



# The Intrepid Airmen



January 2013

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San Jose, CA

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## January Event

### Meeting at Russ Todd's house

Russ will perform a simulated IFR flight using the Windows Flight simulator, his flying hardware, and his big screen TV. **Please note** that the meeting will be held at Russ's house, 10484 Dempster Ave. Cupertino, 95014.

### UPCOMING EVENTS

#### January Chapter Meeting

**Thursday, January 3.** Russ Todd's house: 10484 Dempster Avenue, Cupertino, 95014

#### Chapter 62 Board Meeting

**January 10** at 7:30 PM in the Terminal Building, all welcome.

**February 7,** Don Campbell of Samson Motorworks speaking on the *Switchblade*.

No other events scheduled! Let's get some on the calendar.



Simulated Cessna 172 flight

**EAA Chapter 62's January meeting will be held at Russ Todd's house, please see above.**

A pizza dinner will be served. Next month we return to our usual place at the Reid Hillview Terminal Building

6:30 PM General Meeting begins  
7:30 PM Presentation starts

## Membership Notes by Donald Von Raesfeld, Jr.

Membership Chairman  
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### JANUARY 2013

I hope you all had a MERRY CHRISTMAS and a HAPPY NEW YEAR. It's hard to believe another year has passed. I don't know where the time goes. I remember when I was young the time seemed to drag on and on. Now it just seems to fly by. My children have grown up and my wife and I have five grandchildren at this time. I also have a great dog, Niner, whom most of you have met. God willing, we will celebrate our 40th anniversary on November 18. Let us hope that 2013 brings us all peace and happiness and let us not forget all those who defend our right to be free. May God bless them and keep them safe.



Our last general meeting was held on December 6, 2012 at the Three Flames, 1547 Meridian Avenue in San Jose. This was the Chapter's annual holiday party and the second year that we have held it at this location. All chapter 62 members were invited along with the Young Eagle Volunteers. Russ Todd, EAA Chapter 62 Young Eagle Coordinator, was our guest of honor. As all of you probably know by now, Russ Todd won the "YOUNG EAGLE COORDINATOR OF THE YEAR AWARD", which was presented at Air Venture 2012 in Oshkosh last July. The award was accepted by Chapter 62 Past President Andy Werback on behalf of Russ Todd. This was an evening to say thank you to Russ for all of his hard work and also all of the Young Eagle Volunteers who make our Young Eagle events a success.

As you probably know by now, long-time EAA Chapter 62 member Martin Hollmann passed away on October 12, 2012. Martin was also a Technical Counselor for the chapter. Past President Wolfgang Polak presented a slide show of Martin Hollmann's life which was produced by Martin's wife Rita. December 6 was Martin's birthday. Martin would have been 72 years old that day. May you rest in peace Martin...you will be missed.

Dinner was served about 7:30 PM, the menu being chicken, fish,

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## Skybolt News December 2012

by Andy Werback

For a while it seemed like we needed a monthly update on the progress of Skybolt N528S. Every month it was something new, something weird, some progress. The airplane spent 6 months in Phase 1 Flight Testing, and I'm just now getting the "space" to work on some of the more needed changes, such as reworking the nosebowl for more cooling air.

To recap, the airplane first flew on March 7, 2012, at Hollister airport, with Robin Reid at the controls. The airplane flew just fine (yay!) but within 20 minutes was showing signs of high oil temperature. This oil temperature issue persisted over the next several short flights. We looked at the baffle, opened up the exit area on the bottom of the cowl, tried it with and without a lower cowl air deflector (works better with it on), cut away some of the front cylinder baffling for more air flow, put a couple of washers in the oil pressure regulator, but still no improvement.



Fortunately, Robin Reid knows several people at Hollister, in particular Steve Lamb of Antique Aero Enterprises. Steve is a pilot, has Skybolt flying time, and is an A&P IA (and Robin is also an A&P, so there's a lot of airplane and engine knowledge right here where we need it). So Steve took on the task of figuring out what was going on and implementing some solutions. That was good, as we no longer were living in San Jose, and it's a long commute from Santa Rosa. (I know, should have done Phase 1 in Santa Rosa, in hindsight).

So the basic issues that we faced were –

- a) Low and fluctuating oil pressure
- b) High oil temp
- c) Difficulties with the electronic engine monitor
- d) Miscellaneous issues with radio, flying trim, shimmy in tail wheel

Let's start with the oil pressure problem.

- A) Low and erratic oil pressure.

Steve and his associate Jeff Vanderswett (an excellent welder, by the way) spent about a week going over the oil system. The engine is an AEIO-360-EXP, with 10:1 pistons, angle valves, one electronic mag (Lightspeed Plasma III), an oil system "adapted" for inverted flight, and a Christen 801 inverted oil system.

They were looking for anything that could cause an oil pressure issue, such as a bad hose, leaking fitting, something I had done, whatever. They found a galled aluminum plug I had installed in the inverted oil valve and indications that the Teflon/stainless oil hoses weren't handling suction very well. Also, the oil quick drain might have been sucking a little air. But, after fixing the aluminum plug, putting in some new rubber hoses and removing the quick drain, there was no change at all in the oil pressure.

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Back to square 1.

Along the way, Steve also looked into why #2 cylinder was running a little rich at idle. Compression and plugs were OK, flight CHTs were good. Steve finally measured the fuel orifices in the fuel divider (spider) and found that #2 was just slightly bigger. Steve checked with the factory, and was told that it was within spec. So maybe someday, when everything else is under control, we might rotate the spider and use a different set of 4 ports (it has 6).

Back to oil pressure. A couple more short flights, and Steve notices that aircraft attitude has a lot to do with the fluctuating pressure, and some research into Lycoming service bulletins provides more info. A flight with 9 quarts of oil shows that more oil makes a difference. In addition, a flight with the Christen system bypassed, and finally, a flight with the complete original oil system (factory sump) showed good oil pressure. Well, that's a clue.

So we decided that it was time to take off the oil pan and look for maybe a leak in the oil pan gasket or a hole in the sump pickup. Note that on this engine, the normal oil sump has been plugged and a new pickup installed so that the oil from the pan goes out to the inverted oil valve before going back into the fitting where the oil screen goes to the suction inlet of the oil pump. (Easier shown with a picture!). What we found was:

In the picture to the right, the normal oil pickup in the center of the sump (which works just fine) is disabled, and the oil comes from the aft pickup port. There is a possibility that port is generating a vortex and sucking air as there is a Lot of oil being pumped through the engine.



photo shows disabled oil pickup (center) and new pickup at the aft end of the pan (right)



new antivortex suction tube installed

Steve's solution was to create a suction tube with distributed holes to minimize the chance for generating a vortex. This is a lot like the normal way of installing the Christen inverted system, except that it's off to the side instead of in the middle of the sump. According to Steve's research (a Lycoming bulletin and some other sources) this particular IO-360 model is troublesome in the oil sump area. Oops. Steve also discovered that the old style oil pressure regulator (with internal washers used to control the

(cont' on page 5)

pressure relief limit) was a poor choice for an aerobatic engine with external oil system—it wouldn't regulate very well. The solution was to install the new model regulator with the external screw adjustment.

Between the oil pickup and oil regulator changes, and running with at least 7 quarts of oil, the oil pressure issue was resolved. But it was a difficult path. Lots of help from other people, such as the folks at Lycon, was also helpful.

### B) Oil Temperature.

Oil temperature was and continues to be another root canal. After about 20-25 minutes, it would just climb on up to 240 degrees and stay there, regardless of engine power or pitch attitude. Not very much fun. We started by trying to make sure there was adequate airflow over the cooler, and then tried to get as much more as possible. As mentioned earlier, we opened up the cowling and cut away some baffling that might have been restricting air, but no change. CHTs, strangely, were all good (around 330-360 deg.) for an engine that wasn't broken in.

After some research, we determined that there probably wasn't enough capacity in the oil cooler I had



baffle mods

installed. It was more appropriate for an IO-320. But since it came with the boxes of parts for the airplane, I assumed it was the correct size. But it's a little hard to tell, because I could only give it a 3" SCAT tube (duct) from the back of the #3 cylinder baffle, so maybe it's just not getting enough air. In any event, Steve installed a second oil cooler on the left side of the engine, and removed the cabin heat (who needs it?) so he could install a second 3" SCAT air supply. The second cooler helped a lot, at least it got us to where we could fly the airplane for more than 25 minutes. We are able to fly continuously at moderate power, but we still have limitations on

climb and continuous high power.

So the next big thing is to install an airspeed indicator to show the differential pressure between the upper and lower cowling. I suspect that there isn't a lot of pressure differential, which means not enough air is getting in though the nose bowl inlets (they're sort of small and tight).

Along the way, Steve also looked into the vernatherm, the oil temperature regulator, and found that it was operating correctly, but we still tried a test vernatherm that was rigged to be open all the time. It didn't help, so the vernatherm is doing what it's supposed to be doing.

Another suspect in the oil temperature problem was the electronic ignition. Some sources suggested that with the 10:1 pistons the combination of the high compression and ignition timing could cause high CHTs and thus high oil temperatures. Steve disabled the electronic system and installed a regular

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magneto, but we could detect no change in operation.

### C) Electronic Engine Monitor

Another thing that caused problems was the electronic oil temp/pressure indicator, an AIM-3000. This item fits my panel space, but I highly do *not* recommend it. We checked transducer calibration and tried a couple different transducers, and found that oil temperature indication was close but always behaved poorly around 235 degrees (where we really wanted good data), and the oil pressure was indicating about 10 psi different from an external round gauge. So we also installed a couple of new gauges for better data, and a separate electronic tach as we weren't getting any tach display from the (now disabled) electronic ignition system. Electronics International makes a nice box (well documented, has good factory support) that has just numeric displays, and is about the same size. Something to consider for later on.



AIM-3000

### D) Miscellaneous Issues

Well, the good news is that the airplane flies well. Small problems remain with the trim, but considering all the things that could go wrong or are hard to change once you get the structure welded up, holes drilled to mount the wings, fabric over everything, it's not easy to make a significant change. Not that the engine issues were easy, and there's still more to be done, but at least the basic airplane is in good shape.



Flying!

Robin identified the tailwheel spring length as being a source of trouble, especially for a guy without much experience in tail draggers. So Jeff shortened it a couple inches, we flew it, and I managed to get some shimmy a couple of times. Another easy fix, we tightened up the mounting bolts just a bit (the leather pad needed some break-in time) along with the Scott main bolt, added a little grease, and it was all good.

For the yaw trim, we added a rudder trim tab (duh), but we still have some flying wire adjustments to make, and a couple of washers to adjust in the I-Strut mountings in

order to correct a slight right roll.

Finally, we have a small radio problem. The KY-196 is a 28v radio that sort of works on 14v (maybe better on other airplanes). On the Skybolt it receives fine, but the transmitter output can barely be heard beyond a couple of miles. So I'm installing a KY-197 at some additional cost. Oh, well.

To wrap up, we had an intense week of flying with Robin, getting checked out, flying off a bunch of the 40 hours, and getting the Phase 2 (permanent) Airworthiness Certificate. Yay!

(cont' on page 7)





## Membership Notes, cont'

or steak. I myself had the fish (Tilapia) while my wife, Jocylene, had the steak. I can tell you both were delicious. Jocylene was not able to finish her steak so I finished it for her. Sam Werback and Gudrun Polak provided a delicious selection of holiday cookies for dessert. Thank you, Sam and Gudrun. A slide show of Young Eagle events, presented by Vice President Mark Wainwright played during dinner.

Past President Andy Werback, took center stage while everyone was enjoying dessert. Andy introduced the Chapter Officers and Board Members, and also two new chapter members present, Louise Lane, and my son Mark Von Raesfeld. In addition to being new to the chapter, Louise and Mark are also new Directors. Mike Navarre, also a new member and our new chapter Secretary, was unable to attend. Andy introduced Howard Stegg, a friend of Jon Garliepp, who he had the pleasure of taking for a flight during our annual chapter barbecue held in October. Howard was a navigator on B-29s during World War II. He also introduced Mr. and Mrs. Karl Honaker, Director of Airports, and Mr. Mike Donahoe, Policy Aide to supervisor Dan Cortese.

Mr. Mike Donahoe had two plaques that supervisor Dave Cortese's office had put together. The first plaque honoring EAA Chapter 62 for its Young Eagle program was accepted by Chapter President Konstantin Blank. The second plaque was presented to Russ Todd, YOUNG EAGLE COORDINATOR OF THE YEAR, commending him for his Young Eagle program leadership. He also expressed the Supervisor's and County's appreciation for the Young Eagle efforts to all participants.

Russ Todd then spoke about the Young Eagle program and thanked the pilots and ground volunteers, including the LULAC (League of United Latin American Citizens) participants. He presented certificates of appreciation to many of the Young Eagle volunteers who were present. He even mentioned my dog, Niner, who helps me escort Young Eagles.

Thank you to all who attended this event and made it a success. A special thank you to Andy and his wife Sam for putting this all together. It takes a great deal of time and effort. If you missed it this year make plans to attend next year. We had a good time.



a serious escape from Santa Clara





Russ Todd with the commendation from Santa Clara County

Chapter 62's commendation plaque, received for the Chapter's work with Young Eagles





Hummelbird looking for an engine



Richard Wilson's Fly Baby



YEs at work





more work

Boyd Blue



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