

## Lancair Owners & Builders Organization

APR 2013  
VOLUME 5, ISSUE 2

### in this issue

- 1 from the president
- 2 safety brief
- 5 social occasions
- 8 loss of power
- 13 emergency landing!

editor: mark sletten

LOBO  
3127 creve couer mill rd, h-n5  
saint louis, missouri 63146  
[www.lancairowners.com](http://www.lancairowners.com)

### FROM THE PRESIDENT

jeff edwards



Winter is past and spring is here! I just got out of the basement after tornado sirens sounded here in St. Louis multiple times tonight. Are you ready for the challenges of spring flying? Convective activity, higher density altitudes and windy conditions make for interesting flying. Get ready now for the spring flying season with a recurrent training session. [Click here](#) to contact a LOBO-approved instructor in your area!

### WHAT'S NEW?

Your LOBO board has been busy! Here's some of what they're up to.

LOBO is on the march making great progress towards achieving our goal of 501c(3) tax exempt status. What does 501c(3) mean for you? Achieving 501c(3) status would validate LOBO's commitment to the goals of improving flight safety and educating our membership, as well as others in the Lancair and wider GA communities.

LOBO's

pursuit of these goals will be a big factor when the IRS evaluates our application for tax exempt status. We hope to become designated a 501c(3) organization later this year.

This April, I accepted an invitation to represent LOBO as a speaker and participant in the NTSB's General Aviation Listening Session at NTSB HQ. I advised NTSB leadership on ways to improve EA-B aircraft accident investigations. Specifically, I offered the NTSB the expertise and knowledge of LOBO's membership as a resource for investigating Lancair accidents.

In the five years since LOBO's inception we have gained 353 members against about 1000 flying aircraft. Since then there have been 45 serious reported accidents, only three of which involved LOBO members. That tells me you are all doing a great job of managing risks and safely flying your Lancairs, keep it up!

### SHARING THE WEALTH

Two nights ago I was invited to speak at EAA chapter 429 in Jefferson City. I fired up the Lancair and flew 20

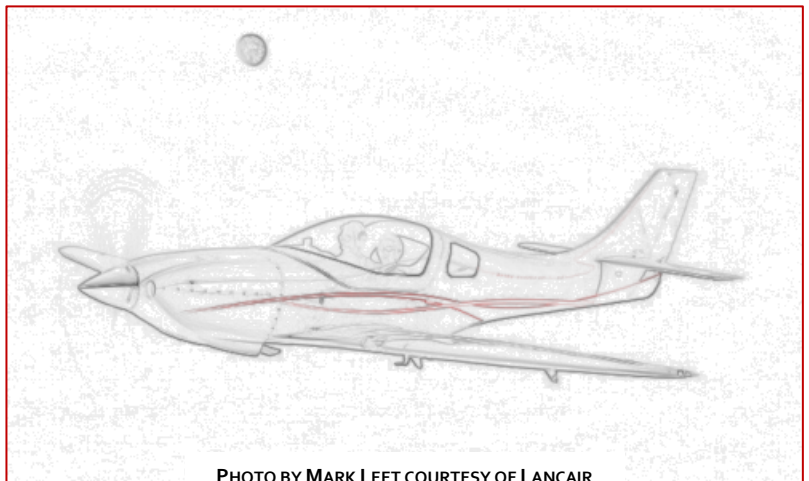


PHOTO BY MARK LEET COURTESY OF LANCAIR



**EVOLUTION**  
by **LANCAIR**

- **Turbine Power**  
*Pratt & Whitney PT6A-135A*
- **Garmin Avionics**  
*G900x Synthetic Vision*
- **Lancair Innovation**  
*All Carbon Fiber Construction*
- **Stellar Performance**  
*"Best In Class"*

**Fly Fast - At 300 KTAS    Range - Up to 1300 nm**  
**Fly High - Pressurized comfort at 28,000 feet    Useful Load - Greater than 1900 pounds**  
**Climb - Greater than 4000 fpm    Take off and Land - In 1000 feet    Carry - More than 800 pounds**

**Reshaping the high-performance single!**

www.lancair.com 541.923.2244

minutes to KJEF where I was met by chapter members who oohed and ahed over the Lancair's sleek lines.

After some pizza and a bit of friendly conversation I spent a couple of hours talking about our type club. I focused on what LOBO is doing to address safety concerns and how they, as fellow experimental amateur builders and fliers, can take steps to reduce their flying risks. As an aside, on the way home I logged a few night landings. Have you looked in your logbook lately to check your currency status?

#### **UPCOMING EVENTS**

LOBO is working hard to make a great showing at this year's Airventure. Please join us there for an evening of

fellowship and fun. If you are planning to fly in to Wittman Regional Airport to attend Airventure please review the NOTAM. If you've never flown to Airventure before consider reaching out to those that have for some "been there, done that" advice. In addition to our annual Oshkosh banquet, LOBO will host a Lancair forum—so stop by and participate. Also, don't forget your tiedowns!

Planning continues for this year's annual LOBO/Lancair Landing, slated to be held at Greenville, SC in October. Be sure to read Claudette Colwell's article later in this edition of *LOBO News* for more information about both Oshkosh and this year's Landing. If I know Claudette, she has a terrific lineup planned to entertain and educate us all!

#### **SAFETY BRIEF**

*jeff edwards*

#### **DO YOU KNOW WHAT YOU DON'T KNOW?**

If you fly behind glass, do you know what you don't know? Do you know how to program a flight plan, add a waypoint, activate an RNAV approach on the GPS navigator or transition the autopilot from enroute to approach mode? Are you an expert with all the bells and whistles of the glass cockpit or are you a "direct to" flier? Have you read the flight manual supplement for your cockpit instrumentation, availed yourself of John and Martha's Avidyne or Garmin course or just winged it?

**AEROTRONICS INC.**



**"PLUG & PLAY" PANELS FOR LANCAIR AIRCRAFT**

Nearing the start of our 6th decade, Aerotronics continues to work with industry leaders to ensure you receive the best in avionics for your certified or experimental aircraft.

Aerotronics Inc.  
1651 Aviation Place  
Billings, Montana  
406-259-5006  
www.aerotronics.com  
www.avionicsmall.com

The 2010 NTSB Safety Study, Introduction of Glass Cockpit Avionics into Light Aircraft, concluded, "[T]he introduction of glass cockpit PFDs has not yet resulted in the anticipated improvement in safety when compared to similar aircraft with conventional instruments. Advanced avionics and electronic displays can increase the safety potential of general aviation aircraft operations by providing pilots with more operational and safety-related information and functionality, *but more effort is needed to ensure that pilots are prepared to realize that potential.*" (Emphasis added.)

At the heart of this argument is a question: Who is responsible for pilot proficiency? The study suggests the FAA and manufacturers are. I believe that pilots should place more effort on their own preparation to ensure they are prepared to fly in the national

airspace system utilizing glass cockpit technology. In other words, I believe responsibility for pilot proficiency lies with the pilot in command. What do you think?

### OBSTACLES TO PROFICIENCY

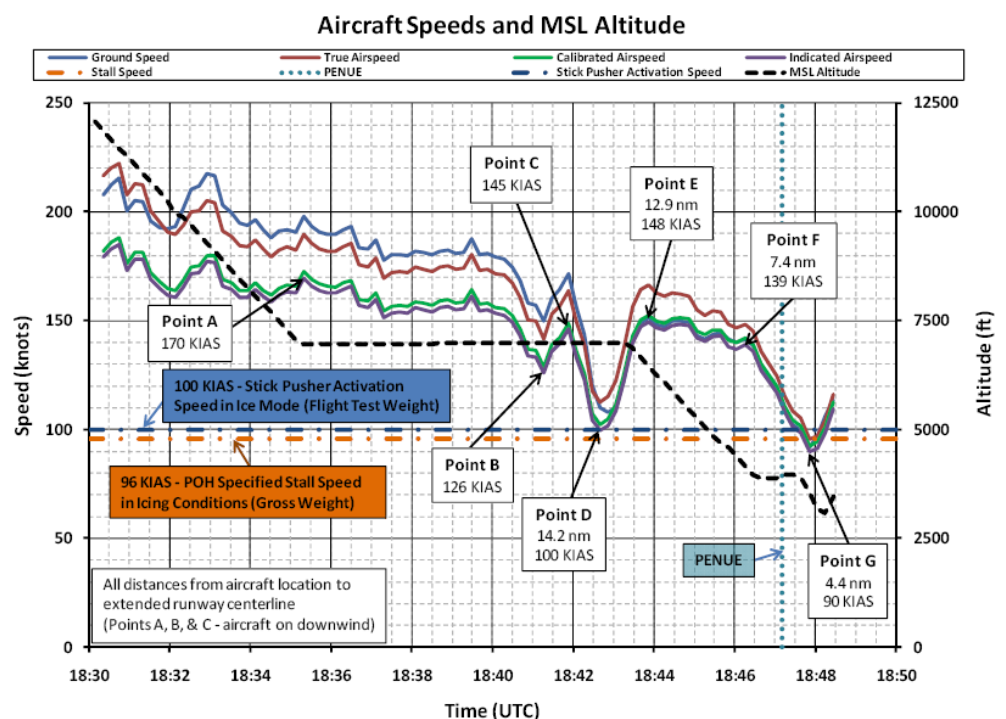
One big factor working against pilot proficiency today is high cost. Most directly, high fuel costs mean fewer flight hours. AOPA's recent pilot survey indicates pilots are averaging only 5 hours/month or about 60 hours/year. Is this enough for pilots to stay instrument proficient? Research suggests it's not when you consider the average instrument pilot logs 10 percent or less of their total as actual instrument time. Research also indicates that overuse of the autopilot is linked to a decline in hand flying instrument skills. Ms. Susan Parson, writing in the FAA's Safety Briefing says that, "instrument flying skills—like any other skill—are perishable."

What are your obstacles to proficiency? Identifying them is the first step to eliminating them.

### LACK OF PROFICIENCY KILLS

On March 26, 2005, a turbine single aircraft flying from Florida to Penn State crashed while flying the ILS approach to University Park, PA. Radar data suggests the aircraft was flown by the autopilot during the nearly four hour trip. While being vectored to final, ATC instructed the pilot to maintain 4000 feet MSL until established on the approach. The pilot leveled off at 4000 feet MSL, but failed to begin a descent at glideslope capture and quickly exceeded the upper vertical limit of the glideslope. Passing the outer marker, PENUE, the aircraft began a rapid descent as the pilot apparently attempted to get back on the glideslope—a classic unstable approach.

Analysis of radar data indicates the pilot was flying below the recommended approach speed and close to the aircraft's stall speed. It appears the pilot eventually abandoned his attempt to capture the glideslope, and pitched up without a commensurate application of power. The result was a stall and subsequent





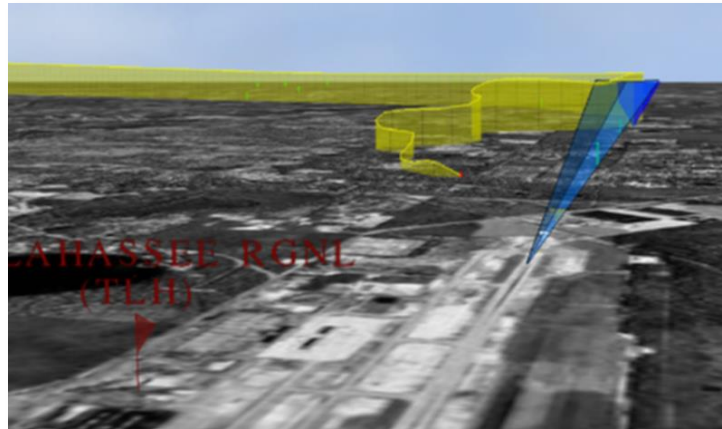
crash.

On November 13, 2008 an instrument-rated private pilot and his wife in a "new to him" piston single crashed while on approach to Tallahassee, FL. Night IMC conditions prevailed, with a 400 foot broken ceiling and 10 miles visibility. The pilot purchased the aircraft just a month before the accident, and had logged a total of eight flights, four with an instructor. The accident flight was the second leg of a cross country originating in upstate NY.

Radar and onboard data indicate the autopilot was engaged for the majority of the trip.

The aircraft was equipped primarily with steam gauges, but included a Sandel HSI and Avidyne moving map display. Additionally the pilot used a handheld Garmin 496 GPS, from which the NTSB was able to download data and reconstruct the accident flight path

The pilot requested and received clearance for the ILS 27 approach. ATC provided vectors to final and directed the pilot to maintain 2000' MSL until



established on the localizer. Radar and GPS data shows the aircraft intercepting the localizer, but the pilot failed to descend to the glideslope intercept altitude of 1800' MSL. Near the final approach fix (GACED) the aircraft deviated north of the course, flying a serpentine flight path while descending. ATC issued a vector of 240 to rejoin the localizer, which the pilot acknowledge-ed. The aircraft initially turned to the directed heading, but again deviated north while continuing to descend. Despite being approximately one mile north of the final approach course, with the HSI likely indicating full-scale CDI deflection, the pilot continued the approach, eventually descending below 400 feet MSL. In his last radio

transmission on the ATC recording the pilot said, "...seven golf mike's gotta go..."

According to data downloaded from the GPS, airspeed during this final segment fell below 65 miles per hour. The aircraft stalled and crashed in the front yard of private residence.

During a post-accident interview, the accident pilot's CFI said he'd counseled the pilot not to fly instrument approaches without a CFI. The aircraft manufacturer recommends at least 100 hours of time in type before instrument or night flight. The pilot had logged 17 hours of flight time in the aircraft—with one hour at night.

What is the root cause of these accidents? In a word, proficiency—or lack of it.

The piston pilot had acquired his aircraft only a month prior to crashing it. He had logged only six night IMC approaches in his flying career—most at his home airport. Additionally, the accident investigation revealed the pilot had not complied with an important checklist item listed in the

**THE EXPERTS IN LANCAIR OPERATIONS**

**ELITE PILOT SERVICES**

(541) 314-4EPS      [www.FlyEPS.com](http://www.FlyEPS.com)

- 1 First Flights
- 2 Phase One
- 3 Return to Service
- 4 Initial Training
- 5 Recurrent Training
- 6 Biennial Flight Reviews
- 7 Endorsements
- 8 Basic Formation
- 9 Ferry Service

Offering a broad  
range of  
aviation solutions

CONTACT US!

### New! Jeppesen charts available with Lancair.

Now when you buy a Lancair Evolution, you can get our charts and NavData—and access to Mobile FliteDeck 2.0—installed as part of the PilotPak.



App Store is a service mark of Apple Inc.

## The latest and greatest addition to your Lancair cockpit.

Jeppesen Mobile FliteDeck—our dynamic mobile app that replaces paper charts—is upgraded to v2.0. And it's loaded:

### Increased capabilities

- Weather
- SID/STAR support
- Improved terminal chart access
- In-app chart rotation

### First in the industry

- Night theme
- Highlighting

### For GA pilots, by GA pilots

- Redesigned application interface

Visit [jeppesen.com/lancair](http://jeppesen.com/lancair) for more information.

### Airplane Flight Manual.

Although the turbine pilot was more experienced and had more time in type than the piston pilot, accident reconstruction revealed these pilots had at least two things in common: Both were initially well above the glide path on approach, likely precluding a successful coupling of the autopilot in approach mode, and it appeared neither possessed the skill to hand-fly their aircraft in instrument conditions to Practical Test Standard (PTS) or Instrument Proficiency Check (IPC) standards.

Recently, the FAA rewrote 14 CFR 61.57 requiring that IPCs be comprised of all PTS tasks for the instrument rating. Flight path reconstructions indicate the pilots of both accident aircraft deviated from

the localizer or glideslope, likely due to their inability to couple the autopilot in the approach mode. The resulting hand flown approaches were well outside the maximum CDI deflection, the hallmark of an unstable approach, yet neither pilot performed a timely missed approach.

Would you?

## SOCIAL OCCASIONS

*claudette colwell*



### LANDING UPDATE

Kick the tires, light the fire, pull on your goggles and leather cap, grab your sweetheart and head to Greenville,

SC for the 3rd LOBO/Lancair Landing, scheduled for October 4-6!

We've rolled out the online registration, and you should have received an email with a link to the page on LOBO's website by now. Our newsletter editor extraordinaire, Mark Sletten, worked hard to make it easy for you to register and pay online, so please take time to complete the registration form in full. We use the information to make your event as enjoyable and informative as possible, and it starts with a registration packet we'll have ready when you and your sweetheart arrive in Greenville.

### WHAT'S UP IN GREENVILLE?

I'm glad you asked; we have exciting things planned for everyone! We knew this year we would likely move our

daytime activities to our host hotel since airport facilities that can host events such as ours are rare and unique. So, the Hilton Greenville is our location for all activities... **BUT...** we've massaged the format this year so we're through every day by 3:00p, giving everyone a chance to make the short trek to the Greenville Downtown Airport, KGMU, for a bit of hangar flying, or just to sample all the Lancair eye candy sitting on the ramp.

Keep an eye on your inbox and our website, as we'll be publishing an agenda soon. On it you'll find all the details, including what to expect for all three tracks of the LOBO Ground School—Jeff's for those already flying their Lancairs, Bob's for those getting ready for their first flight and Sue's for the Cockpit Companion. You'll also find

out who will fill the forum schedule from our impressive roster of sponsors/exhibitors.

For the ladies, Judy Pastusek has planned a passel of fantastic activities. Remember how much fun Donna Scales had in Branson, MO during our first annual event ([click here](#) to read her article on pg. 16 in the Jan 2012 LOBO News) at the style show? Remember how she talked about the VIP treatment our ladies were given and how everyone looked forward to seeing their new friends the next year? Well, ladies—do we have plans for you!

Sign up for an all-day tour of the famous Biltmore Estate of the Vanderbilts on Friday. Included is a private bus trip to/from, lunch with your friends and a visit to Antler Hill's

winery, farm and shops ([click here](#) for more details). On Saturday you can look forward to another style show!!! Watch this space for details about the style show.

We'll see all y'all in Greenville!

### **2013 LOBO OSHKOSH BANQUET**

If you're going to AirVenture/Oshkosh this year then don't miss a chance to have dinner with your closest flying buddies – those fearless stalwarts of the sky – your fellow Lancair pilots!!! Brought to you in part by Lancair International and NationAir Aviation Insurance, the LOBO Oshkosh Banquet has become the most popular Lancair evening event of the AirVenture experience.

## **THE LOBO PREFERRED INSURANCE BROKER**

**It's time to expect more from an aviation insurance broker. A lot more.**

As the preferred insurance provider for LOBO, we make sure aviation underwriters recognize LOBO members' excellent safety records and provide you with the best rates. NationAir is the country's leading broker for Lancair and has belonged to LOBO since its inception.

### **NATIONAIR OFFERS MORE FOR LANCAIR OWNERS:**

- One-stop shopping for the full spectrum of insurance, from builder's risk to full flight
- Critical support for training and safety awareness
- Outstanding relationships with aviation's underwriters
- Sponsorship for LOBO and Lancair fly-ins

Contact Lancair Specialist  
Jenny Estes  
[jestes@nationair.com](mailto:jestes@nationair.com)  
877-648-8267



VISIT OUR WEBSITE FOR EASY, ONLINE QUOTE REQUESTS:  
[LIGHTAIRCRAFT.NATIONAIR.COM](http://LIGHTAIRCRAFT.NATIONAIR.COM)

discover better.™

**NATIONAIR®**  
AVIATION INSURANCE



**Date:** Thursday, August 1<sup>st</sup>. **Place:** The brand new Best Western Premiere Waterfront Hotel, 1 N. Main Street, Oshkosh. **Time:** Bar opens at 5:00p; dinner at 6:15p. **The speaker:** LOBO member and Lancair 320 pilot Dr. Alberto Behar will spin us a yarn about his experience as an investigative scientist on the Mars Curiosity Rover team. Dr. Behar is a member of the Robotic Vehicles Group for NASA's Jet Propulsion Laboratory where he has worked since 1991. His section designs the rovers and in-situ surface systems for NASA's planetary exploration missions. In his spare time, Dr. Behar holds a professorship at Arizona State University, as well as Rotary and Fixed-Wing pilot certificates with Multi, CFII and ATP ratings. He also has a type rating in the Gulfstream G5 and is a certificated A&P mechanic.

A caveat: Dr. Behar recently returned from the Antarctic where he's been conducting climate research. There's a chance he may be on assignment to Greenland at the time of AirVenture. In that event, we'll find another speaker – the talk just won't be about Mars!

We are fortunate to have a new venue this year; the Hilton increased its prices nearly 70%, and we were rapidly outgrowing its banquet facilities. The Best Western has great prices and a friendly staff.

Please RSVP as soon as possible; the last two years we have had to turn

away some who waited until the last minute. Don't be that person!

There is no place else on the globe where you can spend a more informative and scintillating evening in July than dinner with your fellow Lancairans during Oshkosh!

Price per person:

LOBO members - \$33.00

Non-members - \$39.00

Price includes a no-host bar; mixed-green salad; choice of two entrees with in-season vegetables and herb roasted potatoes; rolls w/butter; coffee or tea; and dessert. Stay tuned for updates on transportation arrangements for those camping on the field.

[Click here](#) to register via email. Please include your name, the name(s) of your guest(s), your aircraft type and N number (for name tags). [Click here](#) to pay via PayPal, or you can write a check to LOBO and mail to:

3127 Creve Coeur Mill  
Road Hangar N5  
Maryland Heights, MO  
63146

We have to guarantee our attendance numbers to the Best Western ten days in advance, so please make reservations prior to that. *Because of scheduling and contracting requirements, reservations made after July 18 will increase by \$5.00 per person.*

### LOBO NEEDS A FEW GOOD LANCAIRIANS

We are looking for a volunteer to handle solicitations for ads on LOBO's website. Over the years we've had a

# FACTORY VALUE



## NEW AND REBUILT ENGINES



**TSIO550**

- Genuine Continental factory engines increase aircraft value on avg. 10%
- Continental Factory Warranty and Product Support
- Continental Extended TBO's up to 400 Hours on Factory-Rebuilt and New Engines
- Upfront Pricing - No Surprises
- Latest Production Improvements
- New Part Content Average 80% on Rebuilt Engines
- "No-Hassle" Core Return

**GET YOUR ENGINE QUOTE TODAY**



**Continental Motors, Inc.**

VISIT US AT [WWW.CONTINENTALMOTORS.AERO](http://WWW.CONTINENTALMOTORS.AERO)  
OR CALL CUSTOMER SERVICE 800.326.0089  
2039 SOUTH BROAD ST. MOBILE, ALABAMA 36615

LIKE US!  [FACEBOOK.COM/CONTINENTALMOTORS.AERO](https://www.facebook.com/ContinentalMotors.Aero)



DR. ALBERTO BEHAR

# Back-up. Back down.

The back-up EFIS that flies your plane down in an emergency.



The VP-400 finds the best airport to land then flies your airplane to the runway threshold. Know instantly what your options are. VP-400 features include:

- *Runway Seeker™ technology flies your aircraft to the best runway in an emergency*
- *Integrated Electronic Circuit Breaker system with trim and flap control*
- *Back-up EFIS with synthetic vision and built-in back-up battery*

➤ *Visit us at the Lancair-LOBO Landing.*

➤ *Ask about upgrading your Lancair Evolution!*



➤ Learn more at [VerticalPower.com](http://VerticalPower.com) or call (505) 715-6172.



**Vertical Power**

Site advertising has the potential to generate more traffic on LOBO's website, inform members and site visitors about products and services available to them, generate revenue for LOBO and increase sales for vendors who advertise with us.

If this sounds like something you would be interested in please contact me via email (address below). Include your name and phone number and a perhaps a brief note describing your sales and marketing experience. This is a great opportunity to help yourself and your fellow LOBO members; please step up and offer to help. Thanks!

for questions about the fly-in contact lisa ([lisaw@lancair.com](mailto:lisaw@lancair.com)) or claudette ([c.colwell@lancairowners.com](mailto:c.colwell@lancairowners.com))

## LOSS OF POWER

colyn case



*This is the first part of a multipart series about how loss of power accidents affect Lancair fleet safety, and what you can do to prevent/mitigate them.*

### INTRODUCTION

LOBO has tracked a total of 194 Lancair accidents from 1989 through mid-2012, with 56 involving a loss of power. Fatal accidents totaled 94 with 23 related to LOP. No matter how you

do the math, some 25 percent of Lancair accidents involve loss of power. Discussing ways to mitigate this risk seems to hold promise in LOBO's goal of improving the Lancair fleet safety.

### MULTIPART SERIES

This is the first in a series of articles in which I'll look at the loss of power implications for each phase of flight. We'll begin with flight preparation. For this article I'll examine preparing for flight with two primary goals related to loss or power:

1. Avoid engine failure if at all possible.
2. Maximize your survival prospects should one occur anyway.



 <p><b>AvalonLogistics</b> INCORPORATED</p>	<p><i>...always on the move...</i></p>
<p>Worldwide 3PL and Trucking</p>	<p><a href="http://www.AvalonLogisticsInc.com">www.AvalonLogisticsInc.com</a> 310.327.3525</p>

### SEDONA MATH LESSON

Now you may be thinking "I know all about that." But before you flip the page, let me tell you about a perspective-changing bit of math I wrangled with while putting a few slides together for a talk in Sedona. The resulting perspective inspired these articles, so I thought you might want to know.

I was trying to figure out exactly how bad our fleet accident record is, and how one might make a case to an insurance underwriter that providing insurance for the Lancair fleet makes good business sense. The Lancair fleet experiences about five fatal accidents each year on average. We're still working on getting accurate, verifiable numbers, but our current best estimates suggest there are roughly 1000 flying airplanes in the fleet. If you assume those airplanes average 100 hours a year, then our fleet flies about 100,000 hours a year.

That's a really convenient number because one of the ways the NTSB quantifies accident rates is to compute the number of fatal accidents per 100,000 hours flown. The Lancair fleet fatal accident rate is five for every 100,000 hours flown.

What's that mean to you and me? It means the probability of a fatal accident is 1.0 for the average Lancair

pilot who manages to amass 20,000 hours in his/her Lancair. Or it means of twenty average Lancair pilots, one will die every ten years. Or... Well, you get the idea.

What does this mean to an insurance company? Insurance is all about calculating odds; in the case of our estimated statistics the odds say there will be one claim involving a fatal accident for every 200 Lancairs insured in one year. If such a claim results in a \$2 million payout, an insurer would have to charge \$10,000+ per airplane just to break even.

The fact that Lancairs experience five fatal accidents every 100,000 hours flown is just bad any way you look at it; we already knew that. So then I started thinking about the situation in quantitative terms—and about what might be required to make the numbers better... And that's what surprised me.

Let's compare safety stats between Lancairs and other segments of the aviation community. There are .01 fatal accidents per 100,000 hours flown for commercial aviation (airlines), which means they avoid fatal accidents 99.9999 percent of the time. General aviation is 100 times worse at 1.0 fatal accident per 100,000 hours flown—which seems obscene—but means GA pilots still avoid fatal accidents 99.999 percent of the time. The Experimental

Amateur-Built (EA-B) rate is even worse at 2.3, while the Lancair fleet, at 5.0, is a dismal 500 times worse than airlines.

It may not be fair to compare Lancairs to airliners, so let's just stick to the wider GA community. The Lancair fleet currently experiences fatal accidents five times more often than the GA fleet. If the Lancair community wants to lower its fatal accident rate to match GA numbers we need to reduce the number of fatal Lancair accidents by four per year. Ever heard a pilot rationalize with a sentence that begins "99 percent of the time..."? In the case of fatal accident rates, the difference between one fatal accident per year (the GA fleet) and five fatal accidents per year (Lancairs) is the difference between avoiding fatal accidents 99.999 percent of the time and avoiding them 99.995 percent of the time—the action is in the third decimal place! That's going to require serious attention to detail.

In writing this article I'm looking for ways to close the gap.

### ONE DOWN; THREE TO GO

That brings us back to the subject. In the introduction I stated that loss of power is a factor in about 25 percent of fatal accidents every year. If we can reduce the number of fatal accidents resulting from power loss we will have addressed one of the four annual accidents needed to at least match the GA community.

Of the 56 loss-of-power accidents (both fatal and non-fatal) cited in the introduction, 16 occurred during takeoff, and six during climb. We know that bad decisions both on the ground and in the air were contributors. This article is focused on preflight preparations that minimize the possibility of engine failure and providing yourself an out if one occurs despite your best efforts.



**Free datalink weather and traffic  
was the FAA's idea.  
We just made it fit in your flight bag.**



**Introducing the Garmin® GDL® 39.** With this new dual-link portable receiver, you're all set to connect with the subscription-free U.S. weather and traffic services available through the ADS-B datalink network<sup>1</sup>. NEXRAD imagery, METARs, TAFs, SUAs, PIREPs, and more: It's all beamed free, using the FAA's 978 MHz UAT uplink. Plus, you'll also receive ADS-B traffic information and target alerts to help you maintain safe separation. Accessing both 1090 ES and 978 UAT frequency bands, the GDL 39 shows you a complete air-to-air picture of other ADS-B "Out" equipped aircraft in your vicinity<sup>2</sup>. You can view all this data on select Garmin GPS portable units – as well as on your Apple iPad® or other iOS® or Android-based devices compatible with our Garmin Pilot™ mobile app. To help optimize map navigation on your iPad® or other tablet, the GDL 39 combines WAAS-quality positioning accuracy with 5-times-per-second updating capability. And with prices starting at just \$799<sup>3</sup>, this is clearly one smart way to score the free benefits of ADS-B. Got questions? Visit our online ADS-B Academy ([garmin.com/adsb](http://garmin.com/adsb)) for information and answers.

Follow the leader.

[Garmin.com](http://Garmin.com)

**GARMIN®**

NASDAQ GRMN

©2012 Garmin Ltd. or its subsidiaries

<sup>1</sup> NOTE: The GDL 39 is a non-certified receive-only product. It does not provide ADS-B "Out" capability to satisfy FAA mandate requirements.

<sup>2</sup> A certified ADS-B "Out" solution is required to ensure complete traffic coverage with correlated ground station uplinks

<sup>3</sup> Manufacturer's suggested retail pricing.



## POWERPLANT PREFLIGHT

This section discusses preflight actions. I'll concentrate on these areas of concern:

- Fuel System
- Engine Oil
- Ignition System
- Etc...
- Post Maintenance

### Fuel System

According to Bob Pastusek's maintenance article in the [September 2012 edition of LOBO News](#), the NTSB has found that fuel system problems are the leading factor in Experimental – Amateur built (EA-B) aircraft accidents.

The problems can be insidious though. For a compelling account of how a 30,000+ hour Air America pilot and Lancair expert got tricked by an aircraft which he had flown many hours, check out Mike Busch's story from [April 2012 Sport Aviation](#).

Here are some of the failure modes that can be a problem:

- Fuel level sensors not calibrated
- Baffle door/vent obstruction
- Shape anomalies in the tank
- Debris in the fuel lines
- Air leaking through the fuel selector
- Fuel flow sensor not calibrated

Bob Pastusek has a detailed and excellent article on the subject of checking out your fuel system in the [May 2012 LOBO News](#) (pg. 8).

### Engine Fuel Flow

Fuel flow setup, especially on the TSIO-550, is critical. I know of at least 2 Lancair IV-P's that crashed due to a black-smoke, over-rich condition and at least one other aircraft that landed safely following an over-rich situation. Conversely, a too lean setting can cause unrecoverable damage to an engine, even if it doesn't stop right away.

When you have an A&P set up the fuel flow on your engine you should be looking over his/her shoulder, checking that it's done by the book. For a Continental TSIO-550 you would want to consult [Continental Service Information Directive \(SID\) 97-3E](#).



Why the extra pair of eyes? Here's a real life incident: A couple years ago I test flew a Mooney Rocket I was considering buying. I wanted to evaluate climb and cruise performance, so I asked the owner to do a full power Vy climb. With cowl flaps full open, mixture full rich, wide open throttle, close to ISA temps, we made it to 2500' AGL before the CHT exceeded 400° F necessitating a power reduction and airspeed increase. I noted the fuel flow and looked up the manufacturer's recommendations in the SID when I got on the ground; it was 6 gph too low!

We talked to the mechanic and learned only that he wasn't interested in no stinkin' SID. Instead, he had carefully—and incorrectly—adjusted the fuel flow on the engine according to his own personal standards, and the engine now had 600 hours on the Hobbs. Needless to say I didn't purchase that airplane.

### Fueling

Another Lancair fatal accident occurred after a line maintenance worker put JET-A into a IV-P piston. There was enough 100LL to get airborne but then the engine got unhappy in a hurry. Here are some

steps you can take to avoid a similar fate:

1. Be there when anyone puts fuel in your aircraft. It takes time, but that is part of the cost of being your own ops department.
2. Get locking fuel caps.

### NORTHSTAR FLIGHT LAB is at

the leading edge of a relatively new trend in general aviation; a flight simulator center open to the general public. We offer all-weather, full motion flights, all around the globe to pilots and flight instructors for advanced flight training, recurrency and proficiency. Check us out! 541.504.0305 [www.northstarflightlab.com](http://www.northstarflightlab.com)

3. Install decals at fuel filler ports specifying type and grade fuel. They're ugly, but they work.

### Engine Oil

I didn't fully appreciate the role that oil plays in our engines until I saw all the parts out on the table during my visit to Continental for training. Plain bearings handle huge loads which, were it not for oil, would grind our engines into uselessness in a matter of seconds.

According to Continental, the oil flow rate for the TSIO-550 is 24 gallons per minute, therefore it's critical to check anything that might let the oil out. The path to the outdoors may not be as obvious as a loose fitting. Check out Fred Moreno's account of mystery oil loss in [this post on the Lancair Mail List](#). Fred's story points out that seemingly trivial modifications can have totally unanticipated results. The same is true for fuel systems.

A review of accidents involving loss of oil traced problems to these areas:

- Three flights experiencing loss of oil pressure for unspecified reasons
- Turbocharger oil line came off
- Oil filter gasket extruded



**Dedicated to  
Lancair Owners  
and Builders**

**Regal Aviation  
Insurance**



Your Insurance Professionals  
Since 1978

**800-275-7345**  
**www.RegalAviation.com**

5625 NE Elam Young Parkway, Suite 100  
Hillsboro, Oregon 97124  
PHONE 503-640-4686 | FAX 503-640-3071

Did some of these involve a failure to observe fastener/fitting torque requirements? My LIV-P has seven high-pressure oil lines plus the oil filter gasket. That's 15 fittings that need to be properly torqued. This is not an area to cut corners.

#### **Ignition System**

The ignition must be set up by the book and it must pass every test you can muster on the ground.

Continental Motors provides [this document about ignition theory](#) on their website. If you have a Continental IO-550 series engine, ignition is covered in [Chapter 6 of the maintenance manual](#).

**Etc.**

Check everything you possibly can that might threaten the health of your engine: electrical connections, oil connections, control connections,

exhaust connections, everything. It's amazing how much can be revealed by a small hint. One day I was looking around in my engine compartment and noticed the nylon cover to the fuel line going into the gascolator was frayed. "Wait" I thought, "there's nothing moving here that would cause abrasion". On closer inspection I determined that the nylon was actually melted, and a nearby slip joint for the exhaust was leaking. On even closer inspection I learned that all the slip joints were leaking... But that's another story. The point is any anomaly that you can't explain convincingly is likely a problem.

One thing we learned at the engine course at Continental Motors is that using correct torque values is critical. The engine literally will not stay together if this is not done. One attendee brought pictures showing his cracked crankcase. Based on the pictures, the Continental experts surmised that the hold down bolts on the cylinders were never torqued correctly or that paint in one of the load-bearing areas extruded, thereby changing the torque value. From there motion starts developing and stress is not evenly distributed among the bolts. See more comments on the Continental training course on page 16 of the [February 2013 edition of LOBO News](#).

#### **POST-MAINTENANCE**

At least one Lancair fatal accident occurred just after maintenance. An engine failure resulted, apparently due to an over-rich condition that showed up shortly after rotation. If your airplane goes in the shop and someone else works on it, consider all the careful work you did prior to your first flight that might have been undone.

#### **AIRPORT SELECTION**

We all learn "Always have an out". In this case, having the right airport is



part of the out. Sometimes that's going to mean choosing a different airport than we might have had in mind. If that means hiring a truck to move the airplane, so be it.

That may seem extreme, but the Lancair is a very fast airplane with a very small wing. The characteristics that give the Lancair such great cruise performance result in tradeoffs, like higher landing speeds, which burns up runway faster and/or means more energy to shed for off-airport landings. Most Lancair owners are happy to give up access to airports with shorter runways in return for glorious cruise speeds. Choosing a favorable airport is an appropriate response to that tradeoff.

Here are some considerations in recognition of this tradeoff:

### Runway Length

The first line of defense is a long, and preferably wide, runway. Ideally, find a runway that is long enough to get airborne, notice a problem shortly after takeoff, and put it back down again. We'll look at the numbers further on in the next article but for now figure 5000' is bare minimum.

### Obstacles

If you have a low altitude power loss and can't get it back on the ground before the runway ends, your next option is going to be whatever is beyond the runway or just left or right of it. Power lines, trees, freeway overpasses, gravel pits, etc. are not ideal.

### Nearby Off-Airport Landing Sites

Once you are in the air you now have access to nearby landing sites, if there are any. An airport surrounded on all sides by trees or cliffs is not ideal.

### PART TWO PREVIEW

We've prepped the plane and selected an appropriate airport. In the next

newsletter I'll cover planning emergency actions prior to takeoff and the takeoff.

for questions contact colyn at [c.case@lancairowners.com](mailto:c.case@lancairowners.com)

## SETTING RECORDS

jeff edwards

By now most of you have probably heard that Lancair IV builder and flier, Bill Harrelson, set a new record by flying non-stop (7,051 NM; 38.5 hrs) from Guam to Jacksonville, Florida on March 1. Bill, a former LOBO board member, and his aviatrix wife, Sue, have already built and flown two Lancairs, and their third kit-built aircraft nears completion as this goes to print.

Bill built his IV with the purpose of setting a new record—a polar circumnavigation of the globe with just six legs:

- Bangor, Maine to Recife, Brazil
- To the southern tip of Argentina
- Over the South Pole to New Zealand
- On to Honolulu, Hawaii
- North to Fairbanks, Alaska
- Over the North Pole to Bangor

Bill made a record attempt in mid-March, but was forced to cancel after several days of waiting for favorable weather in Argentina. He plans another attempt in October. Bill's wife Sue is the mission's "Capcom," monitoring his flight via Spidertracks and satellite phone. As with other record setting attempts like Burt Rutan's and Jeana Yeager's aboard Voyager, Steve Fossett's in his 10-story-high balloon, Spirit of Freedom, Lindbergh's flight in The Spirit of Saint Louis, and Earhardt's Electra 10E, a good aircraft, great pilot and careful planning and execution are a must.



BILL & SUE'S IV  
PHOTO COURTESY ROB LOGAN

This is not Bill and Sue's first grand-scale aviation adventure. Some of you might remember their presentation at the 2011 LOBO/Lancair Flyin at Branson, MO, where they thrilled us with their story about flying from the United States to Europe in their Lancair 320.

Bill recently traveled to Sun 'n Fun in his IV (practically around the block for Bill) where the GA crowd caught up with him. I heard he had a tough time getting away from all the admirers in Lakeland.

Technology certainly favors Bill with GPS, autopilot and weather forecasting, but it is still the aviator against the elements. Please join me in wishing Bill and Sue the best as they prepare for their next big adventure!

## EMERGENCY LANDING!

by howard "rusty" hamer



### OR HOW TO GET CARRIER QUALIFIED IN A LANCAIR 235...

This story starts like many involving a near disaster: I decided to modify my Lancair 235 to go faster. A friend of a friend was selling a Lycoming O-290 he had modified based on a Master's Thesis written for California State



50 YEARS OF  
THE POWER, THE PASSION,  
THE LEGEND...**LIVE IT!**

PROUD SPONSOR OF THE **2013 LOBO / LANCAIR LANDING**

**Pratt & Whitney Canada**  
A United Technologies Company

University, Sacramento. The paper described converting a Lycoming O-290G (used in military ground power carts) for aviation use. This particular engine had a crankshaft from an O-340, which increased total displacement to 308 cubic inches due to a quarter-inch stroke increase, and high-compression pistons. These modifications were thought to increase the engine's overall power output to near 180 HP.

I bought the engine and sent it to Evert Hatch for a teardown and inspection (Evert had previously worked on this engine). Evert said everything looked fine except the crank had been repaired after having spun a bearing on the number three rod journal. He had the repair tested by Magnaflux and said it looked good, but reminded me Magnaflux testing isn't particularly good at finding subsurface defects. We debated the repair and Evert recommended I use the crank, but have it inspected again after 500 hours. I decided to use the crankshaft, but to halve Evert's recommended inspection interval.

The engine ran great for several years, but I never stopped looking for a good O-340 crank. In the spring of 2000 I

bought a complete Lycoming O-340 out of a Twin Navion that had landed gear up. I checked the runout on that engine's crankshaft and found it well within tolerance, so I shipped it to Lycon who inspected it and blessed it with a yellow tag. I had planned to install it in the fall after the summer flying season, which would have been well before the 250 hour inspection interval I had set for the repaired crankshaft in the engine installed on my 235.

### **STRANGE VIBRATIONS**

Late that summer I joined local group flying from my home airport, Nevada County Airpark in Grass Valley, CA, up to Hood River Oregon. As I flew between Klamath Falls and Sun River I suddenly noticed a strange vibration and notified a fellow flyer that I was making a precautionary landing at a small air field in Chiloquin, OR to check out the vibration.

My post-landing troubleshooting was unsuccessful at identifying the cause of what seemed a fairly subtle vibration. My friend landed and we pulled the cowl. One thing we found right off was a loose magneto—I was able to move it with a slight twist. At that point we

assumed a mistimed mag was causing the vibration.

Unfortunately, while trying to adjust the mag we tore the gasket. Now I had a big oil leak. Since there were no other aircraft on the field we called a repair station in Klamath Falls about a new gasket and the possibility of borrowing a timing device. They had the gasket I needed, and agreed to loan us a magneto timer. They also suggested we bring the magneto with us so they could look it over, which seemed like a very good idea.

We flew down with the magneto, which checked out fine. Since I had limited experience with magneto timing (and my wife was with me), I asked if a mechanic could drive up and reinstall/time the magneto. He agreed, and we all packed in a car and made the trip back up to Chiloquin. After the mechanic installed and timed the magneto we closed up the cowl, fired up the engine and taxied to the run up area. During the run up something still seemed wrong, so we taxied back to the ramp and shut down. We checked plugs and plug wires, and had the mechanic scratching his head trying to find something. We restarted, taxied out, did another run up, then started a



takeoff. Something still didn't seem right, so I aborted and taxied once again to the ramp. After pulling the cowl and doing some more head scratching, the mechanic rechecked the timing on the magneto and found it was ten degrees off. He was noticeably embarrassed, remarking he had never made that mistake before.

We decided a test flight was in order before going back up with my wife aboard. The ground check was much better but the static RPM was about 50 RPM less than at my home field. I rationalized this was possibly due to the higher field elevation.

### **THE LITTLE LANCAIR THAT COULDN'T**

The takeoff roll was slightly longer and the climb rate lower than they should have been. As the gear came up the air

speed increased and my fixed pitch prop also accelerated. There were pine trees all around, so I angled left for Highway 97 which was close and the only cleared area. A few seconds later, after getting a nose gear up light, it seemed like somebody pulled the throttle closed, which didn't make sense because I had my hand on it and it was still fully open.

I quickly got the boost pump on, checked the mixture and cycled the magneto switch. The engine was running, but it wasn't making any power. I checked my altitude—around 250' AGL—and couldn't help a longing look over my shoulder at the runway I knew I couldn't safely return to. I noticed my airspeed had decreased to the high 60s from the 80s, and was still decreasing. I thought, "Time to fly the

plane."

I banked slightly right to line up with US Highway 97, which has four lanes and is undivided, and started scanning for traffic. I saw a tractor-trailer ahead going the same direction as me which I didn't think I could avoid. There were two more tractor-trailers running side by side in the oncoming lanes which also appeared on an intercept path. I judged I could possibly stay over the right hand lanes until passing the two oncoming trucks and shift to the oncoming lanes just before touchdown. In the meantime, I had lost sight of the truck in my lane as it passed under the nose of my aircraft.

I held the airspeed constant as the aircraft descended. Just as I was getting close to the ground, and about to pass the two oncoming trucks, I felt



**CASCADIA AIRCRAFT MANAGEMENT**

*AeroDesign-Group, provides industry-leading design consultation and 3D graphic renderings for your aircraft's interior and exterior design*





- Design
- Paint
- Interior
- Avionics
- Build
- Maintain

*We are the premiere aircraft maintenance facility in Oregon*

**Building Dreams, Delivering Excellence!**

www.cam-aero.com phone: (541) 504-6869

www.aerodesign-group.com phone: (647) 347-3459



an impact and heard two almost simultaneous bangs coming from the prop and the tail. Suddenly, there was a large plywood wall in front of me, and somewhere in the back of my mind I was wondering what in thunder I had hit. Then my thoughts turned quickly to survival, and I realized I badly wanted out of that cockpit. It was at that moment I realized I was still moving about 60 mph. I felt the aircraft slowing, and watched as the plywood

wall in front of me moved to the side of the road.

### **WHERE AM I?**

Once stopped, I released the canopy latches and jumped out of the plane, landing on a wooden deck. I heard a door opening sound toward the front of the plane and turned to see someone jumping down from the cab of a truck... The truck which was pulling the flatbed trailer I had just landed on! The driver and I just stared at each other for a moment, amazed.

The nose of the plane was wedged into the truck's sleeper cab about eight feet above the trailer bed. One blade of the prop was caught between the cab and the cargo retaining bulkhead—made out of plywood. The plane had rolled slightly to the right after impact and the right flap, undamaged, was resting on the side of the flatbed trailer. This put the left wing high in the air—high enough so that traffic was able to get past. Fuel was leaking from the right vent, so I plugged it with a small stick. The empennage was almost completely broken off, but the ventral fin was wedged into the wood bed of the trailer. The wings were somehow undamaged.

### **THE TRIP HOME**

The Highway Patrol directed the driver to move his truck—with my plane still sitting on the trailer—a mile down the road to a state highway gravel supply area. (It would have been closer to take me

back to the airport, but when you're on a highway you do what the Highway Patrol says, even if you're in a plane.) There, we used a couple of straps and a wrecker to lift the plane off the trailer, where-upon I turned on the master switch and put the gear down. After getting three greens we lowered the plane to the ground on its wheels.

I called one of my friends who had flown up to Hood River ahead of me to tell him not to expect me, and he relayed news of the crash to the rest of the group. Katie, one pilot's wife who had remained home, volunteered to drive her truck to Chiloquin the next day with a flatbed trailer large enough to transport my plane. Some of the group flew back from Hood River the next day to help me disassemble the Lancair.

Katie arrived at Chiloquin around 1:00p, a record time from Nevada County to Chiloquin! By then, the guys and I had the 235 apart, and I called the wrecker back to lift the fuselage onto the trailer. We reattached the upper cowl and fastened the wings to the trailer bed. Katie flew back to Hood River with her husband, and my wife and I headed home in Katie's truck with the Lancair on the trailer after turning in our rental car in Klamath Falls. What a great group of pilot friends, and I include Katie who is also a pilot!

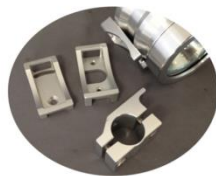
While driving home I returned the call to the FAA using the number passed to me by the tow truck driver. The first thing they said was I should leave the aircraft at the accident site. I told them it was too late, and that the wreckage was already on the way back to Grass Valley, CA. Besides, I told them, the accident site was a flatbed trailer that was currently on its way to the apple orchards in Washington State! I suggested a compromise: I would not perform any further disassembly until FAA inspectors were present as witnesses. Not having much choice, the FAA representative reluctantly agreed.



TK-5 Dampers for  
Lancair 235, 320, & 360



Airlite Landing Lights  
75 Watt  
brackets available for most planes



### **Precision CNC Machining**

Risse Racing Technology, Inc.  
334 SE Timber Ave. Unit 103  
Redmond, OR 97756  
541.526.7242 phone 541.526.7243 fax  
www.risseracing.com sales@risseracing.com





### WHAT HAPPENED?

Back at my hangar, with FAA inspectors present, I rotated the prop and got the requisite clicking from the magnetos. There was good compression in all the cylinders, so the valves were working. The header tank had fuel and the engine fuel pump worked. The throttle was fully open. I started wondering myself what I had screwed up, or if I had been hallucinating. The first indication of a serious problem came when I removed the oil screen; there was a significant amount of bearing material and some unidentified pieces of steel. That seemed to satisfy the FAA reps, and they left.

At this point I knew a catastrophic failure of some sort had occurred, but exactly what had failed was still unclear. After removing the cylinders I finally found it: The crankshaft had broken between cylinders three and four. Additionally, the rear main bearing and mount on the crank case had started to fail. The slippage between the two crankshaft portions had significantly impacted timing for the front three cylinders.

I now believe I took off with a broken crankshaft held together only by the main bearings; the engine lost power when the rear main bearing failed enough to allow the broken halves of the crank to turn independently of each other. The ten degree "mistake" the mechanic thought he made was the result of play between the pieces of the broken crankshaft.

Several years later a former Rolls-Royce Merlin mechanic came by my hangar and we talked about the failure. He said that Rolls used to repair nitrated Merlin crankshafts that had spun a bearing, but ended the practice when they found those crankshafts always failed at the point of repair. Lycoming crankshafts are nitrated. Mine failed at 208 hours.

To set the record straight, I've never wanted to get carrier qualified, and I wasn't trying to land on that flatbed trailer. I'm just a very lucky fellow, or somebody was looking after me that day.

### AFTERMATH

A special jig and a few layers of fiberglass restored the tail to its proper position. A Lycon rebuild of the O-340 (which Lycon measured on a dynamometer at 178hp) along with a new Catto prop got the front end sorted, and

N84LH was flying within three months of the accident for another 10 years—with the same CG as I had with the original O-235.

*for questions about this story contact  
rusty at [hamer@theunion.net](mailto:hamer@theunion.net)*

**ASL**  
**CamGuard™**  
ADVANCED OIL SUPPLEMENT

**FAA  
FEDERAL AVIATION  
ADMINISTRATIVE  
ACCEPTED**

- **Fights Corrosion**
- **Reduces Cam & Lifter Wear**
- **Inhibits Engine Deposits**
- **Conditions Engine Seals**

**aslcamguard.com**