THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

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

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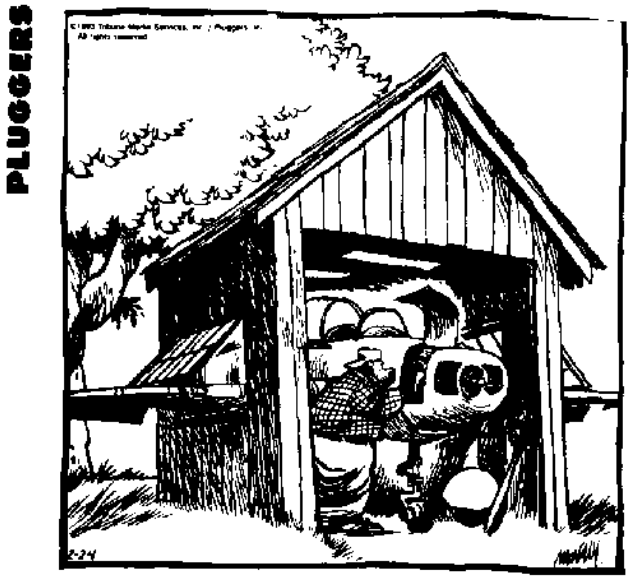
http://www.eaa1000.av.org *March 2007*

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:



You're a plugger if you've built an airplane from the runway up

Out-of-Cycle *Project Police* Inspection Sweep
The Barely Started and The Close To Done
Tuesday, 20 March 2007
1700 hrs (5:00 PM Civilian Time)
Mojave Airport and Rosamond

NOTE

For those of you who weren't very good at story problems in school and couldn't figure out what was going on during November's Project Tour, here is this month's in blatant simplicity:

1. **Go to Stormy's Hangar at Mojave Airport first**
2. **Next go to Erbman's place in Rosamond**
3. **Then go to wherever the Kommandant decrees for dinner**
4. **After dinner, go home**

You guys know how serious I am about our chapter presentations and how I like to finely tune this column. I put a lot of effort into balancing the information with just (*next page* ↓)

Dues Delinquents!

According to the ***Project Police Bylaws*** (as amended), **March** is the month when we publish the list of names of the **Ne'er-do-wells** amongst our fold who are **slacking** and **sponging** off the rest of the ***PPOs***. That's right—the dreaded **Dues Delinquents** list! The punishment of public humiliation by confrontation has been very successful at getting those slackers to pay up ($20).

Unfortunately, this year **Evil Editor Zurg's** staff is guilty of slacking—forgetting to get the list of ***Heroes of the Project Police*** (those who have paid) in time so that by the process of *Calculatus Eliminatus* the identity of the **Dues Delinquents** might be determined.

Once the list has been drawn up, the slackers on it will receive a strongly worded e-mail directing them to **pay up!** To make sure your name isn't on that list, send your $20 in to the treasurer (see back page). Or go to http://www.eaa1000.av.org and click on the Paypal® button. If you're not sure if you had already paid, pay again and you'll get credit for next year as appropriate.

Sixteenth Annual Scotty Horowitz Going Away Fly-In 19 May 2007 at Rosamond Skypark

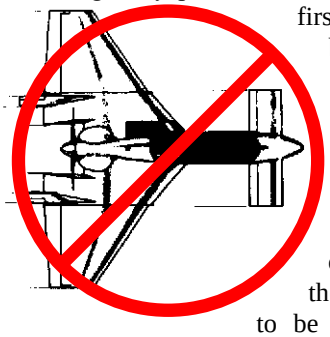
Make your plans to attend now! Volunteer your services to help out before the board assigns duties to you!

Overcast Weather Scheduled for 17-18 April 2007 at WJF

(see inside)

the right amount of humor, using words that fire the imagination, with careful attention to keeping them to two syllables or less so that you understand what they mean. Now I have been hearing about **Scott "Stormy" Weathers** and his RV-8A kit lately. He has started construction and, wait, you won't believe this, he has already driven **6 rivets**. I know, hard to believe. So I said to my self, as ***Project Police Officers*** it is our duty to inspect this project. So how did the project get started? I'll let **Stormy** tell you in his own words.

I started planning to build an aircraft while studying aerospace engineering in the late seventies. Of course, college students and lieutenants cannot afford to build aircraft. Lieutenants can barely afford to fly. That's why I didn't get my private ticket until 1983, after I pinned on first lieutenant. My plans to build an aircraft evolved over the years. I once told **Mike Melville** and **Burt Rutan** that I plan to build a **VariViggen**. They both told me to build a **Long-EZ** instead. I tried to buy a set of Long-EZ plans at Oshkosh the next year. It just happened to be the first year they stopped selling plans. I spent several years looking at the Wheeler Express (later Express Aircraft) while waiting until I became rich enough to start such a project. Later, the Lancair 235 or 360 looked promising, but I still couldn't afford such a project.



While working at Hill AFB with some members of the Royal Australian Air Force (RAAF), one of them lent me a book entitled "Zero Three Bravo." The writer describes her experience of flying a Luscombe around the country one summer. In the first chapter, she remarks that a lot of very expensive aircraft are sitting on the ramp because the owners cannot afford to fly them. I realized my circumstance was very close to that. I wasn't building an airplane because I wanted one I could not afford. The same RAAF warrant officer asked me if I had "considered the RV series of aluminium (Australian spelling) aircraft?" Yeah, I've seen them. But they're just straight aluminum construction with fixed gear. How good could that be?

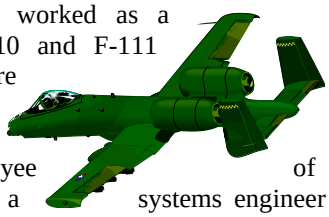
A little research revealed that they were much more affordable than anything else I had considered. Moreover, the fixed gear performance numbers were very impressive to me. I began to think I could build an RV, or I could go into a pine box waiting to start a project. I also realized that twenty years as an engineer in the USAF was suddenly applicable to construction of an aluminum aircraft. A TDY to Tucson, Arizona put me in contact with a long time colleague who happened to have an RV-6A. The hook was set—I just needed to pick the floor plan, so to speak.

A few factors influenced that choice. Almost all of my civilian flying has been in four place or side-by-side two place airplanes. Most of the time, the right seat was empty. Although I never saw it, my father's favorite airplane was a J-3 cub, N96211. I got to spend some very memorable time with him in the back seat of an O-1. Later, I spent some time in the back seat of a T-38 at Holloman AFB. I also had several rides in the back of an F-4D, but I spent too many of those hours with my head in a plastic bag.

With an interest in building a night IFR capable aircraft, the RV-8A seemed like the logical choice. Yeah, I know. It comes with a training wheel on the front. "Real pilots fly tail draggers." I contend that I am not a "real" pilot because I have never been checked out in a tail dragger. Furthermore, the T-38, along with 98 percent of all aircraft designed after 1950, are not tail draggers. Checkout will be easier. Insurance will be cheaper. Resale will be simpler for whoever has to settle the details of my meager estate.

Being a good systems engineer, I plan to change a few things on a perfectly good design. I hope to add a capability to hang an external store from a centerline hard point. This started out as a way to carry golf clubs, but it has grown from there. With provisions for an external tank, I could develop a number of store configurations. I only get to build one aircraft, but I may spend the rest of my life designing and building stores. I also hope to add a single point refueling capability. If I convert part of the forward baggage compartment into a tank, I could fill all tanks from that one. More details are available upon request. In other words, I bet I can say more about this than you care to hear. I try to respect the difference in these capacities.

In retrospect, it seems the last twenty years of my career have been designed to prepare me for this project. I gained crew experience as a navigator in the Air Force. I worked as a defense contractor in a job that gave me lots of exposure to engineering analysis, documentation, and technical orders. Later, I worked as a structural engineer on A-10 and F-111 aircraft with lots of exposure to aluminum components and repairs. Upon becoming a civilian employee of the Air Force, I became a systems engineer on the A-10 aircraft with responsibility for mass properties, fuel systems, flight controls, electrical power distribution, and propulsion. After transferring to Hill AFB, I became a performance engineer with the opportunity to develop and modify performance charts and write procedures for flight manuals for the A-10, T-37, T-38, and QF-4 aircraft. Finally, I find myself here at Edwards AFB, surrounded by world class experts, and learning flight test techniques that will serve me well in developing the flight manual for my own little piece of aviation.



I received the kit on 18 Sep 06. It's everything I expected. I spent five years in Utah volunteering help to a couple of RV builders, so I got some hands-on experience. I highly recommend this approach. In fact, if anyone would like such experience, I feel it is my solemn duty to give back to the RV community by accepting such help.

To see the scraps and bits that are destined to become RV-8B #82601, also to be known some day as "N7WX," come to hangar 969 at Mojave Airport . Turn north from Business 58 near the Convair 990 and F-4 into "Mojave Spaceport," as they like to call it. (It seems a little like calling someone a rock star after a couple of good nights of karaoke.) Turn left (west) at the four way stop sign near the Voyager Restaurant. Go west to the tee intersection and turn right (north). That road will take you into the gate onto the flight line. The first hangar on the right is Number 969. For the GPS savvy among us, it is located at N35-03-24 W118-09-52. It is labeled prominently as "Global Hilton" from the days when **Dick Rutan** (my landlord) constructed a balloon in there for his attempt to circumnavigate the world in a lighter-than-air aircraft. If you do not have key card access to the flight line, turn right at the line of mailboxes and park in the dirt near the hangar. I can offer access through the door that opens on that side of the building. My rent does not include the office area just inside that door, but **Dick** graciously suggested I could use that door if need be. I ask that you move promptly through the **Rutan Aircraft Factory** office into the part of the hangar that I am renting. If you do have flight line access, please park close to the side of the building so as to not impede aircraft traffic that may need to use that taxiway. The door on the flight line side is on the north side of the building. Unfortunately, it is not possible to park in front of the hangar without blocking the taxiway. If you need further help, call my cell at (661) 317-9453.

Stormy

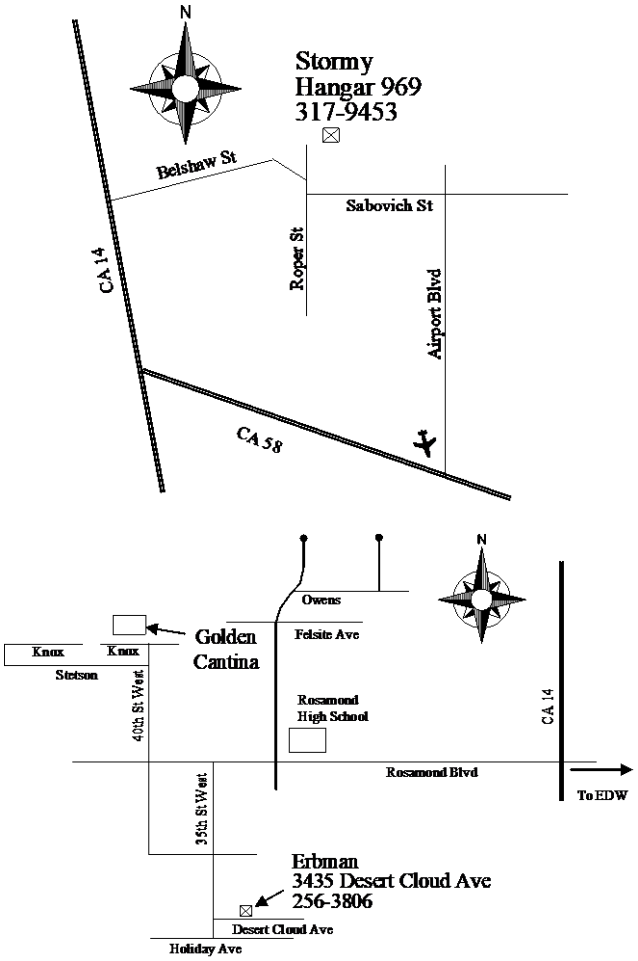
Boy oh boy, that Stormy is some snazzy writer, isn't he?

As is said on those late-night infomercials "But wait! There's more!" Yes, that's right. **Erbman** has been slaving away with wire strippers and crimping tools and has managed to complete (as complete as anything ever is on a homebuilt) the wiring of the mighty ***Bearhawk***. Therefore, after we have dutifully inspected **Stormy's** six rivets, we will proceed south to Rosamond to force **Erbman** to do the Diehard test on his batteries by turning on all of the toys in the panel. At some future meeting we'll have him tell us about how all of the toys are integrated together.

After either 1) **Erbman's** batteries go dead or 2) we become bored to tears by **Erbman's** endless yammering we will proceed to the eating establishment chosen by the **Kommandant** for the usual solving of the world's problems.

- George "Knife" Gennuso
Vice Kommandant

P.S. In anticipation of an unreasonable request from **Evil Editor Zurg**, the following maps are provided for the visual learners in the crowd.



Last Month's Meeting

EAA Chapter 1000
Flight Test Museum, near the Ejection Seat Display
USAF Test Pilot School, Edwards AFB CA
20 February 2007
Gary Aldrich, Presiding

This month's meeting was held at the **Edwards AFB Museum**, hosted by the museum curator **Doug Nelson**. Yup, after months of hounding, pleading, offers of bribes and even veiled threats, the **Knife** finally prevailed and persuaded **Doug** to give the chapter a personal tour of the facility. A dozen members availed themselves of the opportunity, no doubt to cash in on the ice cream birthday cake for **Doug** who let slip that the very day of the tour was his birthday. Ever the considerate guest, **Knife** brought the cake as a surprise for **Doug**, who by all accounts, was indeed surprised and pleasantly so, sufficient to invite us back (as long as we bring more cake). I might add that no, you read it right, it was indeed an ice cream cake, not cake and ice cream separately, but actually combined. **Donna Drucker** also brought a large quantity of her patented homemade C^3's, which are always crowd pleasers. The Chapter also welcomes new member **2LT Mason Hubbard** currently at TPS.

Due to the large quantity of refreshments, the **Kommandant** waived the requirement for complete consumption prior to proceeding with the meeting/tour. **Doug** proceeded to give us the benefit of his vast knowledge of Edwards history, including the little known fact that **Rogers** and **Rosamond Dry Lakes** were formerly know as **Lake Gregory**. **Doug** also gave an incredible brief on the ejection seat display (**Doug** was an egress guy when he wore the blue suit), including a description of the **Martin-Baker** "**eccentric actuator**" (which probably explains **Knife's** unusual behavior for the rest of the evening). **Doug** is the holder of the official Air Force record for removing the pan from the MB seat in 58 seconds, which remains unbroken to this date.

We also viewed an artist rendering of the famed two-seat YA-10B, which **Kommandant Aldrich** claimed that he was actually both pilots in the picture. In fact, the two pilots did indeed look alike.

Satisfied we were cognizant that his greatness had been immortalized in an object d'art, the **Kommandant** declared "**Victory**" and all adjourned to the BK Lounge for dinner and further discussion. Unfortunately, Doug was unable to join in and reap the benefit of "supersizedness" liberally bestowed on guest speakers.

- Kent "Cobra" Troxel
Minister of Propaganda

Kommandant's Korner

The long awaited day has come! **Jeff Landon** of **High Desert Avionics** fame has performed a **GPS-ectomy** on the ***Fightin' Skywagon II***. This radical move is more in the category of a cosmetic procedure rather than being caused by illness or injury to the unit. Hopefully, by the time you read this, the gaping hole in the 180's dashboard will be filled with a transplanted unit that, outwardly at least, closely resembles the removed **GNS 530**. In fact, the "innards" of the refurbished unit…designated the **GNS 530W**…are reputed to be significantly different (read "better") in performance.

The heart of the upgrade is a GPS-engine from the **GNS 480** that samples GPS satellite data at a 5-Hertz rate…five times faster than the old box. Further, and more importantly, the new engine receives and processes **Wide Area Augmentation System (WAAS)** signals from a constellation of geosynchronous satellites. This is done through a new dual antenna module that replaces the normal "puck-type" antenna on the Skywagon's noggin. **WAAS**, for those readers who have been under a rock for the last few years, calculates position with sufficient resolution and accuracy to provide precision approach guidance (horizontal or "lateral" as well as vertical) to minimum heights comparable to the venerable ILS system.

Given the complexity of this upgrade, the Skywagon's navigator had to be returned to a special processing line at the **Garmin** factory in Kansas. Since the Garmin surgeons would have the old box spread out on the bench like **Dorothy's Scarecrow**, they are taking the opportunity to install a better **brain** (ala Scarecrow, again) and a new "**heart**" (read motherboard) just like the **Tin Man**. All that remains is the "**courage**" implant. Sorry, I couldn't think of an Oz-analogy for that one. I suspect Garmin will be expecting **me** to display that trait when I plunge into the clouds with the new technology. The new processor and motherboard promise faster and smoother screen re-draws and higher resolution for graphics like **XM weather** and terrain. The increased computing power will also allow display of a more complete set of XM weather products than the old processor could handle. I can already feel the "hook" being set for the next upgrade...Another **GNS 480** trait that is transferred is the ability to accurately display and provide guidance for tracking of holding patterns and procedure turns. If a "GPS-Steering" (GPSS) autopilot is coupled, this can all be automated. Of course, that's another few $AMUs for that capability.

There are already well over 300 instrument approach procedures published that require the WAAS capability, including one for Runway 06 at WJF. I don't see the de-commissioning of the VOR or ILS approach system anytime soon, but it just made sense to breathe more life into this critical piece of avionics while Garmin was still holding the price point at the level first advertised more than 3-years ago. Stay tuned to this column for a report on the new approach capability. I suspect I will use it in anger soon.

Speaking of anger, most readers are aware that the specter of user fees has again risen in Washington. Those of you at Fox Field probably received a plea from the Airport Association to a) join, and b) express your extreme displeasure with the ill-conceived fee schedule with your state and national representatives. If you are not the letter-writing kind, at least join one or more of the alphabet groups (AOPA, EAA, etc) that are funding and fighting this issue for us. With fuel costs again on the rise, we don't need any more shifting of the FAA's budget costs to our segment of the national aviation system.

Finally, the ***Aluminum Overcast*** visit is nigh! Next month we'll again host the famous EAA B-17G and **Stormy Weathers** will be tapping folks to help out. We'll need people willing to devote time during the normal work days of the visit. Please consider spending a bit of you hard-earned vacation or comp-time in this worthy cause and help us to make this visit a bigger success than the last.

Check Six, Fly Safe, and may the WAAS be with you

- Gary Aldrich
Kommanding

Det 51 Goes To Tehachapi

In the rush to get last month's newsletter out on time, two errors slipped through **Evil Editor Zurg's** extensive review process. The ugliest error was a trip in the Wayback Machine – the February 2007 newsletter was published in January 2007, or at least that's what the date said.

The second error was to leave out one picture of Det 51's visit our local area. Here we see ***PPO* Doug "Opie" Dodson** introducing ***PPO* Chuck Rider** to the thrills of motorless flight in an ASK-21 glider at the official ***Project Police*** gliderport (**Mountain Valley Airport** of Tehachapi CA) while **Steve Stants** looks on.

"The wing on this side balances the moment from the wing on the other side"

Young Eagles Report

(*It's been a long time coming, but we have a Young Eagles Coordinator again! Yes,* ***PPO* Tanya Duke** *has stepped up to the challenge. Come out and give her your support!*)

The February Rally was a huge success. I want to thank all the volunteers and pilots who helped get the year off to a great start. We had 10 pilots, 7 volunteers and flew 26 Young Eagles. Two new pilots joined the excitement of the Young Eagles program. Thank you and I hope you will join us again.

Pilots: **Ted Blaine**, **Ed Lewis**, **Steve Peute**, **Doug Triplat**, **Paul Reukauf**, **Randy Kelly**, **Rich Crosley**, **Gary Aldrich**, **Todd Schultz, Bryan Duke**

Ground Crew:
Registration: **Victoria Rosales**, **Midge Lewis**
Ground School: **Paul Rosales**, **Mike Gonzales**
Tower Tours: **Ellen Vennola**
Certificates: **Daesha Roberts**, **Craig Woolston**

Our next event is **March 17th**, St Patrick's Day. We already have 19 kids signed up. Please let me know if you can be either a volunteer for ground crew or pilot for this event.

I'd like to ask a favor of everyone. When you tell people about our YE events, please have them call me to pre-register. I prefer to not have any "Show-ups". The reason behind this is when I have a list of kids and don't have enough pilots, I start telling the parents that we do not have room for anymore and put them on the list for the next month. Then if kids just show up, it is not fair to the kids who called and were not able to participate in the event. If someone shows up and are told that we do not have time for them, they might get disappointed and discouraged about coming to the next rally. If we can get everyone to pre-register, I think the events will run more smoothly and we'll provide a better experience to the Young Eagles.

- Tanya Duke
youngeagles@thedukes.org
Home: 940-3698
Cell: 810-1004

For your Calendar:
Future Rallies:
April 14th
June 9th (International Young Eagles Day)
August 18th
October 13th
December 15th

Rallies for May, July, September & November will be by request and are tentative.

ALUMINUM OVERCAST visits Lancaster, California

Hosted by EAA Chapter 1000

My fellow chapter members, in my new capacity as the chapter "Silly Little Detail Officer" or SLDO, I have been appointed by our beloved **Kommandant** to act as the **Tour Stop Chairman** (**TSC**) for the **B-17** tour stop at **Fox Field**. You might compare it to selecting the **Grinch** to be **Cheermeister** of the **Whoville Jubilation**. But, **Max** and **I** can't do this alone, so I am prepared to plead for **your help**.

The celebrant aircraft will arrive on **Monday, 16 Apr 07**. Our most active involvement will be **Tuesday** and **Wednesday** when we will be coordinating flights, conducting ground tours, and hawking an impressive array of B-17 paraphernalia.

The following are descriptions of the roles to be performed. If they seem familiar, it's because I shamelessly lifted them from **Gary's** e-mail last year:

"**Straw Boss**" - This guy is the primary contact/interface with the On-site Tour Coordinator, B-17 Aircraft Commander, Media, and the FBO personnel.

When he's not "interfacing", his duties include: Asst Plane Captain, Asst Carny, Gopher

"**Carny**" - This guy's primary focus is hawking merchandise and ground tours in the Merchandise Trailer. Requires the ability to operate a cash register (after training) and to count change. **Tattoos** and **piercings** are optional.

"**Plane Captain**" - Flow control is the name of the game. During the flying period (0800-1400) this guy ensures that "Flight Experience" riders get from the Merchandise Trailer to the aft aircraft door without being chopped to a bloody pulp by engines 1 and 2. After the flights, he is the greatest living expert on the Flying Fortress (make up what you don't know..."**Why yes, I flew the Regensburg mission...**"). He will probably be stationed at the forward hatch or aft door to regulate flow of ground tours. He will be augmented by the Straw Boss and any Wheel Chocks who happen to show up.

"**Wheel Chocks**" - These important individuals will keep the operation from getting away from us. They are available to fill in at any spot, at any time, and, of course, are qualified in any required specialty.

"**Sandbags**" - These folks, otherwise known as "**self-loading ballast**", who through service to the chapter or graft and corruption, will be offered the opportunity to ride the Fortress from WJF to VNY on Thursday morning's re-positioning flight. Transportation back to WJF will be provided by the chapter.

This is a schedule of events as we foresee them:

Monday 16 Apr 07	1200 - 1800	B-17 arrives, media flight
Tuesday 17 Apr 07	0800 - 1330	Flights, tours, and shameless commerce
Tuesday 17 Apr 07	1300 - 1800	More tours and commerce
Wednesday 18 Apr 07	0800 - 1330	Flights, tours, and shameless commerce
Wednesday 18 Apr 07	1300 - 1800	More tours and commerce
Thursday 19 Apr 07	0800 - 1130	B-17 departs for VNY with Sandbags

On Tuesday and Wednesday, we will need a full crew consisting of a straw boss, a plane captain, a carny, and several wheel chocks. We have broken these days into two shifts to permit the gainfully employed to participate. Start coordinating your kitchen passes now.

Activities on Monday will require only a straw boss and plane captain. However, other chapter members are welcome to join us in greeting the Wisconsin based flight crew. Thursday will require a straw boss, a plane captain, and the appointed sandbags.

Please let me know as soon as you can when you are available to help. This is a great opportunity to honor the members of the greatest generation and bring their contributions to life for those too young to remember first hand. It's a chance to touch a piece of living aviation history and share it with the non-flying public. It's also our best chance to bolster the chapter coffers. So, come out and help us secure the free skies over Lancaster. I'll buy the first round of coffee. Remember, many hands make light work – and a really big poker game.

- Scott "Stormy" Weathers
EAA Chapter 1000 SLDO

Project Police Fly <u>The</u> B-17 "Aluminum Overcast"

(*Our Magnum Opus on "Flying The Fortress" continues. If you really like what you read, start saving your dimes and nickels—for just $359 you will be able to "Fly The Fortress" yourself on 17-18 Apr 2007 right here at Fox Field. Better yet, donate your time to assist with the operation and get selected for one of the coveted "Sandbags"! Talk to* ***Scott "Stormy" Weathers*** *about how you can help!*)

Radio Compartment

Tip-toeing over the catwalk gets you into the radio compartment. Yes, the Garmin GNS 430s have radios, but since Boeing didn't install those originally, the 1945 radio equipment was a little bit larger and required a dedicated crew member to make it work. Five receivers are located on the right front wall of the compartment and the ADF equipment is located on the left front wall. The transmitter was on the left aft wall. The transmitter was crystal controlled (no digital tuning available), and there were 5 crystal units about the size of a desk drawer each with about 20 frequencies available. If the frequency you want was not installed in the transmitter, you had to pull the crystal unit out of the transmitter and swap it with one of the other four units on the right rear wall.

Radio receivers

Only the radio operator could actually transmit or listen to the radio. He then relayed any necessary information to the rest of the crew over the intercom.

Located above the ADF was the "IFF Must Die" switch. If it appeared that the airplane was going to fall into enemy hands, actuating this switch would dump the full current of three batteries into the IFF box to intentionally fry all of the electronics. The "zeroize" switch on today's units seems so much more elegant, and

ADF unit, with oxygen regulator on left sidewall

Transmitter unit

Additional crystal tuning units

leaves the unit in a condition where the memory could be reloaded and used again.

If the upper window hatch over the radio compartment was removed, another flexible gun could be slid into position to fire on the Hun above you. This gun was not installed in *Aluminum Overcast*, but was installed in *Fuddy Duddy*. Removing the window also gave a great view of the tail.

Window above radio compartment

Radio Compartment flexible gun in stored position (*Fuddy Duddy*)

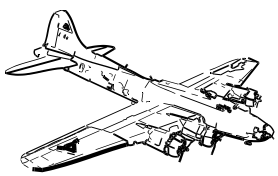
View aft through radio compartment window

View out left side radio compartment window

Ball Turret

The ball turret was electrically and hydraulically driven. The turret had its own hydraulic pump, such that the only power connection to the airplane was electrical. The turret was self contained, with all of the hydraulics, guns, ammo, life support (oxygen and flight suit heating electricity), and communications (intercom). Since the ball turret gunner typically can't just crawl out of the turret to use the flight deck relief tube, a separate relief tube was provided. All of this in a sphere about five feet in diameter.

Ball turret hanging from the top of the fuselage. Note hand crank for elevation on the left side of the picture and catwalk around the turret on the right side of the picture. Above the turret is a small box labeled "Spare Parts Box" and a warning label stating "Do not attempt to operate this turret before receiving proper instructions. Serious injury may result from incorrect operation". I wonder if that was a big problem during WWII?



Ring gear and pinion (left side) for rotating ball turret in azimuth

Normal operations had the ball turret gunner in the waist gunner's compartment during takeoff and landing. In flight, he would maneuver the turret until the guns were pointing straight down. In this position, he could open the hatch and step down into the turret. Another crew member would close the hatch behind him, and the hatch became his back support.

I was allowed to crawl into the ball turret while the airplane was sitting safely on the ground. Consider that I'm 5'9" tall, which is a little large for a WWII ball turret gunner. With the guns horizontal, the hatch could be opened from the outside. Crawling in led to an interesting position—I was lying on my back with my shins horizontal. My knees touched my elbows, and I was looking between my feet for Jerries. The gun sight was in front of your right eye. The handles that control everything are above your head, and are very similar to those found at the nose turret. Your left foot has pedals that control the gun sight, which you would match some cross hairs to the wing span of the enemy aircraft for stadiometric ranging. Under your right foot was the push-to-talk switch for the intercom.

Would you want ear plugs? I would think so, since the gun breeches sit right next to each ear. Of course, the top turret gunner would have the same problem.

Ever wonder why you always see in flight pictures with the ball turret guns pointed straight down? I suspect that is because in that position, the gunner is actually sitting on his butt instead of lying on his back.

- Russ Erb
Project Police Qualitative Evaluator

...Then a Miracle Occurs...

(*text from a recent e-mail from* ***Erbman*** *to* ***Vince "Opus" Sei****...*)

In my experience, as I suspect in yours as well, one of the toughest things to do has been to get two computers to talk to each other via an RS-232 or similar connection. It usually involves eye of newt and a sprinkle of pixie dust to achieve any success.

Imagine then trying to get seven (7!) computers to talk to each other! Well, through a quirk of fate, a twist of the space time continuum, and some excellent support from my Approach FastStack avionics guy I've managed to pull it off.

Yes, my do-it-yourself integrated avionics panel is up, functioning, and all of the boxes are communicating (or at least were at one time).

At the center of this is the GNS-480, the all seeing, all knowing GPS/COM/VOR/ILS/GS/XPDR/TV/Eye Candy/ Pilot Confuser. I'm surprised, but the box will get as good as a GPS solution with WAAS lock in the garage. The COM on it and the SL40 have been tested and are known to work to a range as far away as a handheld radio in the cockpit, which is interesting in an engineering sense, but not very practical. This weekend I ran a coax for the VOR to the wingtip (with antenna) in the driveway but couldn't pick up any of the local VORs. I suspect that is just signal blanking rather than a problem with the box.

The easiest connection was the Dynons and the ADI Pilot II autopilot, as those just happened to work with the default settings. The HSI page is really cool, and shows it is getting GPS data, although some of it (0 altitude) doesn't make sense. The CDI and other indicators don't show up, but I'm told by my avionics guy that I'll need to be in flight (or maybe just moving) for those to work, and I shouldn't expect them while sitting still. If you use a manometer to adjust the pressure on the static or total ports causing the box to sense airspeed, the Dynon will show you a direct headwind equal to the computed true airspeed, thus confirming that the airplane isn't moving. Are you going to upgrade your Dynon to the new firmware? I'm not sure the HSI would be useful for your setup, unless you used your Blue Mountain as the ADI instead. Then again, maybe you'd like the wind readout.

The autopilot is real exciting--all it does is show "OFF" instead of three dashes if it has a GPS signal.

I managed to get the EDM-900 engine analyzer to talk to the GNS 480, but then realized it wouldn't talk to my laptop using the EZConfig II configuration software. It seems the two-year old EDM-900's software was not current enough to work with EZConfig II, so I pulled it out of the panel and shipped it back to JPI for an upgrade. It's there now, so hopefully they'll get to it this week. I did manage to force it to record some data and download that to the laptop before pulling it out.

The Rocky Mountain micro-Encoder, which started out as the most sophisticated piece of equipment in the panel design about eight years ago, has been relegated to a rather minimalist role in the whole networking scheme. It now feeds pressure altitude to the GTX-327 transponder via grey code and pressure altitude to the GNS-480 via RS-232, which the 480 needs for some reason to be certified for IFR use, but no one can tell me why. Both of these functions could have been accomplished by either Dynon box, but they were late additions to the whole scheme after these jobs had been assigned to the micro-Encoder.

The micro-Encoder is still useful as a pilot display, showing stuff like pressure altitude, density altitude, and OAT with either no or one switch action (less than the Dynon). It took an e-mail to my avionics guy to figure out how to get the micro-Encoder to talk to the GPS.

The transponder was the last one to be up and running while I waited for a shipment of coax for the antenna. After another e-mail to my avionics guy, I got the transponder and the GPS to communicate. It seems the transponder RS-232 needed to be set to "remote", which the transponder manual said was "reserved for future use" which I interpreted as "doesn't work yet". Apparently the future is now. The really odd thing is that now I can control my transponder using the GNS 480, which is interesting but not all that useful since the transponder is all of 1.6 inches below it, and all of the front panel buttons on the transponder are still functional. Controlling the transponder from the 480 takes one to two more button pushes than doing the same operation on the transponder.

The SL40 is connected to the GNS 480 by an RS-232 line, but I'm still not sure what that's supposed to do. Supposedly the GNS 480 can provide information on frequencies, but I don't know how to get the SL40 to use it.

Over the weekend I developed Visual Basic programs that will read the data stream real time from the Dynon and the GNS 480. I could also have read the micro-Encoder, but the Dynon, 480, and the recorded data in the EDM-900 cover all of the parameters that would come out of the micro-Encoder. You should see the "hydra" -- one plug goes into the panel for "flight test instrumentation" and splits to up to six lines of 9-pin DSub connectors, which then each go to a Serial to USB converter.

If I need more than two inputs, I have a USB hub that plugs into the laptop. I tried it this weekend, and my laptop was easily able to handle two data streams and record the intercom audio track from an intercom headset plug all at the same time.

Apparently **Opie** is getting some motivation--he was over alodining some parts yesterday and was heard to say about my airplane "It's looking like you're going to fly before me and that's pissing me off!". Hey, it's a service we provide. No extra charge.

- Erbman

Web Site Update

As of 11 Mar 2007, the hit counter stood at **114050**, for a hit rate of about 19 hits/day for the last month.

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

Mar 17: Young Eagles Rally, 8:45 a.m., General William J. Fox Field, Lancaster, CA. (661) 940-3698

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

Apr 3: EAA Chapter 49 Monthly Meeting, 7:30 p.m., General William J. Fox Field, Lancaster, CA. (661) 948-0646

Apr 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Apr 14: Young Eagles Rally, 8:45 a.m., General William J. Fox Field, Lancaster, CA. (661) 940-3698

Apr 17-18: B-17 *Aluminum Overcast* hosted by EAA Chapter 1000, General William J. Fox Field, Lancaster, CA. (661) 609-0942

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

May 1: EAA Chapter 49 Monthly Meeting, 7:30 p.m., General William J. Fox Field, Lancaster, CA. (661) 948-0646

May 8: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

May 15: No meeting. Go to Fly-In instead

May 19: Sixteenth Annual Scotty Horowitz Going Away Fly-In, Rosamond Skypark (L00), Rosamond CA. (661) 256-3806

Jun 5: EAA Chapter 49 Monthly Meeting, 7:30 p.m., General William J. Fox Field, Lancaster, CA. (661) 948-0646

Jun 9: Young Eagles Rally, 8:45 a.m., General William J. Fox Field, Lancaster, CA. (661) 940-3698

Jun 12: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, 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

To join Chapter 1000, send your name, address, EAA number, and $20 dues to: EAA Chapter 1000, Doug Dodson, 4431 Knox Ave, Rosamond CA 93560-6428. Membership in National EAA ($40, 1-800-843-3612) is required.

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

*From the **Project Police** legal section: As you probably suspected, contents of The Leading Edge are the viewpoints of the authors. No claim is made and no liability is assumed, expressed or implied as to the technical accuracy or safety of the material presented. The viewpoints expressed are not necessarily those of Chapter 1000 or the Experimental Aircraft Association. **Project Police** reports are printed as they are received, with no attempt made to determine if they contain the minimum daily allowance of truth. So there!*

THE LEADING EDGE
MUROC EAA CHAPTER 1000 NEWSLETTER
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ADDRESS SERVICE REQUESTED

THIS MONTH'S HIGHLIGHTS:
OUT OF CYCLE PROJECT TOUR 20 MAR 07
STORMY PATH TO AN RV-8A
YOUNG EAGLES REPORT
STILL MORE B-17 FLIGHT REPORT

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