

WINTERMAIL

EAA CHAPTER 25

MINNEAPOLIS / ST PAUL, MN

MARCH 2007

Building the RV-4 *An interview with Ken Beene*

by Pete Gavin



How did you decide to build the RV-4?

At the time, I was looking for something to build. I had finished building my first airplane, an RV-6, in 2000. After I finished, I discovered that I really missed the building process, so I began upgrading the panel to full IFR. I finished that, and began looking around for an antique or classic to restore. I just couldn't find anything at the level of quality I felt would be worth the investment.

That's when I learned that Ed Fischer (Chapter 25 member) had a complete RV-4

(Continued on page 4)

Zodiac 601 XL *by Pat Hoyt*

Like many EAA members, I am fulfilling a lifelong dream by building my own airplane. For my project, I have chosen the Zenith Zodiac 601 XL.

Why the 601? Selection criteria was fairly simple: I wanted something that fit within Sport Pilot (all my flying is day VFR, mostly by myself, and infrequently with 1 other person). I wanted something with similar characteristics as the airplane I currently fly, and I wanted a kit with a reasonable likelihood of completion, with numerous examples already flying.

In November, my wife & I traveled to the Zenith facility at the Mexico, Missouri airport to attend a two day Rudder Workshop.

(Continued on page 7)



Pat and Mary Hoyt at Rudder Workshop

Cleared for Takeoff
March meeting, February minutes

P2
P3

Ads/Wanted
Events/Fly-ins

p7
p8

Cleared for Takeoff *by Jon Cumpton*



It's Sunday night, close to midnight, and I'm writing this column. But wait, I have things to tell you! For those of you who weren't brave enough to venture to the chapter hangar on March 3rd for the Chili Feed – eat your hearts out, because we had fun! I arrived around 10:30 am to find Mike Dolan and Mark Kolesar thoughtfully digging me a parking space in the snow drifts. Who says high office doesn't have it's perquisites?

Not me – and thanks, Mike and Mark. A hearty but small crowd turned up to eat – and we had four different batches of chili. New members David and Mary Maib decided to show up and see what happens at our hangar – and Mary made brownies for me – with no nuts. She must be a psychic! She also probably thought she was making brownies for other people too! She also made some Mexican cornbread for the gathering.

I also have news of the Gusty. Greg Laslo, a contributing editor for Sport Aviation, is planning to write an article about the restoration of this airplane. He has already been in touch with Peter Denny, and will be talking to other chapter members who were involved in this project. The next project will be to display the airplane in the hangar more suitably. At this point, Dale Johnson has agreed to spearhead a plan to hang the airplane vertically on the wall.

Turning to the world of FAA funding proposals, the initial response to the Bush Administration's proposal has been overwhelmingly negative. It has created some interesting events in Washington. I noticed a report that Senator Inhofe of Oklahoma showed up at the Senates Aviation Subcommittee hearing to testify. Senator Inhofe is a pilot (no surprise here), but he isn't a member of the committee. Yet he appeared to voice his opposition to the FAA proposal. In another hearing, it was interesting that when asked directly if the Aviation Trust Fund could afford the NextGen air traffic system, the FAA said it could! So why do they need to increase GA pilot taxes by over 300%? At any rate, we can not afford to just shake our heads at the mysteries of Washington politics. Please take the time to voice your concerns to your elected Federal representatives. Monitoring the EAA and AOPA websites is a good way to help you voice your specific concerns.

At the board meeting on March 3rd, we approved an additional \$500 youth scholarship. This one will be for a student from Washburn High School in Minneapolis. The requirements will be identical to those we have for the Lakeville High School scholarships. One of our members thoughtfully agreed to fund this scholarship for the first two years. Speaking of giving away money, we are also looking for a worthy candidate to support for a trip to the EAA's Air Academy Camp this year – please contact me if you know of some deserving young person.

At our March meeting, we will continue to take advantage of the Washburn fabrication shop. To practice metal bending, we have two projects to try. By the time you read this, you will already have an email from me with details. But all you need to do is bring yourself and your enthusiasm!

See you there!



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ON FINAL



Minneapolis/St. Paul

Visit our website at eaa25.org

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The Leader In Recreational Aviation

This Month: Wed Mar 21st—Washburn High 6:30pm

This month we continue at Washburn High School in South Minneapolis for our winter meetings.

Program: This month you'll get a chance to try your hand at metal fabricating projects, and new members David and Mary Maib will conduct a riveting demonstration. We will have blueprints available for a tool tray, and for the really ambitious, a full toolbox.

Sat Mar 17th, 9 am—Young Eagles

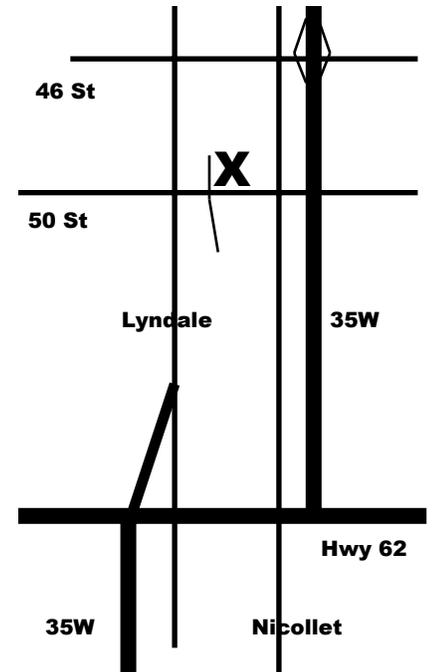
Contact John Koser for confirmation, plan on meeting at the Airlake FBO.

Sat Jun 16th—Chapter 25 Annual Picnic

Directions to Washburn High School:

From the South: Exit 10B from 35W at the Crosstown. Continue north on Lyndale Ave to 50th Street. Right turn and proceed 3 blocks. Turn left into the school south parking lot.

From the North: 46th street exit from 35W, turn right on 46th street. At Nicollet, turn left. South on Nicollet to 50th, turn right. West on 50th past the Junior High School to the Sr. High School 2 blocks west of Nicollet. Turn right into the school south parking lot. **Entry: South door #9, look for signs.**



EAA Chapter 25 Meeting Minutes

February 21, 2007

Presiding Officer: Jon Cumpton

Location: Washburn High School

Business meeting discussions

The following guests were introduced:

David Cox Bob Cheppelear Mary Maib

All members are encouraged to wear nametags. To order a permanent nametag at a cost of \$5, please email Jon Cumpton.

Members are reminded to visit the chapter website at EAA25.ORG for the latest chapter information. Please send project updates/other content for posting to Jon Cumpton.

Members are encouraged to sign up with Pete Gavin to get the chapter newsletter via email. The electronic version is in color and sending it by email saves approx \$1 per copy.

Fourteen Young Eagles were flown at our monthly rally last Saturday. We continue to look for groups of kids (Boy Scout Troops, etc.) to fly. Please talk this up with others and have interested group leaders contact John Koser or Bill Brown.

Bill Brown's wife Sue just completed surgery for a lung transplant. She is doing well so far. We wish her a speedy recovery.

Greg Lasco, a writer for EAA's Sport Aviation magazine has contacted the chapter to do an article on the Gusty restoration. He will be contacting those involved for more information.

We continue to look for a site where the Gusty can be put on display. Please forward any ideas to a chapter officer.

A treasure's Report was circulated. At meeting time our account balance stands at \$7,847.

Peter Denny reports that the Sonex Project is progressing well at Washburn High. Members are encouraged to visit the school and use the new shop facilities.

The chapter plans to offer a \$500 scholarship to a student from both Lakeville High Schools (North and South) this year. A committee made up of Jon Cumpton, John Schmidt, & John Koser will evaluate applicants.

The chapter is now looking for kids with an interest in aviation to send to EAA's Air Academy this summer. Please submit names of candidates to a chap. officer.

Saturday, March 3rd is our annual Chili Feed. Bring family and friends with your pot of chili. The event runs from 11– 1. A Board meeting will follow—all are invited.

Our next two chapter meetings will be at Washburn HS. We plan to do some project work in the metal shop.

Mark your calendars. Our annual banquet will be held on October 7 at the Eagan Community Center. The program will be related to Lindberg's solo Atlantic flight.

The Mn Aviation Hall of Fame Banquet is May 12. Chapter member Roger Anderson and former member Ray Brown will be inducted. See Pete Gavin for tickets.

The FAA has proposed implementing user fees. The fees include raising the fuel tax & charges for other services. The proposal also suggests that congressional oversight be eliminated. Visit the AOPA or EAA websites to learn more and contact your Representatives.

Several homebuilders gave updates on their projects.

Program—Peter Denny gave a tour of the newly established Washburn Aviation Metal Working Shop.

Submitted by Craig Nelson

Building the RV-4

(Continued from page 1)

kit that was not finished. He had bought this in 1989, but with all of his commitments, had constructed only the horizontal stabilizer. With most RV projects, people buy a partial kit at a time, but Ed had bought all of the kits at one time along with an engine. I bought everything from Ed but the engine. This was in 2001, and I just finished the RV-4 late last year.

When did you start the RV-6?

I originally got interested in RV's in the early 90s after looking at a number of different designs at Oshkosh. I had almost settled on a Glastar model, but as I thought about the length of time RV's had been on the market, and the large number flying even then, I decided the Van's kit would be a lower risk investment. I also really enjoyed working with metal, and didn't like the messiness of composite. Tube and fabric would be fine on a classic, but I wanted something faster. So I started the RV-6 with a partial kit in 1994. I had no experience building aircraft at the time, but I had restored several Porsches, so I knew that I enjoyed working with my hands. I practiced riveting for a few hours on scrap aluminum, then started on the real thing.

What engine did you choose for the RV-4?

I decided that I wanted more power than the O-320, which is the one I have on the RV-6. I also wanted to try a constant speed prop, as opposed to the wood prop on the RV-6. I felt this would perform better when flying in formation with other RVs, and also perform better doing aerobatics. So I went looking for an O-360. I found a government auction for one with about 1000 hours total time from the US Parks Dept in Alaska, and won it with a sealed bid. The engine was off a Husky float plane, and was being stored in International Falls. I drove up there, and had quite a time finding it and getting it loaded in my truck. There was a woman working alone when I got there, and she didn't know anything about the engine, but finally found an O-360 in an out-building. We used their forklift to put it in the back of my truck. I then checked the serial number and found it was not the engine that I purchased. As we were removing it from the truck some other park department employee determined that we



ON FINAL MARCH 2007

forklift operator showed up and we got it into the truck. I paid \$6,050 for the engine, and the next lowest bid was \$5,900, so I felt I got a good deal. I spent \$5,500 for a new Hartzell prop, and another \$1,200 for the governor.



The engine has performed very well. I get fantastic climb performance, and the constant speed prop acts almost as a speed brake when you want to slow down in a hurry. With this combination, I'm airborne before I reach the numbers on the runway, and with a little wind can be up to pattern altitude by mid-field. I find I need to really watch out for traffic, because I don't want to surprise someone crossing over mid-field to downwind.

What had you flown before you started building?

I originally trained in 150s back in 1967 when I first got my license. I also had a few hours in a Champ. I had hopes of flying for the Air Force at one time, but my eyesight kept me out of the program. The first plane I owned was a Tri-Pacer when I lived in Texas, but I sold that before I came to the Twin Cities in 1976. With family and career obligations etc. I didn't fly again until 94. I got checked out in 172s and rented for awhile before I started building the RV-6.

So when I decided to build the RV-4, I actually had very few hours in a taildragger. Because I had soloed the Champ in the sixties, I was grandfathered in and did not require the tail-wheel endorsement to fly one. But before flying the RV-4, I did take 3 hours of dual from Hank Geissler in the PA-11 at Stanton. Hank also gave me an hour of dual in his own RV-4 before turning me loose on my own.

How was building the RV-4 compared to the RV-6?

First of all, the RV-4 was easier to get out of my basement! With the extra width on the RV-6 fuselage, I had to actually remove a wall to get it out. My wife was very impressed that I could remove the wall, extract the plane, and reinstall the wall in one day. With the narrow fuselage of the RV-4, that wasn't necessary.

Both models were a lot of work. That is, in both cases the kits come with a few important pre-formed pieces, such as the bends for the leading edges and the ribs, but are mostly just aluminum sheets. So I had to build up the spars, construct jigs for the wings & fuse, cut out the lightening holes in the ribs, and position the ribs in the jigs. The skins are held over the ribs with straps and tape and drilled onto the ribs. This had to be exact, as you are drilling through ribs you can't see. As you drill you put a cleco in to hold it

(Continued on page 5)

Building the RV-4

in alignment. The skins are then removed, deburred, and dimpled before they can be clecoed back on and the riveting begins.

Van's newer kits for the RV-7, 8, 9 & 10 have a lot of this work done for you. All of the sheets and ribs are pre-cut and pre-punched, so it doesn't require precise measurement or a jig. That is a whole lot easier than doing all of that from scratch. If I had to do it over again, I would pass by the RV-4 kit and go with the RV-8. I would have saved a lot of time. I also ended up replacing some of the original kit with updated parts opting for longer landing gear legs, new constant speed cowling, pressure-recovery wheel fairings and sheered wing tips.

What type of instruments are you including on the panel?

As I mentioned, my panel on the RV-6 is full IFR. At one time I thought about getting an instrument rating, but as I looked into instrument flying with this type of aircraft with its sensitive controls, I decided it is really not the best platform for IFR training. The RVs are easily upset in rough air and the autopilot is helpful when looking at a chart and for cross-country flying. Last year while flying back from New Mexico, I lost the autopilot over South Dakota as it was getting dark. About an hour later I flew into a cloud and couldn't see the lights on the ground anymore. I kept the wings level and slowly descended until I could see the ground again. That was a little tense.

I decided to keep the panel simpler on the RV-4. I have only one communication radio, a transponder, and a Garmin 496 for navigation. The GPS antenna is installed on the roll bar. I also have an XM weather radio, with the antenna installed on the turtle deck. The XM radio is tied into the GPS, so I get NEXRAD radar satellite coverage displayed on the GPS along with current METARs. This lets me see thunderstorm cells on the moving map so I can give them plenty of distance.

The RV-4 minimum engine instruments are included with cylinder head temp, oil temp, fuel pressure, fuel level, volt and amp gauges. I have a mechanical tach and a g-meter



for aerobatics. I also have a fuel flow totalizer which I still need to calibrate. Right now it is reading 10% high. I also plan to install a Dynon HSI and air data computer. I can then connect the Dynon to the GPS and get winds aloft without having to do any calculations.

The paint scheme is beautiful - What type of paint process did you use?

The paint scheme is from an F-4-F Wildcat from Fighting Six in 1941. The paint brand is AwlGrip 2000. It is an Acrylic Urethane over an epoxy primer. I cleaned the aluminum, applied an acid etch followed by alodyne, and then applied the epoxy primer. I sanded the primer with 600 grit before applying the color coat. I did no sanding on the

(Continued on page 6)



Building the RV-4



color coat. I did not go for perfection – that takes a lot of work. On my Porsche restorations, I would sand the color coat with 2000 grit, clear coat it, then sand and buff it.

How about performance – are you getting the published numbers for an RV-4?

They are very close. I'm getting an extra few knots at 75% cruise. That may be due to the new Hartzell blended airfoil, with the curved tips. I have about 20hp more than the RV-6, and I'm getting 205 mph at 8500 ft, an additional 15 mph over my RV-6. The climb seems to be right on the numbers at 2450 ft/min. Takeoff in 260 ft seems about right. My empty weight is 1027, which is around 100 lbs. heavier than spec, but it is very hard to find an RV-4 with an O-360 and constant speed prop under 1000 lbs.

I've been adding weight in the rear to practice flying with a passenger load, and I'm up to 160 lbs. in the back seat now. It definitely climbs slower with the extra weight, and it takes longer to get off the ground. But it is actually a little nose heavy flying solo, with the large engine and constant speed prop.

The stall speed is a few mph higher than Van's numbers. I'm getting 60 mph with or without flaps, and specs call for the mid 50's. I have yet to calibrate airspeed in that range, but I did the 3-way GPS runs to verify cruise speed.

How much fuel can you carry?

I have 16 gallons in each wing for a total of 32. At 9 to 9.5 gph, this will not give me as much range as I would like. For example, my trips to El Paso will require two stops with the RV-4, where my RV-6 with 38 gallons could do it with one stop. That is one thing I would change if I had it to do over again.

You mentioned aerobatics earlier – have you taken formal training?

No, I am self-taught in that arena, but it is really something one should get formal training in first. I did a lot of reading, and the RVs just roll so fast, if you get the nose up 20 or 30 degrees, you really don't have much time to get in trouble with an aileron roll. You have to be more careful with a barrel roll, or some of the other maneuvers. When I first started I would remove the cushions and wear a parachute, but I don't bother with that anymore. I can do a 2.5 – 3 g loop, and 1.5 g barrel roll. The RV-4 & 6s are rated for +6 and -3, so that is well within limits. I also do split S's and Immelmans. I don't do spins, as Van does not recommend them. They can build up speed fast and take a couple of turns to recover.

I have heard that the RVs can be difficult to slow down – have you found that?

They definitely take more speed management than the typical trainer. You really do need to plan earlier for landing, and get the speed down in advance. Although I will say that the constant speed prop is a great help – you can really use it as a speed brake if you find you are too fast in the pattern. This also helps in aerobatics, where you need to be careful about overspeed in a descent.

How does your family take to flying?

My wife tolerates it. She flies with me, but it is my addiction, not hers. On the other hand, I have an 11 year old grandson who loves it. We flew up to Tower to tour the Soudan iron mine, and he is actually a very good pilot for his age. The iron mine is 2 or 3 miles away, and after we landed, we found a man there building a Murphy Rebel. He had ridden his bicycle to the airport, and when we told him that we wanted to tour the iron mine, he bicycled home and brought back his car. He told us to take it, and just leave it at the airport when we returned from the mine.

Another time we flew down the Minnesota River then over to a little grass strip at Amboy. They typically leave bicycles there for people who want to eat at the restaurant in town. It was late fall and there were no bicycles, so we started walking. Before long, an older lady pulled up, said she saw us land and thought we might need a ride into town. That's the sort of thing that is so rewarding about flying – the very nice people you meet.

Van's Air Force has about 200 members in the Minnesota Wing, and we have formal meetings quarterly. A number of us have impromptu visits at airport restaurants more often – we are planning a fly-out to Dayton, Ohio on May 4th to visit the Air Force Museum. We will have 12 or 13 RV's flying in loose formation. Navy guys call this Air Force formation – “same day, same way” – a lot more relaxing than tight formation. They do have formal RV formation training down in Mason City every year a week before the Oshkosh fly-in.

How many hours do you have on the RV-4 at this point?

I'm right at 27 now, so 13 more to go for the Phase I flight testing. The FAA gave me a 40 hour test period because my prop and engine were not certified together. I'm really looking forward to completing the test hours, so I'll be ready for all those pancake breakfasts this spring!



Zodiac 601 XL *(from page 1)*

During this time we were introduced to basic sheet metal techniques under the watchful eyes of the Zenith technicians. While taking a break from rudder building, we were each given a demo ride in a factory Zodiac 601 XL. Flight characteristics were excellent, and the visibility through the bubble canopy was outstanding.



Mary unloads the Corvair engine

Upon completion of the rudder, we purchased the remainder of the tail kit, which I have since completed. Several weeks ago I received a large wooden crate containing the wing kit and the fuel tanks. At the time of this writing I have completed the tail, both flaps, both ailerons, and am working on the right wing. I've got enough to keep me busy at least until summer. When my wings are nearing completion I will order the fuselage component kit.

I also obtained an engine from a 1967 Corvair. Many of the parts that I have removed from this engine have been sent in for core exchange on new components that I will use for the conversion of this engine for aircraft use. I started on my engine early in the project so as to always have something to work on should I experience any downtime between any of the major component kits, as well as mitigation of any long lead times on engine components that I would otherwise have faced as I near completion of the airframe.



Pat with tail and wing



Stuff for Sale/Wanted

For Sale: 1/10 share in Wally's Flyers J-3 Cub - N25WF - \$3700 - includes hangar at southwest corner MIC - Dues \$165/quarter, \$35/hour wet. Contact Joel Fuller at 952-906-4921 or joelfuller@visi.com

For Sale: Full Lotus Floats model FL 1220 brand new never inflated. 2 extra air bladders, front & rear. Ops Manuals. Digital pics to e-mail if interested. Asking \$2500. Paul Brown paul.brown@fontiernet.net or 952-457-6940.

For Sale: 1/2 share 1958 J-35 Bonanza (IFR) based at Fleming Fld in So St Paul in a new htd hgr. (Bldg an RV-10.) 12 hrs SMOH 300 hrs SPOH on Beech 278 prop. Airplane is "10" mechanically. Updts/mods include: IO-470-N 260 HP eng, STEC-30 autopilot w/yaw damper and alt. hold, KLN-89B GPS (IFR), new wing bolts in 2004, alternator conv, GAMI injectors, EI UBG-16 eng mtr, EI FP-5 fuel flow, 1-piece wshield, shldr hrns & much more. All AD's complied with. 160 kts TAS 11.5 gal/hr. See and fly to appreciate. \$45,000 David Maib 651-454-5358 dmaib@mac.com

For Sale: Homebuilt two place tandem. open cockpit, hi wing, 64TT,



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Chapter Events and Fly-Ins

Mar 21st Ch. 25 Meeting Washburn HS
Time to learn how to use all the great tools in Washburn's aviation workshop!
See page 3 for map & directions.

Mar 17th Young Eagles (LVN)
Contact John Koser for current info

Jun 16th Annual Chapter Picnic

Future meetings 4/18, 5/16, 6/20, 7/18, 8/15, 9/19, 10/17, 11/21, 12/19, 1/16, 2/20, 3/19

Feb 17 Eden Prai. Mn (FCM) 8-12

Getten Pancakes on Charlie Ln
Marv Getten (763) 473-5398

Feb 25 Warroad Mn (RRT) 8a-1p

Bkfst & Ski plane fly-in on the Warroad River. Shuttle avail.
218/386-1818

Mar 3 Duluth Mn (DYT) 9am

Wheel & ski plane fly-in. Buffalo Burgers & beans. Sky Harbor.
800/432-2884 x4880

Mar 6 Mankato Mn 6pm

FAA Wings Safety Seminar
Ostrander Auditorium, Mn State Univ., Mankato 612/713-4225

Mar 8 Duluth Mn 6pm

FAA Wings Safety Seminar
Monanco Air Duluth
612/713-4225

Mar 17 Cloquet Mn (COQ) 10a

Food & birthday cake fly-in
218/879-3062

Mar 17 Rushford (55Y) 10a

Chili feed fly-in 507/452-6888

Mar 18 Deer River Mn 10a-3p

Highbanks Resort Ski-plane fly-in
E. shore L. Winnibigosh
47° 27' N, 94° 08' W 800/365-2560

Mar 26-27 Bloomington MN

Sheraton Bloomington Hotel.
2007 Aviation Maintenance Conf.
Janese Thatcher, 651/297-7652

Apr 11-13 Alexandria Mn

Arrowwood Resort
MCOA Airport Symposium
651/296-8061

Apr 28 Mora Mn 8a-1p

Panacakes & Eggs fly-in
612/227-8083

May 4-6 East Gull Lake, Mn (9y2)

MN Seaplane Pilots Assn Safety Seminar at Cragun's Resort

www.mnseaplanes.org

May 12 Bloomington Mn

Mn Aviation Hall of Fame
Ramada/Thunderbird Convention Center, north of Mall of America
Ticket information available after Jan. 1. E-mail nallard@unitelc.com

May 19 Alexandria Mn 8a-1p

Belgian waffles, Armed Forces/Airport Days fly-in 320/762-1333

Jun 3 Reedsburg Wi (C35) 7a-12p

Fly-in bkfst 608/524-6888

Jun 10 Albert Lea Mn (AEL) 7a-

12:30p Fly-in bkfst

Jun 10 Montevideo Mn (MVE) 8-1p

Fly-in 320/269-4829

Jun 15-17 East Gull Lake, Mn (9y2)

Madden's Fly-in & Safety Seminar
Ben Thuringer, 218-855-5970

Jun 16 Morris Mn (MOX) 8a

Fly-in bkfst 320/589-2083

Jun 23 Alexandria Mn

Airshow 320/762-1333

Jun 23-24 New Richmond (RNH)

11am-start 2pm-Airshow
4pm-pig roast 7pm-hangar dance
CTAF 122.975 nrairport.com

Jun 24 St Cloud Mn (STC) 8-1p

Fly-in pancakes 320/255-7292

Jul 7 Superior Mn (SUW) 8-11a

Fly-in pancakes eaa272.org

Jul 23-29 Oshkosh Wi

Airventure 2007

Aug 5 Chetek Wi (Y23) 10:30a

BBQ Fly-in 715/924-4501

Aug 12 Lino Lakes Mn (8Y4) 12-4p

Pig roast Fly-in at Surfside Seaplane Base www.mnseaplanes.org

Aug 12 Walker Mn (Y49) 730a-

1230p CAP Pancake bkfst fly-in
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