

## Chapter Meeting: June 27, 2012

**Speaker: Faride Khalaf**

Dreamliner – A Glimpse of the Future



In the years ahead, most of us who travel on airlines will hitch a ride on the Boeing 787 Dreamliner. This sleek new airplane was designed with cutting edge technology in manufacturing and material science. They did it again; with this bold step Boeing is leading the industry in creating fuel-efficient, easy to maintain, and superbly stylish and comfortable airplanes. The future we've dreamed of is here. In this one hour presentation, you'll see colorful pictures that highlight the Dreamliner's technical innovations as well as its' great looks. We will make comparisons with, and take a look at the technologies and the machinery of Boeing past! Come and join us for a mechanical prospective on the worlds most advanced jetliner that doubles as a beautiful work of art.

### President's Notes

by Bill Reining

Chalk up another successful Young Eagles Rally. Our June 16 rally saw 61 kids receive a free ride. Of special note were the helpers from PSA who assisted in marshalling aircraft, and the Civil Air Patrol cadets who escorted pilots and passengers on and off of the ramp. Discounted Avgas was provided by both Sterling and PSA. It was a very busy day. Thanks to all who helped make it happen!

Progress on refurbishment of the club house continues. By the time you read this, the windows and doors should all have been repaired or replaced, wiring repairs completed, and removal of the fireplace in the large meeting room underway. Meanwhile, we are busy arranging insurance coverage with EAA headquarters and the airport. This must be established before we are permitted to begin our volunteer labor. EAA 393 and MDPA will be painting the inside and outside of the building, removing all trash, and removing the old kitchen cabinets. There is a lot of brush, weeds and overgrown bushes and trees to be addressed by the clubs. You can expect this work to begin in July.

Please inform your President, preferably by email, of your willingness to work on the clubhouse, your availability, skills and experience. I will forward this information to Scott Achelis, who is leading the efforts by both EAA 393 and MDPA. You can expect to hear from Scott as he begins to assemble work parties.

Chapter 393 is sponsoring two kids to the Air Academy in Oshkosh this summer: Devon Goldschmidt from Albany High School, and Liam Clark from Lamorinda High School. Both are

keenly interested in aviation and can't wait to get there. Tracy Peters has coordinated this program and promises that the kids will come to our meeting after camp and give us a full report.

Special recognition goes to Ernst Freitag, Harvard Holmes, Eric Schuldt and Bob Belshe for entering their homebuilt aircraft in the competition held at the Golden West Regional Fly-In on June 10. They each received high marks for their appearance and craftsmanship. Unfortunately our fifth entry couldn't make it, so we didn't garner enough points to win, but it was an excellent showing.

Please mark your calendars for the Chapter Picnic on July 14 (this is a date change), from 11:30 to 2. An electronic invitation has been distributed by e-mail. The chapter will provide grilled hamburgers, hot dogs and drinks. Members are asked to bring all the side dishes (such as salads, beans, rolls, and desserts). If you can't reply by e-mail, please respond to Rick Bourgeois at the next meeting.

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### **Dinner Menu**

By Rick Bourgeois

Dinner is served at 6:30pm – Donation is \$7:

- Roasted Chicken
- Chili Beans
- Potato Salad
- Green Salad
- Dessert
- Coffee and drinks (water & soda)

Let Rick know your suggestions for future meals.

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### **Young Eagles Events**

By Renee Robinson

Our Young Eagles event went very well. We flew 61 children. Thank you to everyone who assisted with this event. Our next event is scheduled for August 18th.

Thanks, Renee Robinson

### **Donate your old laptop computer!**

We can use a few additional laptop computers for the Young Eagles events. The only software required is a relatively recent web browser, so Windows, Mac, and even Linux is acceptable.

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### **June 6, 2012 Board Meeting Notes**

by Pete Mitchell

**Present** were Bill Reining, Pete Mitchell, Bob Belshe, John Davi, Tom Howard, Rich Bourgeois.

**Absent** Tracy Peters, Vi Egli, Kevin Hoos, Renee Robinson

**At large**, Harvard Holmes, Guy Jones

### **Secretary & Treasurer – Pete Mitchell, Bob Belshe**

Combined bank balance \$7,277. Bob announced a \$1,000 donation to the Club from John Davi. On May 17<sup>th</sup> Bob forwarded our 501c3 application, received from Sacramento to the IRS.

We have 53 paid members, 16 have not renewed.

### **Speakers – Tracy Peters, John Davi**

June: Tilly & Bill Larkin to speak on Buchanan Field History. [Changed later due to illness – we will instead have a presentation on the Boeing 787.]

July: no general meeting. The annual picnic will be on Saturday July 14, 11:30 to 14:00.

August: Harvard Holmes will address Modern Glass Panel Alternatives.

### **Food – Rich Bourgeois**

June menu, Roasted Chicken, Chili Beans, Potato Salad, Green Salad, Dessert & Drinks. Rich requested and the Board approved the purchase of a Beverage Cooler/Dispenser.

### **Young Eagles Saturday Flight – John Davi.**

John has arranged for the lawn near MDPA to be mowed, fuel discount cards & contacted the Press. Tracy Peters will run the ground school.

Tom Howard will change date & install the banner. PSA has agreed to run a class for 8 CAP Cadets as Ramp Marshals

### **Club House update– Bill Reining**

The County will repair and replace doors and windows, replace the flooring, remove the fireplace in the meeting room, repair or replace the heaters, and provide new kitchen cabinets. The clubs will do interior and exterior painting, install cabinets & landscaping. The clubs may also install a dropped ceiling. Decisions have to be made regarding how much dedicated space 393 & MDPA will need. Scott Achelis will coordinate volunteers.

### **Annual Picnic**

Because of conflict with Airventure, Tom Howard motioned, Rich Bourgeois seconded and the Board agreed to a date change to Saturday July 14, 11:30 to 14:00. Pat & Tracy Peters will handle the grill.

### **Air Academy – Tracy Peters**

Tracy & Bill Reining will meet our applicants & their parents next week. Both applications have been submitted to National. Tracy has used his personal credit card to pay their tuition deposit, will apply 2011 YE credits toward their tuition and will look into airfare.

### **Tools – Tom Howard**

The Air Compressor Motor is wired for 220 volts only and has a unique mounting, making replacement difficult.

### **Golden West Sunday Judging**

Bob Belshe, Eric Schuldt, Harvard Holmes & Ernst Freitag have volunteered to have their aircraft judged on Sunday. A fifth volunteer is still needed.

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## **May 25, 2012 General Meeting Notes**

By Harvard Holmes

President Bill Reining opened the meeting at 7:30 pm.

He expressed our appreciation to Rick Bourgeois for the dinner we had just eaten.

We had one visitor, Dan Chase of Orinda. He flies a variety of planes, including Pipers, Cessnas, and Diamonds. He is particularly interested in the Aerion Lightning. Bob Belshe was pointed out as the owner of a Lightning. Dan used to fly out of Redmond.

### **Business**

Treasurer Bob Belshe reported that he has received our California State approved articles of incorporation, and that he will forward them to the IRS for our 501c3 application. We have 51 paid members, with 19 members from last year who have not renewed. We have \$7,039 with all bills paid.

Young Eagles Co-Chair Jack Davi reported that our next Young Eagles rally is scheduled for June 16, 2012. He noted that last time there was adequate ground support volunteers, but people were not letting him know that they were coming, causing him a lot of anxiety. He requested that volunteers please let him know in advance that they are coming.

President Bill Reining reported that our efforts to send kids to the EAA Air Academy have suddenly paid off – more than we expected! First, our waiting list position, which we did not have much hope for, moved up to an actual opening. Tracy Peters quickly went to work and selected a young woman, Devon Goldschmidt from his pool of candidates. When it came down to the final decision, other candidates either were already scheduled for other activities or their parents were unsure about letting them go. Devon's aunt is a pilot. Tracy had requested that his candidates be prepared to 1) keep a diary of daily activities, 2) take pictures, 3) write a Cleco article, and 4) make a presentation at a meeting. Second, from our sign on the door at the last Young Eagles Rally, we got a call from a grandmother of Liam Clark, a young man who flew with us at the last Young Eagles event. He is 15 years old and a student at Campolindo High School in Lafayette. He is "ready to go" and Tracy Peters is following up with his parents. Harvard Holmes moved that the members

authorize the Board to spend up to an additional \$1,000 to send a second child to EAA Air Academy. There was discussion about covering the airfare for Devon and Liam and whether we have Young Eagles "credits" that we can use for some of the expense. [After the meeting Bob Belshe confirmed that we have \$560 in credits, which can be used for these expenses.] After the discussion, the motion was approved unanimously.

Bill Reining reported that the renovation of the former MDPA clubhouse is proceeding. General Services (from the County) has done some cleaning (a few items are left), glass to replace the broken windows has been ordered, wiring repairs will be done tomorrow, and exploratory holes for the new water supply pipe will be dug tomorrow. Bill Reining, Maureen Bell, Scott Achelis and Airport/County staff will conduct a walk through inspection on Thursday, May 31 to determine what work EAA 393 and MDPA would/could contribute. Painting and flooring are obvious candidates for EAA and MDPA to work on. Tracy Peters noted that the large meeting room tended to have bad acoustics and that, while a rug could help in this regard, it would be nice to have something more cleanable. MDPA had used some cloth hung from the ceiling to help control the noise. A carpet would be nice in the "living room." Jack Davi noted that Tom Howard had access to surplus carpet.

**Presentation:** Alan Brown from Lockheed:  
Development of the F-117 Stealth Fighter

Vice President Tracy Peters introduced Alan Brown, the former Director of Engineering at Lockheed from 1975 to 1989 for the "Skunk Works." Alan got his education in England at Cranfield, and then continued at Stanford.

Alan noted that his hobby is Radio Controlled models and brought a model of the F-117. He also does university teaching.

Around 1970, DARPA (Defense Advanced Research Projects Agency) was concerned that there was no way that current bombers could evade radar in Russia. What could be done

about this? Perhaps aircraft could be made smaller? Since WW II, aircraft had grown from 5-6,000 pounds to 50,000 pounds. But the physics of radar are a formidable obstacle – to diminish the radar return (visible range) from an object by a factor of 10, the object radar cross section must be made smaller by the fourth power of this factor of 10, that is, it must be 10,000 times smaller.

It was estimated that current bombers/radar would give the Russians about a 20 minute warning (~200 miles). To reduce this to 10 minutes (1/2 or 100 miles), the radar cross section would have to go down by 16 times! But 10 minutes was not nearly good enough! What was really needed was to reduce the detection time to about 2 minutes – then there would be too short a time to counter the bombers. So a radar cross section reduction of 10,000 times was needed. Everyone thought this was so impossible that it was hardly worth thinking about.

Nevertheless, DARPA started the XST (Experimental Stealth Technology) program. Now, Lockheed had the best radar cross section design team in the world, based on their work on the U-2 and the SR-71. But DARPA was thinking in terms of fighters, not surveillance aircraft, so they engaged the fighter manufacturers (not Lockheed), to address the problem. But the work was considered so advanced, theoretical, and improbable that it was not classified top secret – it was only classified confidential, so the existence of the program became known among the defense contractors.

When Lockheed heard about it, they asked to be included. Well, the program had already allocated their funding, so they could not pay Lockheed to be a part of the program. But Ben Rich, the head of the Skunk Works, arranged to pay to be in the program, so for \$1, they were included. The contractors quickly boiled down to Northrop, Donald Douglas, and Lockheed. Then Douglas dropped out, leaving only Northrop and Lockheed.

Lockheed was able to design a shape which was a shallow swept back pyramid which had the required small radar cross section. They were then able to trim the trailing edge of the pyramid without increasing the radar cross section very much. This created a shape that might actually be made to fly.

So Northrop and Lockheed were set up to compete for the lowest radar cross section. DARPA asked Nick Damascus to evaluate the shapes for radar cross section. Nick decided to categorize the radar returns as frontal, side and aft, with the highest weight for frontal returns. So Lockheed adjusted the sweep back angle to put the major returns into the side areas to decrease the frontal return scores. They were able to use a mathematical scheme called Physical Theory of Diffraction to analyze the shapes. This scheme was actually developed by a Russian mathematician, Pyotr Ya. Ufimtsev, and presented at an unclassified conference some years earlier. ( see [http://en.wikipedia.org/wiki/Pyotr\\_Ya.\\_Ufimtsev](http://en.wikipedia.org/wiki/Pyotr_Ya._Ufimtsev) ) At the time, the scheme could only analyze flat plates, so the plane was constructed from flat plates. The other concern was for diffraction effects from the edges of plates, so Lockheed provided 12" of radar absorbing material on the edges of sharp angles.

When Lockheed and Northrop arrived at White Sands, NM to test the radar cross sections, Lockheed realized that the pole to suspend the aircraft at the test site had so much radar reflection that it would dominate the results. When Lockheed offered to replace the pole, Northrop realized that they had lost!

At Area 51, during testing, the F-117 prototype (the Have Blue) aircraft had the flat panels painted to look curved to disguise the aircraft. Lockheed made their first flight on December 1, 1977. Subsequently, they flew against the best radar in the country, specifying when and where they would approach. The radar operators thought they had failed to show up, until they were spotted visually with a telescope, exactly when and where they had said!

The key to the success of the F-117 program lay in two areas: 1) Spend a lot of time on the details. Even something like a pitot tube had to be carefully designed not to contribute to the overall radar cross section of about a marble! The engine air inlets and exhaust were critical to control the radar cross section. They even found radar reflections from the pilot's face and headset were significant and they had to coat the windshield to be radar reflective, yet allow the pilot to see out. 2) Design for manufacturability and maintainability. Otherwise, it could not be manufactured and deployed.

Lockheed produced 59 of these fighters and only one was lost.

In later projects, such as the F-22, Lockheed was able to refine the mathematics and apply more computer power to analyze curved surfaces. This allowed the aerodynamics to improve while maintaining the low radar cross section.

The stealth aspect substantially changed the way flights were conducted. Prior to stealth, bombers flew very high or very low to evade surface-to-air missiles. Neither was ideal for picking out bombing targets. And after the bombs were dropped, a sharp turn back was done. Now, bombing runs flew at a medium height for best target identification. And sharp turns were avoided, because the bank angle exposed more surface to radar detection.

Surprisingly, the rest of the world still lags behind in stealth technology. One reason is that the design is so detail intensive that the US still retains a lead in the technology. Others copy the planes, but without the design knowledge, the copies are not as good.

Many years later, Alan was teaching a class at UCLA when he encountered Pyotr Ya. Ufimtsev, the mathematician from Moscow who developed the Physical Theory of Diffraction analysis. Alan gave him credit for how useful that had been. Pyotr was first dumbfounded that the "enemy" had benefited from his studies. His second



reaction was that he was glad that somebody had used his work.

Many thanks to Alan for his lively and enlightening talk!

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## Wednesday Fly-outs - Photos

By Tom Howard

### May 30, 2012 – Santa Rosa



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## Making Your Instrument Panel (Part 1)

By Tony Bingelis

**Sport Aviation - 7/96**

You have probably studied photos of numerous instrument panels from time to time during the construction of your homebuilt. And by now, you undoubtedly have toyed with a few ideas of what you would like to work into your panel.

Fortunately, this is one area where you as the builder can exercise considerable latitude in designing and constructing the custom instrument panel you want . . . without affecting the structural integrity or the flight characteristics of the airplane.

Airplanes being built from kits will probably be furnished with an aluminum blank intended to be used as an instrument panel and, possibly, a suggested typical layout for the instrumentation. However, most builders like to add more instruments and equipment to suit their fancied needs, although, believe it or not, it's been said that some builders actually want to simplify their instrument panels.

Naturally, the instrumentation you install should be determined by the type of flying you expect to do. That is to say, if you intend to limit your activities to clear weather flying, it would be ill advised to load your airplane down with a vacuum system, gyro instruments, multiple radios, and a complete all-weather instrument flight capability.

In doing so, the added weight will be significant and will have a definite effect on your takeoff and climb . . . however unimportant you might rationalize that to be.

Certainly, the extra instrumentation and radios will have a noticeable effect on your wallet. Unfortunately, a lighter wallet will do nothing to improve your takeoff distance and rate of climb.

### Decisions, Decisions

Before you start cutting holes in that panel you must decide what kind of instrument panel you want. That is, which instrumentation option do you want? Here are three options:

- 1. A Basic VFR Panel. This is the simplest panel with the minimum mandatory instruments installed - and perhaps one or two added personal favorites.
- 2. An IFR Panel. A "full panel" installation with gyro instruments (vacuum or electric), intercom, and all the necessary equipment and avionics suitable for day/night operations under instrument conditions.
- 3. Something in between (call it a deluxe VFR panel if you wish).

Even though you limit your instrumentation to one of these options, similar panels may vary greatly because of the many optional instruments and manufacturers from which a builder can choose.

### **Instrument Arrangement Does Matter**

After you have decided what instrumentation you will need/want for the type of flying you will be doing, you will have to decide how to arrange your instruments. This is important because a good instrument layout will enable you to spend more time looking out for traffic than looking for randomly located instruments.

A sure way to obtain an effective arrangement is to work out few rough sketches to reflect what you have in mind.

Next, select the one layout sketch you like best and make a full size drawing, on paper, of that panel to check out clearances and instrument spacing. Almost any two-seater, side-by-side configured homebuilt will probably be capable of accommodating all the instruments, radios, lights and buzzers your heart desires.

A single seater or a tandem two-seat aircraft on the other hand does not have the space for expansive instrumentation and avionics without some careful planning. You may even have to locate some instruments on sub panels built into the sides of the aircraft or positioned between your legs on the floor.

Your instrument arrangement, especially for the narrower small panel, must be carefully worked out on paper beforehand lest you forget to include some essential

instrument in the limited panel space you have available . . . it does happen.

Be sure you have provided space for each of the mandatory instruments required by the FAA. FAR Part 91 lists these for VFR Day only:

- Airspeed Indicator
- Altimeter
- Magnetic Direction Indicator (Compass)
- Tachometer
- Oil Pressure Gage (for engines with oil pressure system)
- Oil Temperature Gage (for air-cooled engines)
- Temperature Gage (for liquid cooled engines)
- Fuel Gage for each tank
- Landing Gear Position Indicator (for retractables)

Your instruments, when fitted to the panel, should not result in a random arrangement which might be likened to a shotgun's scattered pattern. Instead, try to group your instruments in a logical arrangement that will ensure easy scanning. That usually means the most important flight instruments will be in the middle of your viewing area . . . where you would expect them to be.

Naturally, you can expect your instrument panel to be somewhat different than similarly equipped panels in other aircraft of the same type. A lot depends, as I have already pointed out, on the type of flying you expect to do and the instruments selected.

Another factor which may influence and possibly complicate your orderly arrangement might be the instruments and goodies you have previously acquired and would like to use.

### **Finalizing The Layout**

If you regularly fly other aircraft you might consider duplicating your favorite panel. Habits are hard to break and if, for example, you are already used to having the key and ignition switch on the left side of the panel, why locate them somewhere else in your new homebuilt?

After you have settled on the general arrangement of instruments for your panel, check once again to see that you have provided space for all the essential instruments.

Next, be sure there is adequate clearance for all structural parts and between each instrument.

Avoid crowding the instruments. The minimum spacing between instruments should be a last resort. That sort of thing will make the removal and replacement of instruments more difficult later should maintenance be necessary.

Logic will tell you to locate your switches and circuit breakers or fuses along the bottom of the panel, or on a separate sub-panel to simplify access to them.

The same logic should caution you against locating switches and electrical components in the area directly over the radios where access from below would be impossible. The exception, of course, might be when there

is a flip-up canopy and the space directly above the instrument panel is open affording pretty good access to the upper areas of the back side of the panel.

Your flight instruments, altimeter, airspeed, rate of climb, and gyro instruments should be grouped and centrally located. Likewise grouped, in another easily viewed location, should be your engine instruments. These in many instances are grouped to the right of the radios.

A good installation is one where your flight instruments are mounted on a removable or hinged panel to give you better access to them and other instruments located on either side.

Of course, if you are young for your age and don't mind lying on your back in a crowded cockpit to work on the stuff behind the panel . . . forget about that easier access bit.

Instruments in two-seaters (side-by-side) located far to the right of the pilot introduce a viewing problem due to parallax.

To overcome this parallax viewing error, and to make them easier to read, these instruments can be installed in a small cocked panel section. However, this complicates the construction of the panel and you might not even like the effect.

### **Building The Panel**

It is a good idea to use nothing but non-magnetic materials for your instrument panel. This will afford you more options for locating your compass.

The majority of instrument panels, and panel sub-sections, are normally cut out of a fairly thick sheet of aluminum. A large, one-piece, basic panel, for example, may be cut from a hunk of .080" 2024 T3, or the less expensive 6061 T6 aluminum. This thickness will provide enough rigidity for even a heavily instrumented installation.

It is a good idea, too, to make the basic support instrument panel completely removable. If you have a fuselage fuel tank in the nose end, a removable instrument panel may be essential should the fuel tank ever have to be pulled out for any reason. This means the panel should perhaps be attached to the basic fuselage structure with nut plates.

A suggested minimum thickness for a large wide panel, however, would appear to be .060" with adequate support where needed. Heavier panels made of .090" or .125", on the other hand, will carry a needless weight penalty and should not be considered.

Some builders like the appearance of a wood panel and make theirs of plywood or overlay the aluminum panel with a veneer or textured synthetic sheet. Usually, a wood panel is cut from 1/4" plywood stock.

Such a thick panel, however, introduces some problems when it comes time to install the instruments. For one thing, longer screws will be necessary. In addition, the faces of the instruments will be recessed by the thickness of the plywood.

You might not like that effect. However, you could bevel the instrument panel holes and paint the beveled portions flat black. Naturally, it all depends on the effect you would like to achieve. You only have yourself to please.

Panels are best cut out on a bandsaw and smooth trimmed with a disc sander or a belt sander. A saber saw also works well although more finishing work will have to be done. In the absence of such luxurious equipment you can do an adequate job with a hacksaw, a large bastard cut file and sandpaper.

NOTE: Automotive gages take 2" holes while aircraft instruments require 2-1/4" holes. The sizes are not interchangeable so know which instruments take which size holes and where.

Those large diameter (2", 2-1/4" and 3-1/8") instrument holes are ordinarily cut out using a heavy duty Circle Cutter. This tool has an infinite range of hole size adjustments within its capacity, and does a fine job.

Careful! It can be dangerous to use if you allow your hands to get in the way of the sweeping bar and cutter. Always clamp your work to the drill press.

Use a rather slow speed. The larger the hole, the slower the drill press speed should be. About 500 rpm is a good average cutter speed for aluminum.

This tool should not be used in a handheld drill as it is difficult to control without jamming . . . besides, it is a risky thing to do.

After you have adjusted the cutter to the size hole you want, make a test cut on some scrap. You want the instrument to slip into the finished hole easily. You realize, of course, a 2" instrument will not go into a 2" hole, nor will a 3-1/8" instrument fit into a 3-1/8" hole. The holes must be cut slightly larger, but without too much play.

Believe me . . . don't try for a snug fit. You'll hate yourself later when you find that nicely painted panel won't allow the instruments to slip in. Your only recourse then will be to file the holes slightly larger . . . as they should have been in the first place.

Of course, you will ruin the paint job in the process of enlarging the holes a little bit.

The hardest part of making an instrument panel, I believe, is the accurate location and drilling of the many small instrument attachment screw holes.

Alas, it is quite common to find that one or more of the attachment holes has to be elongated before you can get all the screws in. Fortunately, the screw heads will hide all but the sloppiest holes.

### **Oh, Yes . . .**

Measure carefully, or use a drilling template to assure yourself that the drilled screw holes will align accurately and the instruments are not tilted. A tilted instrument, unfortunately, is the first thing anyone sees when looking at your instrument panel.



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## Wednesday Fly-outs - Information

By Harvard Holmes

To maintain our proficiency, a number of pilots get together on Wednesdays and fly somewhere for lunch. Many of the aircraft owners in the chapter participate. Passengers are always welcome. Not only is it a great way to see the Bay Area, it's also fun to see and ride in our members' aircraft. The email address is [WedFlyOut@eaa393.org](mailto:WedFlyOut@eaa393.org) You may contact Renee Robinson [webmaster@eaa393.org](mailto:webmaster@eaa393.org) to be added to or removed from this list.

Generally, someone who wants to go flying will send a suggestion to this list a day or two before. Those who can go will respond, and a destination gets selected. Recent destinations have included: Half Moon Bay, Petaluma, Santa Rosa, Ukiah, Boonville, Shelter Cove, Willows, Auburn, Sacramento, Lodi, Stockton, Merced, Watsonville and Salinas. If the weather is poor, a destination may be selected as late as Wednesday morning.

The most active pilots on this list are Harvard Holmes, Bill Reining, Bob Belshe, Ron Robinson, and Phil Jenkins. Pilots sometimes advertise that they have empty seats, but not always. Harvard Holmes and Bill Reining are most likely to have extra seats (4 seat aircraft). My advice is to contact a pilot in advance to make sure they have room and to get directions. Typically, you'd get to the airport by 11:30am and return by 3:30pm.

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**Meeting and Event Schedule**

Board	Y Eagles	General	Fly-out	Other
Jun 6	Jun 23	<b>Jun 27</b>		
		<i>Golden West Regional Fly-In</i>		<i>Jun 8-10</i>
Jul 11				
		<i>Arlington Fly-In, Arlington, WA</i>		<i>Jul 11-15</i>
		<i>Chapter Picnic</i>		<b>Jul 14</b>
		<i>AirVenture 2012, Oshkosh, WI</i>		<i>Jul 23-29</i>
Aug 1	Aug 18	<b>Aug 22</b>		
Sep 5	Sep 15	<b>Sep 26</b>		
Oct 3	Oct 20*	<b>Oct 24</b>		
Nov 7		<b>Nov 28</b>		

(\* Events for Girl Scouts & Sea Cadets)

Our meetings are open to the public. Join us for dinner at 6:30 pm (\$7 donation) with the general meeting at 7:30 pm on the above dates in the building at 161 John Glenn Drive north of Sterling Aviation. Enter from the airport side of the building.

Chapter 393 fly-outs are open to chapter members and guests. See the newsletter for arrangements.

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