

# THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

Voted to Top Ten Newsletters, 1997, 1998 McKillop Award Competition

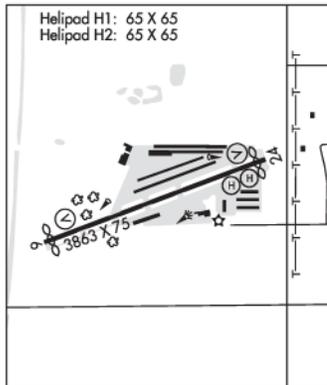
President	Gary Aldrich	661-609-0942
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<http://www.eaa1000.av.org>

January 2018

Chapter 1000 meets monthly on the third Tuesday of the month in the USAF Test Pilot School Scobee Auditorium, Edwards AFB, CA at 1700 or 5:00 PM, whichever you prefer. Any changes of meeting venue will be announced in the newsletter. Offer void where prohibited. Your mileage may vary. Open to military and civilian alike.

## This Month's Meeting:



## Cable Airport (KCCB)

Steven Cable

Tuesday, 16 January 2018

1700 hrs (5:00 PM Civilian Time)

USAF Test Pilot School Auditorium

Edwards AFB, CA

How do you build a privately owned, public use airport in the Greater Los Angeles basin which is already chocked full of alphabet airspace? Simple. Just start early. Like 1945 early (that's a year, not 15 minutes before prime time).

You buy some land, sell of part of it to recover your investment, then build a runway...crosswind. Discover your mistake, build another runway, and start taking in clients. Do all of this before Ontario airport gets big and starts taking in jets and putting up Class C airspace.

Cable Airport in Upland CA is family owned by the...wait for it...Cable family. Steven Cable, interestingly enough a member of the Cable family, will be coming to speak to us to tell us about what it is like to run the world's largest privately owned public use airport, especially in some of the most crowded airspace in the country.

Hopefully he will tell us about Maniac Mike's restaurant and how to best set up a fly-out to there.

After Steven keeps us all enraptured with the stories about airport living and convincing us all that we should come visit, we will take him to see one of our fine local



Your dues are due now!  
\$20 to Knife  
See back of newsletter for address

If you prefer, you



can pay online by **PayPal**® at the Join/Pay Dues link on the [EAA Chapter 1000 web site](#).

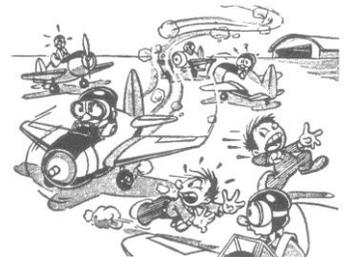
You may also qualify for the government sponsored EAA Chapter 1000 "Free Dues" program.<sup>1</sup>

eating establishments, namely the **BK Dead Kow Emporium**, where the party atmosphere will continue.

**TAKE NOTE:** If you do not normally have base access and depend on having your name on an Entry Authorization List to get past the young airmen with weapons, **you must get to the Visitors Center at the West Gate No Later Than 1630!** At 1630 the Visitors Center closes, and after that you will not be able to get in based on the EAL. New procedures. Don't ask questions and don't be late!

Contact **Russ Erb** if you need to be added to the Entry Authorization List. Do it now—anything within a week is several days too late.

- Erbman



<sup>1</sup>Simply write your name on a government printed "Free Dues" coupon and hand it to any chapter officer. "Free Dues" coupons are available at any bank, ATM, and many businesses. Ask for it by the secret code name "Twenty Dollar Bill."

**Last Month's Meeting/Kommandant's Korner**

**EAA Chapter 1000**  
Kommandant's Kwarters  
Quartz Hill, CA  
28 December 2017  
**Gary Aldrich**, Presiding

A small but boisterous band of **Project Police Officers**, most escorted by a member of the **PPO Auxiliary**, gathered to reverently attend the official **PPTAF** holiday **Festivus** celebration. Participation in the festivities probably would have been greater had the Chapter not suffered the double calamity of a **leaking water heater** (forcing a rescheduling of the event) and the **nasty flu-bug** that seems to be prevalent this season. New (old) **PPO Bob "Waldo" Waldmiller** sadly reported that he had scheduled his **entire year** around the 19 December original date, but couldn't tolerate the 9-day delay because of a mandatory family event in Texas.



Stalwart Festivus supporter **Kent "Cobra" Troxel** was the first to send a lame excuse about having received the perennial favorite gift that kids give to their grand parents...illness. Of course, **Cobra** is known for his hyperbole, so maybe this is just 10 percent true. No word if **Mrs. Cobra** was similarly stricken but I'm sure she felt the responsibility to stay home with Kent and listen to his whining.

**Mrs. Erbman**, on the other hand, left her sick spouse's soiled tissues and germ-ridden carcass to join the revelers. Arriving with the "**Devine Miss Em**" as an escort, she quickly noticed the **Kommandant's** Nikon languishing on the mantle and reprised her familiar role as official **Festivus Photographic Correspondent**. The result is a photographic essay worthy of Life Magazine...oh, and about a thousand snaps of **Emily** which are likely to accompany this report.

The **Kommandant's Krap Exchange**, another perennial favorite, was enjoyed by all, including new member **Brian Purdy**, who immediately grasped the concept and participated as if he was a Festivus veteran. As the "new guy" and a bachelor (Class A or B, unknown) he also benefitted from the traditional sending of the leftover **Lafestivusagna** away. In a classic twist on the familiar Festivus fairy tale, the **Chapter "Gnome"** was opened (and curiously never stolen) by **Randy "Kanard" Kelly**. Assuming he didn't hide the popular statue somewhere in the Kwarters, by next Festivus it will soon be residing in Tennessee where the Kellys have chosen to retire (*I wouldn't be so sure about that...*).

**PPO Michael "Angelo" Machat** and his lovely bride **Sheri** weathered the horrendous commuter traffic on the

14 Freeway to join the party. During the pre-dinner schmooze he casually strolled through the **Kommandant's Machat Gallery**, accompanied by a small band of admirers, and told interesting stories about the artwork. He was followed on the tour by **Colonel (Retired) J. H. Doolittle III** who provided amplifying commentary for Mike and the party guests.

Because of the dismal showing among the Chapter's **Board of Directors**, the presentation of the official Krummy HQ recognition certificates and pins which normally occurs during the "airing of grievances" was suspended. The lack of ceremony didn't stop **VK Hellmuth Steinlin** who seized the moment to reflect on our successful year of interesting program speakers and to urge those assembled to increase meeting attendance in 2018 as he continues to provide entertaining programs...two of which are already scheduled!

Finally, a nod to **Mrs. Kommandant**...another victim of the flu who rallied from a 100.5 degree fever to provide a sumptuous and savory repast for the party, including another soon-to-be-legendary chocolate dessert. **Festivus**, as we have come to know and love would not exist save her tireless and noteworthy hostess skills. The entire event was a fitting close out to another year of **Kamaraderie** in the "chapter with the most zeroes". May you all have a Festive and Happy New Year!

Reporting for the Minister of Propaganda,

- **Gary Aldrich**  
Kommanding

Emergency Backup to the Backup Minister of Propaganda  
Chapter 1000 of the Experimental Aircraft Association of these United States of America and Occupied Territories  
*"We have more zeroes in our chapter than any other!"*



**"So the way I see it, we'll put some hinges on the wing roots of the Zenith so we can fold them back along the fuselage. It already has three wheels, so it will already qualify as a motorcycle instead of a car. We just need to figure out a way to install a transmission to transfer power to the wheels. Shouldn't weigh more than a couple hundred pounds and 50 drag counts. Is that a problem?"**



Jimmy D III was heard to say "That's not a Lazy Susan. That's a Drunken Susan!"



The party from the point of view of the Devine Miss Em. Yes, she actually pressed the shutter release.



Mrs. Kommandant forces her way through fever and fatigue to prepare the Lafestivusanga



"That's cool, Bill! So when does the chapter get its own train car? Can we get one of those cool self-propelled motor cars?"



"Mommy, it's really simple. You point it at me and push that little button. Repeat often. I don't know why you're wasting your time with all of these other people. Mr. Kommandant said there is lots and lots of room on the memory card."



Treasures and surprises lay in wait all around the Festivus Pole

**festivus**

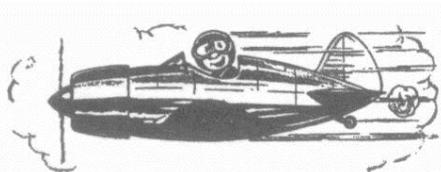




**The Festivus feast table, bedecked with menorah, Mrs. Kommandant's Chocolate Cheesecake, Tuki's Snickerdoodles, and more**



**"I always enjoy visiting the Machat Wing of this gallery. Remind me, Kanard, were you in the T-6 or the F-16?"**



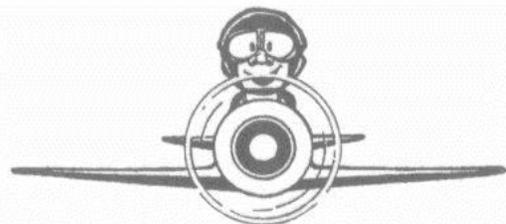
**"But wait! There's more! If you call in the next ten minutes, you can get these exclusive prosciutto wrapped cheese sticks! Only \$9.95! Perfect for dipping in your scotch!"**



**"How's this for a candid looking shot, Mommy?"**



**"I told you, Mommy! All you need to do is take pictures of me!"**





The assembled Festivarians after a full and satisfying round of Lafestivusagna



The Gnome! It's the return of the Chapter Gnome!



Mrs. Kommandant facilitates the Festivarian refresher training on the rules of the Kommandant's Krap gift exchange



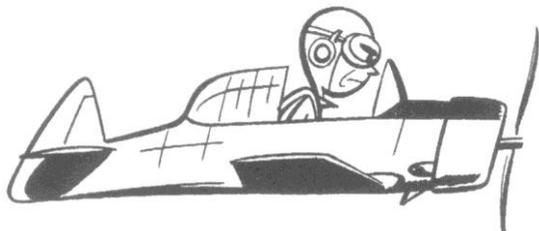
Pat opens a box of yummy snack, which Brian has his eyes on, and soon will have his hands on



Who wouldn't be excited about receiving "Bacon Candy Canes"?



"Will you look at that. Notebook Cooler. Optimal comfort for laptop up to 15.6". Hmm. I guess now I need to get a laptop!"





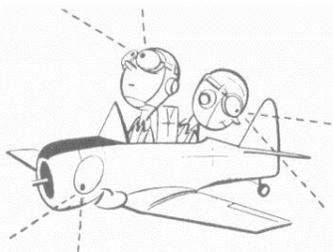
“Look at the nice flowers...oh, wait! It’s Nordies!”



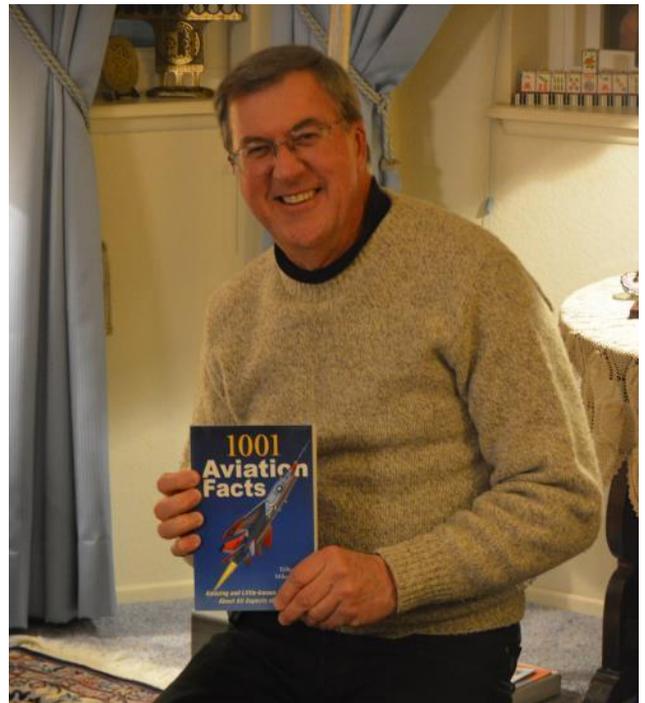
“Yea, Mom. That dress was making it hard to climb on things, so I had to take it off.”



A DVD pack labeled as the worst movies ever made. I don't know—I remember seeing some at Blockbuster that sounded even worse!



“Uh, let me read the fine print. I don't think it's root beer. You know, Erbman told me that if you put root beer into a square bottle it becomes just 'beer'. Not sure what he's talking about.”



Finally! The best gift of the night! Mike Machat's book of 1001 wild and bizarre aviation facts is now available. Only \$18.27 at Amazon.com. Maybe we can have a meeting in the future where Mike will tell us the story of this book. Get yours now so it will be ready for autographing!

Young Eagles Report

Another successful and safe Young Eagles rally was accomplished at Fox Field, from 0800 to noon Saturday 28 October 2017.

Our local EAA volunteer support group surrounding the Antelope Valley area grew in the week prior to the event to include six volunteer pilots and six different aircraft along with numerous ground volunteers to handle the escorting, dispatching and admin chores.

Our volunteer pilots converged on Fox Field from Tehachapi, Rosamond, Van Nuys, Edwards AFB, and Acton.

We successfully staged out of the Fox Field terminal building lobby and cooperated with the friendly local Lancaster Rotary Club "Wings 'N' Wheels" event and also with the Fox Airport Association Pancake Breakfast.

Our assignment was to respond to a request to support The Palmdale Aerospace Academy (TPAA) Aviation Club members and provide as many as 14 Young Eagle first flight orientation rides. Unfortunately, only three members of the club attended. So...we successfully put two of our Aviation Explorer Scout volunteers to work to recruit kids in the vicinity along with a parent to supplement our tasking order. After improvising, we were able to fly 13 Young Eagles with 11 sorties. The weather was sensational! We had blue skies and warm temperatures for the month of October with no wind.

While waiting for prospective Young Eagles to fly, we had numerous conversations about aircraft home-building, general aviation and general flying gossip.

- Tom "Duke" Wayne  
EAA Chapter 1000 Young Eagle Coordinator  
661-733-8825; [twfox2@sbcglobal.net](mailto:twfox2@sbcglobal.net)  
3833 Sourdough Road, Acton, CA 93510



It's A Texas Miracle!

Other significant news was released on 14 October 2017 near Fort Worth Texas during the reception following the "wedding of the year". This was not reported last month because our reporter-on-site didn't take any notes, and, well, forgot.

As first related to our reporter, it was said that the recently re-named Mary "CAVU" Weathers had laid out her first decree—that Stormy had two years to get the RV-8B "Astroblaster" completed and flying or it was out of here! We suspected that there might be a bit of "The Telephone Game" going on here, as any statement like that

shows great ignorance of what all is involved in getting an "Aerospace Vehicle" to slip the surlies.

Follow-up investigation, accomplished by addressing the source directly, revealed a much more reasonable demand. Mary said that she had merely declared that now that the wedding protocol was complete, they should place top priority on making progress on the airplane construction. While this sounds like the sweetest words that any amateur airplane builder could hear from his loving spouse, there is also reason to believe that Mary is incredibly clever and sees this as the best way to accelerate the extraction of the airplane shaped "art" in her new dining room. Either way, she has the full support of the Project Police.



Could this be the real motivation behind the new priority on RV-8B Astroblaster? Priority is priority, no matter where it comes from

With the leak of this information, Evil Editor Zurg immediately recognized this as more ammunition to use against Stormy in this publication (not that he needed any more) and reason to extort newsletter filler out of him. See the following article.

In a follow-up to last month's story, it turns out that Tarrant County of the Great State of Texas is a real stickler for record keeping, and insisted that Stormy's name on the marriage certificate match the name shown on his driver's license, so Mary officially married "Scott Weathers". However, the ceremony only referred to "Stormy" because the only people in the room who knew who "Scott" was were the EAA Chapter 1000 contingent.

Stormy sadly reports that the Total Rivet Count (TRC) is still stalled at 7609. Looks like he needs to get on it before Mary figures out how to take a rivet gun to his solar plexus! While that would be funny picture, we'd rather see progress.

- Evil Editor Zurg

Let There Be Photon Emissions...

I can't believe how much Light Emitting Diode (LED) technology has progressed in only a few years. Just as the Compact Fluorescent Light (CFL) looked like it would

take over for Edison's "glowing resistor" concept, it seems the LED will make that obsolete before it really gets started.

But, that's all about the porch light over my front door. I'd rather talk about opportunities for illumination of my **RV-8B Astroblaster**. I'm not an electrical engineer, and I have never played one on TV. But, the simple application of Ohm's law in the case of driving LEDs with a battery falls within my technical grasp. I once heard a smart man say, "If you're going to put something on your airplane, toss it into the air. If it comes back down, reconsider putting in on your airplane." I heard another wise one say, "Every pound of extra weight is made up of thirty-two half ounces." So, to be worthy of inclusion in the **Astroblaster**, it needs to approach the trifecta of light weight, low cost, and low power. There is a fourth term in this equation that says it should score high on the gadget scale. In other words, it does something neat, almost nobody has one, and lots of people are going to wish they had one.

This is where LEDs come into the picture. They weigh very little. The wire to power them probably weighs more. They use almost no power. And, they are quite inexpensive. The bright white LEDs I am using to illuminate my tie downs are  $4.0 \times 10^{-4}$  AMUs each. If I use nine under each wing, and account for both wings, it's still only  $7.2 \times 10^{-3}$  AMUs. The wiring and supporting components add to that, but it's still very inexpensive when compared to everything else you have to buy when building an airplane. That's why my learned colleagues back in **EAA Chapter 1000** invented the AMU, or Aviation Monetary Unit, equal to \$1000. Some say it made it easier to have a conversation about an avionics upgrade in front of the spouse. (*Is that a breach of classified information?...probably not—how many spouses read this newsletter? Those that do are probably already in the know about AMUs*)

### With Enough Power, Any Diode Can Be "Light Emitting" Once

But, you can't just hook these LEDs across a DC power source and call it good. There is some designing and fabricating involved. Since LEDs are not glowing resistors like their incandescent cousins, they must have a circuit that will control the amount of current. OK, granted, there are 'LED units' out there that already include all the necessary circuitry design and fabrication. If you have one of those, you can just hook it to a DC source. Some of them even adapt automatically to whatever DC voltage you happen to have on line. But, the folks selling those units have adjusted the prices to remind you that you are building an airplane. I acquired some of those to serve as position lights, but that is not the focus of this discussion.

Let's look at building an electron to photon converter from discrete components. They don't weigh much, cost much, or take much power. For the project at hand, I think it would be really cool if the **Astroblaster** had tie down illumination built into the underside of the wing. This may

be only the first of several such illuminating projects to find their way into the **RV-8B**. But, I am building wings, so it seems like the right place to start. Van's Aircraft was kind enough to put an inspection panel on the underside of the wing right next to the tie down hook. So, I can adapt my lighting modification to the inspection panel. Even if I mess this up beyond all recognition (yes, **FUBAR**), I can recover with a Monday morning admission of guilt to Van's Customer Service, with credit card in hand. And, it won't even hurt that much.

### Resistance Is Futile.

And, the design work begins. The first question to answer about any lighting requirement is what kind of light? I break this down further to two more questions: how bright and what color? The question of color is typically easily answered, and there are readily available LEDs to cover the spectrum of visible light and beyond. In fact, there are LEDs for both IR and UV needs. For this project, I chose white. If I am tying the airplane down after landing in the dark, I'm not so worried about preserving my night vision. If I am untying the airplane in the dark for that pre-dawn launch, I think there will be enough time for my night vision to recover. And, I have had those six percent light attenuators sitting on my nose since I was fifteen years old. So, I appreciate a well-lit work environment.

The next question is "how bright is bright enough?" I have chosen an LED for this project. The spec sheet says one LED will output 35K mcd (*millicandelas, not McDonald's*) at a cost of only 64 milliwatts (mW). Now, the question becomes "how many of these is enough?" The best way (only way?) to answer that is to make a test circuit (A.K.A. breadboard) and turn it on in a darkened room. Put something in the light at the right distance from the source and see if that is enough. For now, I think I need nine of these little guys under each wing. For reasons that will become clear later, my chosen LEDs should be used in multiples of three. I may change the design later to either six or twelve LEDs.

### "Twinkle, Twinkle, Little Star, Power Equals I Squared R."

You may recall a diode is a check valve for electrons. In a circuit, it allows electrons to flow in only one direction. So, in the forward direction, it acts almost like a piece of wire. In the reverse direction, it stops the electrons from flowing. The LED is a special type of diode that emits light. We're using it as a light source, but in the circuit it is acting like a diode. Polarity matters. There is a plus side and a minus side (anode and cathode). When current flows through it in the right direction, it lights up.

Unlike a light bulb, the brightness doesn't vary with current very closely. You typically can't dim LEDs by varying the voltage or current. (*I did, but that's not the point here*) There is a current that gives maximum illumination. Raising the current above that just makes it hotter without making any more light. For the LEDs I

chose, that current is 20 mA. And, there is a voltage drop across the LED. For these LEDs, that drop is 3.2 V. If I only wanted one LED to connect with my 12V battery, I could use Ohm's Law to figure out the value of resistor I need to put in series with the LED. After losing 3.2 V to the LED from my 12 V battery, I have 8.8 V remaining. If I want the current through my diode to be 20 mA, I can choose the resistance which will give me 20 mA for 8.8 V. Ohm's Law says  $V = IR$ . But I want to find R. So, I rearrange this to get

$$R = \frac{V}{I}$$

and

$$R = \frac{8.8V}{20mA} = 440 \Omega.$$

This would work. I could put a 440  $\Omega$  resistor in series with each diode and have as many LEDs and resistors as I can fit (or afford), connected in parallel across my 12VDC battery. But, it's not the most elegant solution. The power consumed by the LED to make photons would be 64 mW. But, the power lost in the resistor just to limit the current would be 176 mW.

$$P = V \times I = 3.2V \times 20mA = 64mW$$

$$P = I^2 \times R = (20mA)^2 \times 440\Omega = 176mW.$$

There is a better way. If I connect the LEDs in series, I can add the voltage drop across each one. This works as long as I stop before I run out of voltage. With a 12VDC source, I can get to three LEDs before I run out. With three LEDs in series, the voltage drop is 9.6V, and I have 2.4 V left to control the current.

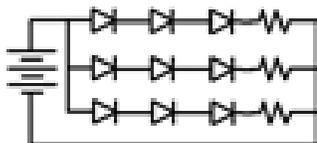
$$12V - (3 \times 3.2V) = 2.4V$$

Since I want the current through all the LEDs to be 20 mA, I want 20 mA to flow through my resistor when the voltage across the resistor is 2.4 V.

$$R = \frac{V}{I} = \frac{2.4V}{20mA} = 120\Omega$$

With the LEDs ganged together in groups of three, the power used in the LEDs is still 64 mW each. But, the power lost in the resistor is only 48 mW. And, there are three LEDs for each resistor. So, the LEDs get 192 mW while the resistor gets 48 mW, a much more favorable ratio.

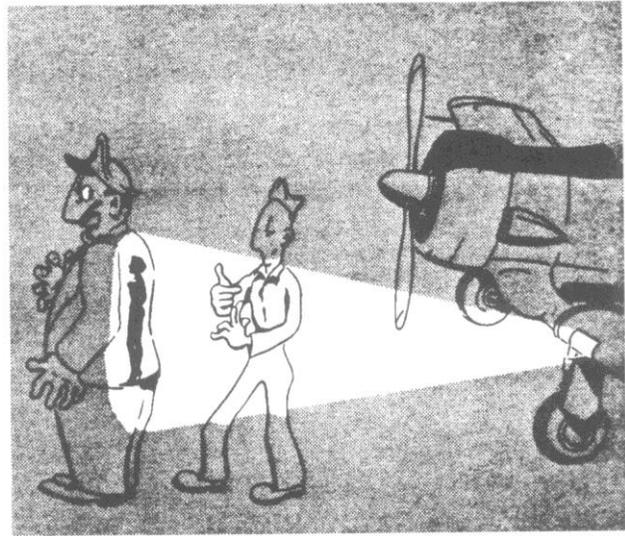
The design of the circuit is done. Here is the schematic diagram of the Astroblaster underwing illumination:



I put together the circuit on the breadboard and turned out the lights. It's crazy bright. I don't know if I am getting 35K mcds as advertised. That would be close to

4000 lumens, or the light you would expect out of two 100W light bulbs. But, it will be plenty bright. Since the voltage on the Astroblaster will be 12VDC from the battery and closer to 13.5VDC from the alternator, I bought a bench power supply with an output of 13.5VDC. But, I checked my breadboard LED circuit at both 13.5VDC and 12VDC. There is almost no perceptible difference in the illumination when I change the voltage. Now, it's time to build the hardware that will go in the aircraft.

- Stormy Weathers



Need An A&P Mechanic?

This notification was forwarded to us by **George "Knife" Gennuso** about a friend he worked with way back when he was employed at Northrop.

A & P mechanic with over 45 years' experience. Worked all phases of general aviation, commercial and military maintenance, modification and repair. Currently doing aircraft and race car fabrication to include, TIG & MIG welding, plasma cutting and general fabrication in aluminum and steel. Offering my services in the following areas: Fabrication, welding to include structure, interior panels and tube bending. Pricing based on complexity and amount of work. Contact: Mike Spencer, Lancaster, CA, (661)435-3358

Web Site Update



Just a reminder that the EAA Chapter 1000 Web Site is hosted courtesy of Quantum Networking Solutions, Inc.

You can find out more about Qnet at <http://www.qnet.com> or at 661-538-2028.

**Chapter 1000 Calendar**

Jan 9: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

**Jan 16: EAA Chapter 1000 Monthly Meeting**, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Feb 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

**Feb 20: EAA Chapter 1000 Monthly Meeting**, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Mar 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

**Mar 20: EAA Chapter 1000 Monthly Meeting**, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Apr 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

**Apr 17: EAA Chapter 1000 Monthly Meeting**, 6:30 p.m., Flying Dog Ranch, 4400 Knox Ave, Rosamond CA. (661) 609-0942

May 8: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

**May 19: EAA Chapter 1000 Annual Aviation Event**, To Be Determined. (661) 609-0942

Jun 12: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

**Jun 19: EAA Chapter 1000 Monthly Meeting**, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Jul 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

**Jul 17: EAA Chapter 1000 Monthly Meeting**, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

To join Chapter 1000, send your name, address, EAA number, and \$20 dues to: EAA Chapter 1000, George Gennuso, 3119 Lennox Ct, Palmdale CA 93551. Membership in National EAA (\$40, 1-800-843-3612) is required. Contact our officers by e-mail: President/Flight Advisor Gary Aldrich: gary.aldrich@pobox.com Vice President Hellmuth Steinlin: hellmuthsteinlin@hotmail.com Secretary Kent Troxel: kenttroxel@sbcglobal.net Treasurer George Gennuso: pulsar1@sbcglobal.net

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<i>Electrical Systems</i>		
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<i>Instrumentation and avionics requirements for VFR/IFR</i>		
<b>Gary Aldrich</b>	gary.aldrich@pobox.com	661-609-0942

Inputs for the newsletter or any comments can be sent to Russ Erb, 661-256-3806, by e-mail to [erbman@pobox.com](mailto:erbman@pobox.com)

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**THE LEADING EDGE**  
**MUROC EAA CHAPTER 1000 NEWSLETTER**  
**C/O Russ Erb**  
**3435 Desert Cloud Ave**  
**Rosamond CA 93560-7692**  
<http://www.eaa1000.av.org>

**ADDRESS SERVICE REQUESTED**

**THIS MONTH'S HIGHLIGHTS:**  
**REGULAR MEETING 16 JAN @ TPS**  
**FESTIVUS REPORT**  
**STORMY'S NEW MANDATE**  
**STORMY LEARNS ABOUT LEDS**

