuming, expensive and generally very difficult. It requires visiting with an HIMS AME, an AME with special training in "Human Intervention and Motivation Study" programs. These programs were originally set up to deal with pilots who had substance abuse issues and have now been expanded to deal with pilots on SSRI medications. There are only about 200 HIMS AMEs in the country, so finding one may present issues for pilots who live away from large metropolitan areas.

The very few approved psychiatric medications and the difficulties in getting a medical certificate when taking one of those specific medications presents a real dilemma for a pilot. On the one hand, if a pilot has a true psychiatric condition and needs medication then he ought to be on medication, even if this will make it difficult for him to fly. On the other hand, if a pilot can do without such medication he can continue to fly, but if his symptoms are significant he may actually be more at risk than a pilot who is properly medicated. It's a real Catch 22. It will be interesting to see how, or if, the FAA addresses this problem when it issues rules implementing the medical certification reform promised in the Pilot's Bill of Rights (PBOR) II legislation.

About the Author: Dr. Jerrold Seckler is retired after practicing medicine (urology) for over 40 years and as an active AME for 25 years. He has over 6,000 total hours, 2,200 of those in his 2001 Cirrus SR22. He is an ATP, CFII, former COPA Board Member and a ground instructor at Cirrus Pilot Proficiency Programs.

The items discussed in this column are related to experiences by Dr. Seckler in his many years as an AME, and made hypothetical for the article. Any information given is general in nature and does not constitute medical advice.



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- **YEAR,** Model Year of Aircraft
- **MODEL,** PA 24-180, 250, 260, 400
- **SERIAL NUMBER,** Serial Number of Aircraft
- **N-NUMBER,** Registration Number of Aircraft
- **TOTAL AIRFRAME TIME,** Total Hours On Airframe
- **AIRFRAME DAMAGE HISTORY,** Any Damage History e.g. Gear Up Landing
- **TOTAL ENGINE TIME,** Total Hours On Engine Since Factory New or Remanufactured
- **ENGINE TIME SINCE TOP OR MAJOR OVERHAUL**
- **PROPELLER TIME,** Total Time On Prop Since New or Overhaul
- **ANNUAL INSPECTION DATE**
- **FLIGHT INSTRUMENTS,** Standard Gyro Panel, Electronic Flight Instrument System
- **RADIO / NAVIGATION EQUIPMENT LISTING,** Communications & Navigation Equipment Listing e.g. GPS, ILS, VORs
- **WEATHER ADVOIDANCE EQUIPMENT,** Stormscope, Radar,
- **SPECIAL EQUIPMENT LISTING,** Engine Monitor (EGT, CHT, Fuel Flow, etc.)
- **AUTOPILOT,** Type & Make of Autopilot
- **INTERCOM**
- **INTERIOR CONDITION & NUMBER OF SEATS**
- **EXTERIOR MODIFICATIONS,** Gap Seals, Wing Tips, Speed Mods, Windshield
- **PAINT CONDITION**
- **HANGERED OR TIED DOWN**
- **AD NOTE COMPLIANCE**
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- **ASKING PRICE**
- **CONTACT PHONE NUMBER**
- **CONTACT E-MAIL**

Abbreviation Key:

A/C	Air Conditioning
AD's	Airworthiness Directives
ADF	Automatic Direction Finder
AH	Artificial Horizon
A&P	Airframe & Powerplant Mechanic
AI	Aircraft Inspector
A/P	Audio Panel
AP	Autopilot
CDI	Course Deviation Indicator
CHT	Cylinder Head Temperature
COM	Communication
C/R	Counter Rotating
C/T	Carburetor Temperature
DF	Direction Finder
DG	Directional Gyro
DME	Distance Measuring Equipment
EFIS	Electronic Flight Instrument System
EGT	Exhaust Gas Temperature
ELT	Emergency Locator Transmitter
E/P	External Power Plug
F/D	Flight Director
FGP	Full Gyro Panel
FWF	Firewall Forward
GPS	Global Positioning System
G/S	Glide Slope
GSP	Ground Service Plug
H/P	Heated Pitot
HP	Horsepower
HSI	Horizontal Situation Indicator
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
ILS	Instrument Landing System
LE	Left Engine
LOC	Localizer (Runway Centerline Guidance)
LORAN	Long Range Navigation System
M/B	Marker Beacon
MDH	Major Damage History
NDH	No Damage History
NM	Nautical Miles
NAV	Navigation Radio Receiver
OAT	Outside Air Temperature
OH	Overhaul
PET	Piper Electric Trim
RB	Rotating Beacon
R/C	Rate of Climb
RE	Right Engine
RG	Retractable Landing Gear
RNAV	Area Navigation
SB's	Service Bulletins
SCMOH	Since Chrome Major Overhaul
SFN	Since Factory New
SFRM	Since Factory Remanufacture
SMOH	Since Major Overhaul
SOH	Since Overhaul
S/N	Serial Number
SPOH	Since Propeller Overhaul
STOH	Since Top Overhaul
TBO	Time Between Overhauls
TT	Total Time
TTAE	Total Time Airframe and Engine
TTSN	Total Time Since New
XPDR	Transponder

ADVERTISING INDEX

A Few Popular Movie Quotes ...

That's not flying, that's just falling with style.
— Woody, from the 1996 movie Toy Story, *regarding Buzz Lightyear.*

• • • • • • • •

Flying a plane is no different from riding a bicycle. It's just a lot harder to put baseball cards in the spokes.
— Captain Rex Kramer, in the movie Airplane.

• • • • • • • •

We have clearance, Clarence. Roger, Roger. What's our vector, Victor?
— Cockpit crew in the movie Airplane.

Ted: "We're gonna have to come in pretty low on this approach.
Elaine: "Is that difficult?
Ted: "Well sure it's difficult. It's part of every textbook approach. It's just something you have to do ... when you land.
— from the 1982 movie Airplane II, The Sequel.

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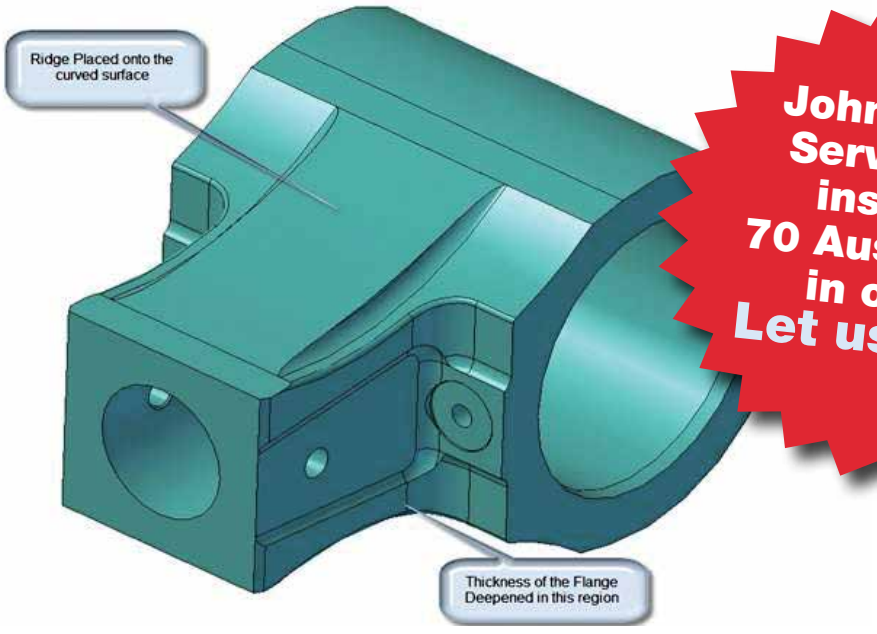

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