



# EAA Chapter 1541 Newsletter March 2016



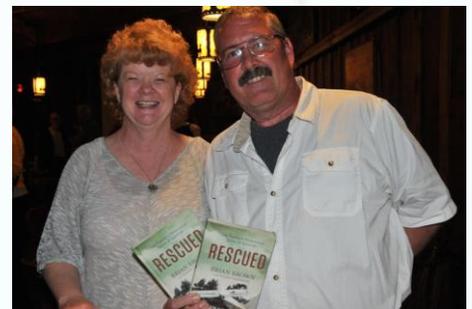
Volume 1, Issue 3

## Wings & Words

Editor's Corner...by Richard Pearl

You're looking at edition # 3 and the newsletter continues to expand. This month we're including an article by Bryon Maynard, president of Lincoln Skyways, on aircraft and engine maintenance. If you have any thoughts on the types of articles you'd like to see, please contact me.

Last month's combined EAA/LRAA meeting at Cattleman's restaurant was an outstanding success. The featured speaker – Brian Brown – was terrific and his topic of survival after an airplane crash in rugged terrain, was totally on point since we live at the base of the Sierra.



The key takeaways were what he did right, and wrong. We all learn from experience, and Brian is to be commended for his willingness to discuss this event. There were plenty of "wow's" in the audience. One of my comments to the group (I've been flying gliders in the Sierra since 1990) was that it pays to get specialized training in mountain flying if you intend to fly in the high reaches.

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## President's Corner – March 2016

Wow, we sure have had fun and big changes so far this year.

Our first FFAST wings presentation was a huge success. Special thanks to all of our membership that helped to make it happen and special thanks to LRAA and its President Bob Butera for his help. It was especially fun to see our two clubs share the meeting. The presentation was outstanding and the energy in the room was very noticeable. We will do more programs like this in the future.

Another great step forward is our new EAA Hangar (S12). So much has been happening recently that we have been delayed a couple weeks to organize our first Hangar event(s). Plans will be underway very soon for monthly pancake breakfasts among other activities. Our March meeting, including a hamburger Bar-B-Q, will take place in the new EAA Hangar. This will be our first official meeting in our EAA home. Thanks to all those that made this happen, in particular to the Gold Members that pledged an annual donation to help fund the club hangar.

Lastly, to help guarantee that our Hangar will always be there for our members and programs, we have started a charitable donation program to assist in funding the Hangar as well other 1541 activities. If you have an old car, boat, motorcycle, or anything of value you no longer need, your donation will be greatly appreciated. Any gift large or small will help 1541 share the love of flight through various EAA programs and you will receive a tax deductible receipt for your gift.

Our first car donation occurred last week. A special thanks is given to former President Richard Bristow for his generous donation of his 1991 Lexus to the club. Richard gave so much time and effort during his term as President and continues to help today. Next time you see Richard, remember to say "THANKS"

I am so fortunate to be part of chapter 1541. Together we will continue to do great things!

Ron Wright  
President  
EAA 1541



# 1541 Event Calendar – 2016



## **March:**

- March 2 (Wednesday) – EAA 1541 Board of Directors meeting, Pizza Roundup, 6:00pm
- March 16 (Note: Wednesday) - Richard Bristow's hangar; bring your partner. Speaker – Richard Bristow. General meeting starts at 6:00pm, dinner at 6:30, presentation at 7:00. Richard will talk on his flying for Scientific Aviation collecting air samples from 200ft AGL to FL250. More on this in next month's newsletter, but plan on attending this great presentation.
- March 19 (Saturday) – KLHM Historical Aircraft Display Day (also cheap fuel)

## **April:**

- April 6 (Wednesday) – EAA 1541 Board of Directors meeting, Pizza Roundup, 6:00pm
- April 12 (Note: Tuesday) – FFAST meeting with the NTSB at our hangar
- April 16 (Saturday) – KLHM Historical Aircraft Display Day (also cheap fuel)
- April 20 (Wednesday) – Membership meeting; bring your partner. General meeting starts at 6:00pm, dinner at 6:30, presentation at 7:00.

## **Upcoming Major Club Events:**

- May 14, EAA 1541 Poker Run, originating from KLHM
- June 11, Lincoln Regional Airport AirFest 2016

**Ongoing (non-Lincoln) Events** (note – this section will be building as we go forward; if you know of an event that should be added, please advise).

- 4th Saturday of each month – Rancho Murietta Airport (KRIU) Chapter 1476 Historic Aircraft and \$5 Lunch, 9:00am – 1pm, and 11:00am – 1:00pm respectively

## **Club Executive Roster**



### **Officers:**

- President – Ron Wright (ronpw@hotmail.com; 916 240 5980)  
Vice President – Ken Schwartz (ken.schwartz@att.net; 916 355 1101)  
Secretary – Richard Pearl (pennyrich@aol.com; 916 715 9666)  
Treasurer – Jim Hughes (jim.hughes@att.net; 530 432 6608)

### **Board Members:**

- Bruce Estes (brucee7837@aol.com 650 504 4464)  
Tony Kasabasich (tonykasabasich@yahoo.com 916 806 8575)  
Tom Lieb (tlieb1@earthlink.com 530 432 6608)  
Bob Miller (bmillerpharmdmba@gmail.com 916 253 2667)  
John Perry (john.perry@tghaviation.com 530 320 2247)  
Richard Ryan (k6hnc@yahoo.com)  
Dug Smith (dug@dugbert.com 916 850 0309)

## Members Spotlight

This month's Members Spotlight is on Marty Maisel. Calling Marty an aeronautical engineer is like calling Babe Ruth a baseball player. Marty's engineering capabilities are at a level that many of us can only dream of. Marty's love of aviation started at an early age when he built model airplanes. Marty loved the construction process, and dreamed of becoming an aeronautical engineer. Marty's eighth grade year book made reference to Marty wanting to make his life career in aeronautical engineering. Remember, Marty was about 14 at this time.



Fresh out of college, Marty went to work for Hamilton Standard in 1960. This was at the time that Marty's friends dreamed of designing space ships and rockets and going to the Moon. Marty dreamed of designing airplanes and airplane equipment. At Hamilton Standard, Marty specialized in the design of propellers for VTOL (vertical take off and landing) aircraft. From here, Marty joined Boeing Helicopters, again specializing in the aerodynamics of propellers and rotors for VTOL aircraft and helicopters. Marty next accepted a position at the NASA Ames Research Center, which required him to relocate from the East Coast to the West Coast in 1970.

At Ames, Marty became a member of a small team that developed the XV-15 Tilt Rotor VTOL proof-of-concept research aircraft. That prototype test aircraft is now on permanent display in the Udvar-Hazy Smithsonian National Air and Space Museum near-Washington D.C. Marty is extremely proud (rightly so) of his achievements in the development of this aircraft. This aircraft led to the development of the famous Osprey VTOL aircraft that is flown by our military today. After 32 years with Ames, Marty retired and moved to Lincoln, Ca.

But, Marty was not done designing and building aircraft. In 1977 Marty had purchased plans for a Cavalier aircraft. A Cavalier is a 2 seat, low wing aircraft with a wood fuselage core structure instead of the typical metal tubing. Marty felt more comfortable working with wood. Life kept getting in the way of construction of the Cavalier, but after retiring, Marty got serious about building the Cavalier. Remember, this is a plans built airplane, not a kit. EVERYTHING has to be constructed. Many of the parts on this aircraft were designed and built by Marty such as the fiberglass wing tip fuel tanks, the fiberglass engine cowl, along with many other custom parts. Marty thinks the aircraft might be ready for first flight this summer.

Marty lights up when talking about his career and achievements. Marty feels incredibly fortunate to have done what he dreamed about as a child. And to quote Marty "I'm still having fun with aviation".

**Bruce Estes**



## Aircraft Maintenance

By Byron Maynard

President, Lincoln Skyways, Inc. (916)730-0788

No matter what we do, everything we own is under constant attack. The earth will eventually consume whatever we create. As pilots and airplane owners, this is particularly true. Our planes are made from light weight materials, one of the many requirements for flight. Metal rusts, aluminum corrodes fiberglass cracks and delaminates, and composites, well we are not sure how they will fare over time. We know that composite planes cannot be painted dark colors due to the harmful effects of heat. Having a composite plane sit outside in the desert heat year after year will probably be detrimental to the airframe over time, just like moisture is to aluminum.

So what can we do? Really, about all we can do is slow the effects of this harsh environment we call earth. Keeping your plane in a hangar for one really helps preserve an aircraft. But even a hangar is not enough by itself to keep a plane in good condition. Recognizing a problem before it becomes a problem is the key. Over time, we have all known aircraft owners that have had drive-by annuals done. These are also known as pencil-whipped annuals. But by doing quick, nonintrusive annuals, they may be missing their best opportunity to spot trouble before it becomes more costly. A lot can happen in a one year span, even flying less than 100 hours.

Consider an all aluminum plane that has a corrosion issue that isn't identified until it becomes serious. The options at this point are punishing. Reskinning a structure can be very costly and time consuming. When we spot the onset of corrosion in an aluminum aircraft at our shop, we clean the affected area and then treat it with ACF-50. ACF-50 is a great corrosion inhibitor / lubricant that creates a barrier between aluminum structure and water. If you can keep water out, you stop the spread of corrosion. We use a sprayer at our shop to disperse a fine mist of ACF-50 into an aircraft structure. A good ACF-50 application lasts up to a year which coincides with the time frame of an annual inspection.

Consider a crack in your aircraft's aluminum skin or structure that goes unnoticed. If the crack is allowed to run, it can mean a much more costly repair down the line. Cracks, spotted early on, can be stop drilled in some cases. Doublers can be added to strengthen the affected area. If the crack is too far gone, a reskin and other key structural replacement maybe in order. Again, a thorough annual can spot trouble before it becomes bigger trouble. Our engines are also under constant assault from corrosion. At the shop, we all too often see the effects corrosion has on camshafts in engines that are run infrequently. A pitted camshaft will lead to spalling, and when severe enough, leads to an engine tear down. If you run your aircraft engine less than once per week, consider adding CamGuard to your oil to defend against the effects of moisture.

Your tires, door seals, window seals, etc are also under attack, mostly from UV and other environmental factors. Applying a good UV vinyl and rubber protectant on a regular basis is a good line of first defense. I like Meguiars or Mothers Vinyl and Rubber protectants, both of which provide UV protection. With the prices for tires and rubber seals escalating over the years, making them last as long as possible is just a good idea.

Consider one item that makes for a pleasurable flight, a clean windshield. Yet, many pilots often ignore this critical part of their aircraft. I like to us Plexus Plastic Cleaner on mine. It contains wax which seals your windshield, preventing pitting, discoloration, and cracking. The cost to replace a windshield is substantial. And given the abuse our windshields take on every flight, a little care is in order.

Look, there are no magic answers to keep our aircraft in great condition. About the best we can do is defend. If we let our guard down, Mother Nature will continue her onslaught, and this translates into larger repair bills.

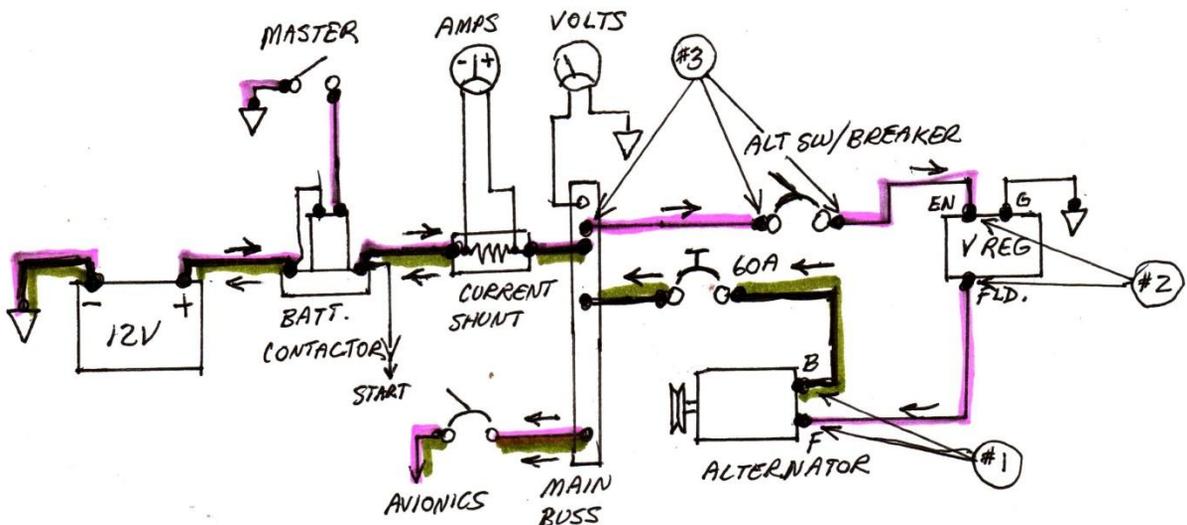


**So, you've run the alternator charging/ load test from last month, and your rpm is over 1,000 , or the ammeter needle is 'wiggling' , indicating unsteady charging, or the voltage doesn't come up to 14.0 14.5 volts. Now what to do ?**

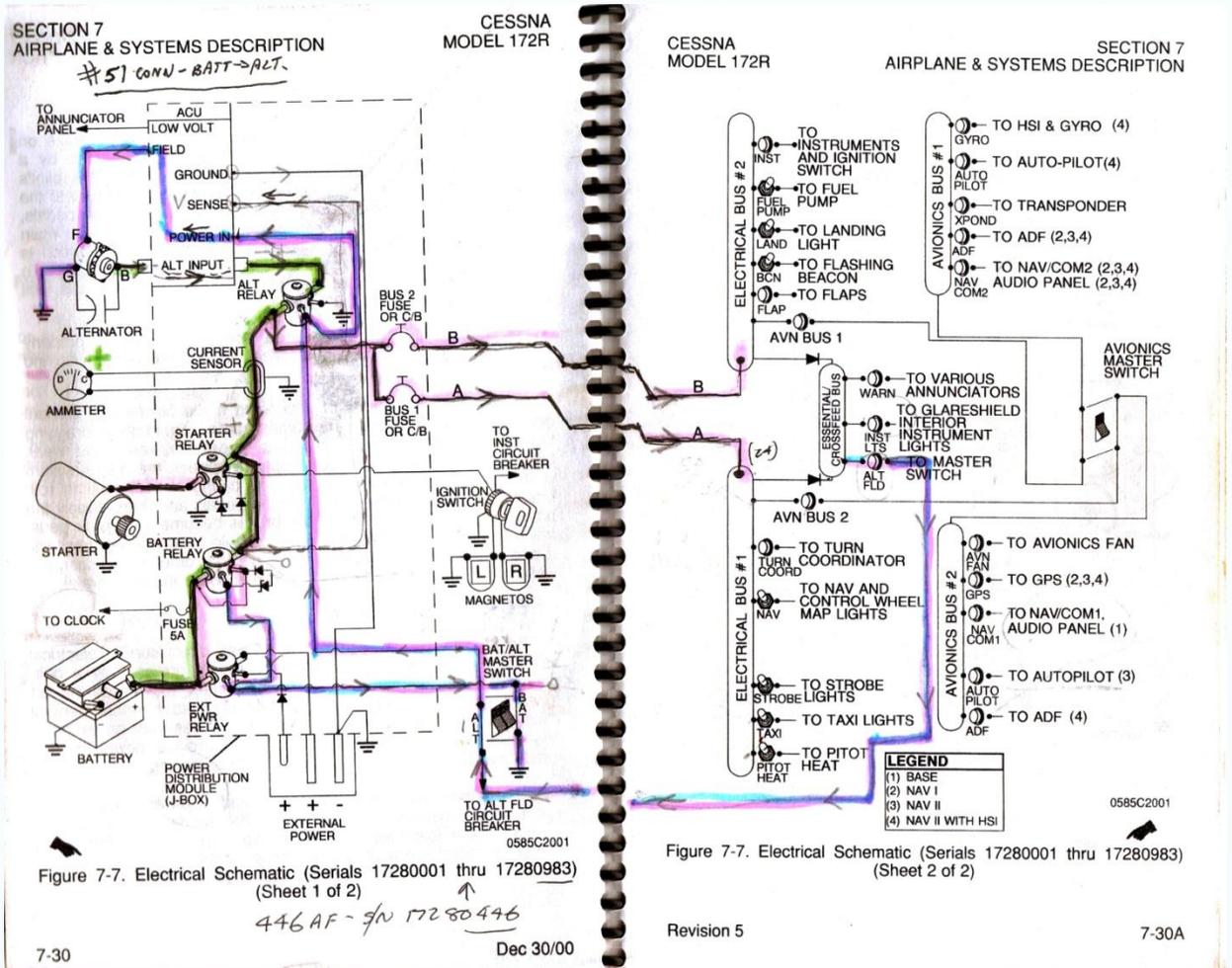
**1. Troubleshooting the alternator charging system.**

- From the battery, to the alternator and the main buss, through switches and breakers, and back to the battery, there can be 26 to 51 connections, any one of which can cause a charging problem or a voltage issue on the main buss.

See the sketch of a sample experimental electrical design . Each of the 'black dots' represents one of the 26 connections. Any one of these can cause a failure. The red colored wires source power from the battery, while the green colored wires supply alternator power to the electrical system and recharge the battery. The arrows show current flow.



The Cessna 172R electrical schematic has 51 connections, so has twice as many points of failure.



- The systems with the fewest number of connections and components will have the highest reliability.

## 2. Tests:

- **voltage checks at each of the components.**

Referring to the sample wiring diagram above, check all the wire connections for tightness. Check the wire crimps - that the wires are tightly crimped to the terminals.

**#1.** With master and alternator 'ON', [ engine 'off'], using your digital multi-meter on 20 volts, DC, there should be battery voltage at the 'battery' screw/nut, [ not the terminal] on the alternator, and within 1 volt of battery voltage at the 'field' terminal on the alt.

- If both voltages are there, the alternator is defective.
- if there is battery voltage at the 'battery' terminal of the alt., but no, or low voltage, [ more than 4 volts less than battery volts, ], at the 'field' terminal, there is a problem in the wiring and connections to the voltage regulator.

**#2.** Check the voltage at the 'field terminals of the voltage regulator:

- if no or low volts, continue checking for voltage at the input and 'sense' wires.
- if there is voltage on the input, but not the output, check the other connections to the regulator, including the ground wire. If they're ok, the regulator is defective.

**#3.** if still no or low volts, check the voltage at the alternator switch/breaker or field breaker [ it depends on the parts installed], and connection to the buss.

**#** Also measure the voltage across each of the terminals of the switch and breaker. There should be no more than 0.5 volts between the terminals. If there is, briskly 'snap' the switch off and on a few times, or pull and reset the breaker, to see if the voltage drops to a low value.

The contacts inside switches, breakers , contactors and switch/breakers will corrode and wear over time. The useful life is about 10 years for these parts that are operated on each flight. Breakers will trip at lower currents than rated if they are continuously overstressed and made to trip.

**#** Switches can sometimes be made to work for a while by quickly 'snapping' the switch on and off a number of times, with power applied. This can mechanically remove the corrosion from the contacts.

As a general rule, switches and breakers should be actuated with a brisk movement, not a slow movement of the lever.

**Extra credit.....** What 4 things are wrong with the wiring in this picture ?



1. Wrong orientation of the contactor – it should be mounted with the black contact section facing down. This has gravity aiding the internal spring opening the contacts when the solenoid is de-energized.
2. The upper and lower cables are on the wrong side of the connection. It should be on the side with the contact terminal, so the 300 amp current does not go through the bolt.
3. The battery terminal, [ bottom] does not have an insulating boot.
4. The accessory wires, coming out of the gray seal on the firewall, should not be routed near the 'hot' battery terminal. They must be spaced away so that there is no chafing and possible short to the high current cable.