Duke FLYERS ASSOCIATION NEWS

Number 11-3 **November 2011**

Hosts: Debbie & Al Uhalt and the Duke Flyers' Association

PRESIDENT
Earle Olson
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VICE PRESIDENT
Al Uhalt
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NEWSLETTER
Jim Gorman
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SPARE PARTS FOR YOUR DUKE

(2) Generators
(2) Starters
(2) Flap Motors
(1) Tach Generator
(2) Magnetos
(2) Landing Gear Motors

Above are located at Aircraft Systems, 5187 Falcon Road, Rockford, IL 61109. They will ship item to you by UPS or Federal Express. You return your part (same day) to them. They will overhaul, charging your credit card for work done, and then item becomes Association emergency part. Phone 815-399-0225.

Cowl Flap Actuator
Electric Boost Pump
Exhaust Transition Pipe
Lycoming Exhaust Pipe #77429
Prop Brush 3E1206-2
Recognition Bulbs DN25-5
A/C Door Actuator
Overhauled Turbo
Oil Cooler (new)
Engine Cylinder Assembly
Prop Spinner (Less Back Plate)
Pin-Nose Gear Up Lock

Above - contact Earle Olson @ P. O. Box 1043, Medina, OH 44258
Phone 330-723-3210 (O) 330-723-9977 (FAX)

Windshields - Contact Gary Bongard @ 612-281-5158 (cell)

Pin-Nose Gear Up Lock **Beach part:** **60820091**

Quite a few comments on web page that this is a critical part which causes major damage if it fails (2 engines, 2 props for starts).

Beech price $5,000.00 (that's right 5 K)

As a result, DFA through a lot of time and work reproduced it as an owner supplied part to the exact specifications as original. The price to members is $ 495.00. Sales to date (zero).

Makes us reconsider future part needs using association funds.

WELCOME NEW MEMBERS

Glen Wood P-442
Morrisville, PA

Gregory Swift
Cleveland, TN

Steven Zaboji P-247
Reston, VA

Ronald Anderson
Amery, WI

Tim Pickett P-90
Peterborough, ON Canada

Jerry Bailey
Ardmore, OK

C. David Owens P-464
Valdosta, GA

Hugo Verledens P-187
Zonnebeke, Belgium

Ricky Jones P-583
Nacogdoches, TX

Gregory Vivaldi P-129
San Rafael, CA

John Treanor
Houston, TX

Christopher Phillips P-373
Shreveport, LA

Ryan Heggie
Nungan NSW Australia

I was asked to present my concepts regarding engine preservation to the DFA Club at the recent Santa Fe meeting.

My airplane is based in Truckee, California, at 5900 feet MSL. In the winter we frequently see morning temperatures pushing -15º to -20º Fahrenheit and afternoon temperatures in the mid to upper 40s. That's a lot of thermal stress on those old engines. The following "engine preservation technique" has evolved over several years. It does require having electrical block heaters, George McGrillis's *Oil-A-Matic* pre-oilers, a battery-minder, and high speed starters installed.

My engines remain connected to the heaters 24/7 with thermal blankets wrapped around the nacelles all winter. The “battery-minder” has been hard wired into the battery box such that the (required) over temp cut off temperature probe is connected to one of the batteries as well. If the airplane is not to be flown for more than one week's time, I go down to the hangar and pull off the nacelle blankets and disconnect the block heaters and battery minder. I then sequentially pressurize each engine to 50 psi with the oil-a-matic pumps and then <u>without</u> priming the engines, I spin each engine for about 15 seconds with the SkyTech high speed starters. The heaters and battery charger are then reattached and the nacelle blankets are replaced.

My concept is that the engine oil is always warm. The battery is always charged. By pressurizing each engine to 50 psi, there is warm oil in the galleys and the valve lifters should be fully extended (no valve lash). By turning the engine through about 15 or 20 revolutions, I am pretty confident that that warm oil gets pretty well “smeared” around inside the case and up onto the lifters and crankshaft.

I use the AeroShell 100W oil with the Lycoming additive, and I also pour a bottle of that additive (Lycoming p/n 16702) into the oil with each oil change and then once again at about halfway to the next oil change. For the last couple of years I have also added a can of "CamGuard" to each engine at each oil change.

It just seems to me that if the engines are kept warm 24/7 that any moisture inside the case will be driven out such, that condensation will not occur on the engine's "guts." By either flying the airplane or going through the regimen described above once a week, I think that I can assure myself that I am keeping an oil film on most of the internal components of the engines.

"*Different Strokes for Different Folks*," but this works for me.

by Greg Jellinek

COMMENTS FROM EARLE OLSON, *PRESIDENT*

Santa Fe Fly-in Report

WOW! Thanks to Al and Debbie Uhalt, our hosts, and Ab Fuoss, the what can I do to help guy, the 2011 DFA Fly-In at Santa Fe was fantastic! We had 55 attendees with 13 Dukes and two Bonanzas. A number of us came commercial air or drove. Our time there was during Fiesta Week which added a number of unusual surprises and much insight into 210 years of New Mexico history.
The conclave opened Thursday evening with a sumptuous barbeque on the spacious veranda of the La Fonda Hotel, a beautiful location overlooking the historic Plaza. The food was outstanding and we had a great time "hangar flying," renewing friendships and meeting and greeting new members.

Friday was "Tour Day" which required an earlier "get-up" than some of us really wanted. It was worth it, though. The tours were both interesting and quite enjoyable, even with the changes necessitated because of the recent wildfires that destroyed part of the Bandelier Pueblo site. We spent some fascinating time exploring pre-historic Indian Pueblo ruins on foot over some pretty rugged territory, then to the Los Alamos National Laboratory Museum, had lunch and headed by bus to the San Ildefonso Pueblo where we learned quite a lot about artistic and commercial pottery-making watching the renown potter, Dora Tse-pe, do "her thing" for us. It was great day with lots of new experiences.

While the aviators got together Saturday for a business meeting and technical sessions, the ladies lunched together and enjoyed a marvelous tour of historic Santa Fe museums and culture. At the business meeting, we learned the Association remains financially sound, re-elected the current DFA officers for another term; and following Ab Fuoss' beautiful and impressive media presentation and offer to host, selected ***Brunswick, Maine for our 2012 Fly-In Convention site***. Tentatively, the dates are October 4-7, chosen because that time is expected to be the peak of New England leaves turning their autumn colors there, always a beautiful sight which we hope to witness.

The Tech sessions were led off by Larry Salganek of the Jet Warbird Training Center, which is located right there in Santa Fe, telling of the adjustments necessary to fly jets compared to props. He said it is easier to learn to fly an L39 than to learn to fly a Duke. Several members took advantage of the special intro price he offered the DFA and had a ball discovering that "that Indian spoke with straight tongue."

Darwin Conrad brought us up-to-date on Royal Turbine's latest improvements to the Turbine Duke. He said that much of what they are doing for the Turbine Duke may be STC'd for the non-turbine Duke. One possibility is increased fuel capacity. He stated they are close to increasing the cabin pressurization to 5.1 psi, up from our 4.6; and that they are also working on drag reduction around the rudder actuator. He further advised they are now able to use PT-6 engines which have been removed from King Air 90s being upgraded. This means a lower price for the Duke turbine conversion. Call Darwin for new pricing.

Kingsley Hill gave us an excellent presentation on the improvements he and Jeff Gorman have been working on for the web site. They have now scanned in all the past newsletters and are working on a complete pdf maintenance manual and parts list. We will be offering our vendors an opportunity to have a logo or message next to their listing under VENDORS. Next, Kingsley gave a run down on several of the aviation applications for I-Pads and I-Phones. He has posted it on the web site. More than half of the attendees had one or the other or both and were all raving about them.

Greg Jellinek told us how he uses "post-oiling" to protect his engine when he is not flying frequently. See his comments elsewhere in this newsletter.

Bob Hoffman and Greg gave a skit on "what to do when the FAA comes a-calling" for a ramp check. In short, they said if this occurs, meet him and ask to see his credentials; ask for his business card, what office he is from and his supervisor's name. *If asked*, show him your pilot license and medical certificate and that's it. You do not want to let him get into your airplane and/or logs because "nothing good can come of it -- and it could produce a lot of bad." Be courteous, but firm.

Politely tell him you are on a very tight schedule and ask if he will stop back another time. This is all within their protocol and should not cause any problem.

Al Uhalt briefed us on the "Clean 100 Octane Coalition," of which we are a member, and said we are one of several owner groups that have formed this coalition to make sure our voice is heard. There are presently no good alternatives to 100LL. He talked to us also about how and why Firesleeving® his engine compartment fuel lines have reduced his Duke's fuel consumption. See a short article on this also elsewhere in this issue.

We went out to the airport for the afternoon sessions. Patrick Horgan, general manager of Santa Fe Aero Services, gave us an excellent presentation on Garmin, Bendix and Aspen flat panel glass instrumentation. They do all their own panel cutting on a cad system that saves time and money. The time was well spent touching and working the displays in mock-up stands and in airplanes. They have in a Navion one of the most expensive and expansive avionics installations you'll ever see in an airplane. It's designed so you can check out various brands and systems of new state-of-the-art avionics all doing the same thing at the same time and make a decision to suit your taste for your airplane. I think I'd get crossed eyes and worn out trying to watch all those presentations simultaneously. It was a fascinating, real, live "wish-book."

Gary Bongard and Jerry Burnham showed us a bottle of fluid containing metal particles magnetically lifted from a washed oil filter and recounted how much lifter damage this metal had caused. The lesson to be learned here, they said, is to always have the filter you are replacing cut open, washed and magnetically checked for ferrous material. Metal found there may well have come from your cams and lifters indicating internal engine damage. Jerry said it is his belief that the less you use your Duke, the more important it is to employ hardened carbide lifters to prevent corrosion and damage to your engine. He said he has never seen rust or pitting on the face of a carbide lifter like he has seen on standard lifters.

The day and the 2011 Convention culminated that evening back on the hotel veranda for our annual Fly-In Banquet. The evening was delightfully pleasant with sounds of Fiesta Crowds and Mariachi Bands in the background. The food was again excellent and the attentive staff feted us with superb service. The highlight of the evening was Don Cary, retired Vice President of Beech Aircraft, speaking to us and telling the story of how the Duke came into being and how delighted he was to be standing beside Mrs. Beech for its inaugural flight. He recounted how Mrs. Beech always called him "Mr. Cary" because she wanted all the staff to respect one another and sincerely felt that proper decorum starts at the top. He told of Mrs. Beech's much-sought-after weekly luncheons for new Beechcraft owners in her private blue dining room. His after-dinner remarks were truly enjoyed by all, including the ladies, who were pleased it was not just another speech aimed at the guys. A standing ovation topped off a most enjoyable evening.

We all departed for our home ports Sunday under clear skies in beautiful, warm weather with fair tailwinds. While this convention will be a hard one to match, Ab Fuoss is aiming to do just that next year, this time in beautiful, colonial Brunswick, Maine. Rosie and I genuinely hope to greet you all there as you arrive in your beautiful Beechcraft Duke.

Most sincerely,

Earle

2012 FLY-IN

Brunswick, ME

hosted: Ab and Wendy Fuoss

October 04-07, 2012

HOLY MACKEREL! LOOKIT THAT FUEL FLOW!!

by Al Uhalt, DFA 423

As far as I know, the phenomena I am here writing about was first concluded by Firewall Forward in Fort Collins, Colorado, several years ago as a result of numerous customer reports and their own subsequent testing. I had them insulate my Teflon® fuel lines which they had installed at engine overhaul. What follows are my personal experiences and conclusions from doing so.

If you do not have the old asbestos fabric-impregnated heavy rubber fuel lines on your TIO-541 engines, you can markedly improve your fuel consumption (notice I did not say "burn") by insulating ***all*** fuel lines forward of the firewall. Most engines manufactured and/or overhauled mid-1990s and later use the new lightweight Teflon® fuel lines which do not need to be replaced every five years as do the old black rubber hoses. They are thin-walled, however, and conduct much more heat to the fuel inside them. Even if you do have the old rubber lines, insulating them will still reduce fuel usage some, though not nearly as much, as they are a pretty good insulator in and of themselves.

Following my engine overhaul, I noted a jump in fuel flow from formerly approximately 21 gph to as much as 24+ gph. After much consternation and complaining back to Firewall Forward, who double-checked my fuel controls to no avail along the way, they suggested I Firesleeve® (that's a brand name; there may be others just as good) every fuel line forward of the firewall, which I had them do. The result ***on my Duke*** was an initial fuel flow reduction of about 2 gph per engine at 25,000 feet pulling 32 inches MP at 2,500 rpm at 850°C TIT, increasing over time at altitude to about 3 gph. Why?

The fuel control on the TIO-541 engine is looking for liquid fuel; it cannot handle gaseous (vaporized) fuel and just dumps it overboard through the crankcase breather line. (This is part of the little mess the engine often makes on the ramp or your hangar floor shortly after you shut your engines down.) Despite excellent airflow cooling, the engine compartment still runs very hot. Combustion occurs at about 3,000°F. The exhaust stacks approximate 2,000°F (Have you ever noticed the stack at night through the vent on the top of the right engine cowling? It's glowing a bright cherry red!) And the EGT is still about 1,600 ± some degrees when it enters the supercharger turbine – witness the TIT gauges. That's a lot of heat! The thin-walled Teflon® fuel lines in the engine compartment are exposed to all that heat (check the main fuel line proximity to the exhaust stacks coming right out of the cylinders) and some of the fuel inside the fuel lines in the boundary layer next to the inside wall of the lines will vaporize (read that "boil"). It's not much at any given time in cruise, but it's continuous and it adds up and when that vapor reaches the fuel control, it is dumped overboard and ***NOT*** routed to the engine for combustion.

Now, enter the Firesleeve®. It insulates the fuel lines from all that heat and reduces (not eliminates) the amount of vaporization in the fuel lines, hence providing more of the liquid fuel from the tanks to the fuel control, still in liquid form for combustion in the engine. The net result is less fuel flow from the tanks to the engine.

You can check this out yourself by noting your fuel flow at cruise power and then turning on your boost pumps. You will notice an immediate drop in fuel flow of 1.5 to 2 gph. What's happening here is that the boost pumps are raising the internal pressure on the fuel in the fuel lines, thereby raising the boiling point of

the fuel. Result: less fuel vaporizes and, with more ***liquid*** fuel being supplied to the fuel control, less total fuel is used. If your lines are already well-insulated, not much change in fuel flow will be seen. Incidentally, I know of no limit on boost pump usage, so you can reduce your fuel flow right now by leaving your boost pumps on all the time. I'll guess that doing that will require new pump motor brushes more often; however, I've not changed a set yet myself and I do use my boost pumps a lot.

With this last bit about where the boiling point of fuel is, consider this: Have you ever noticed that, on a long cross-country flight of three to four hours at high altitude, your fuel flow drops as much as 2 gph per engine from the beginning of the flight until the end? Have you ever wondered why? If not, would you believe that, on a long, high-altitude flight, the fuel in the wing tanks gets colder with time and does not "boil" as quickly or as much as the warmer fuel did early in the flight? QED: less fuel overboard. Doing the foregoing has extended my high-altitude range as much as a hundred miles.

One final note: Sooner or later, every Duke pilot will have one or even both engines shut down on landing rollout or taxi on a hot summer day. Why? Answer: vapor lock; a "ton" of fuel vapor being fed to the fuel controls. The engine compartments are HOT from the flight now coming to an end; and with the throttles retarded, fuel is moving much slower through the lines than when in cruise and picking up even more heat in the hot engine compartments. Vapor lock is almost guaranteed, particularly on hot asphalt at high altitude. Insulating your fuel lines helps you here also, but an additional help for this is to leave your mixture controls right where they were in cruise ***and*** turn on your boost pumps for landing. Now you have a higher fuel boiling point and leaving your mixture controls where they were for cruise with the boost pumps on ensures against flooding, particularly at high altitude airports.

If I've left you with questions unanswered or you just want to argue with me (that's fine – I can handle that), please call or e-mail me. I always like to hear from you.

FLYSAFE!

Al Uhalt
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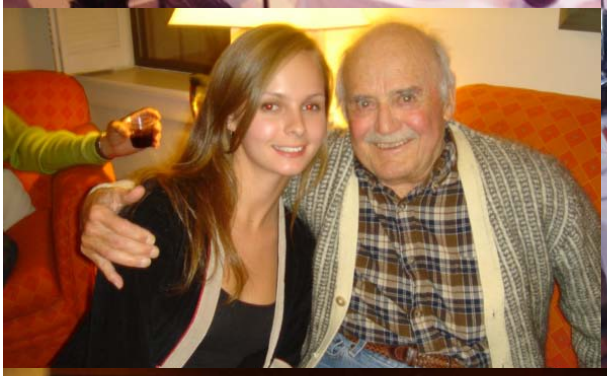
SANTA FE MEMORIES


SEP 10 2011

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