



# RVator's Log

Newsletter of the Twin Cities RV Builder's Group

## June 2012

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### Upcoming Events

**September:** Our next big event will be our annual Fly-in and Family Picnic. Details are still being worked out but look for all you need to know in the September issue. In the meantime, hope you all get to OSH in July.

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### Minnesota Wing Van's Air Force

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## Shop Notes

There are few emergencies that strike greater fear in the heart of a rural homeowner than a plugged up septic tank. A couple years ago, our twenty-year old system had a bad case of "carb ice" and I frantically called a local un-clogger guy to come out and save us. He promptly showed up and after explaining the situation, he donned a seemingly NASA-designed rubber "space suit" and descended into the depths of septic hell to do battle with whatever needed to be battled. It occurred to me as he lowered himself into the tank, that he could charge me just about anything he wanted and I would be happy to pay it. Some jobs are just not that appealing!!



I have the same attitude about painting. I hate painting around the house. I hate painting around the hangar. And I especially hate painting my airplane. I've done just enough to be dangerous and the outcome was never as good as I wanted. So when it came time to plan for the paint job of my RV-7, I was determined to farm out this gargantuan task (at least it seemed to me) to a professional.

Bring up the topic of paint and you'll peel open a whole raft of raw emotion. Some true-blue homebuilders do it themselves. I've seen "home-made" paint jobs that range from works of "Grand-Champion" caliber to those "100-footers" that might look passible from a great distance on a dark and stormy night. Jean and I have owned 12 airplanes in our lifetime and I had three professionally painted. The first two (a Cessna 140A and a Cessna 180) came out fine and both airplanes were Oshkosh award-winners. The third was my RV-4 and, although the end result was a nice paint job, the process took 5 months and probably caused irreparable harm to my mental health. Many of you know the story so I won't go into it now, but I vowed never, ever again to go through such a traumatic experience. My plan for the RV-7 was to save, and save, and save until I could afford to have it painted at a reputable shop with a proven track record and hopefully close to home.

Early on I decided that I would plan to have Wipaire at South St. Paul handle the project. I had talked with paint shop manager Dave Utsch on several occasions and was convinced they could do the job I wanted.



Although they specialize in larger aircraft such as Cessna Caravans, King Airs, and DeHavilland restorations, they had done about a dozen RVs and other experimentals. A local pilot based at Lake Elmo had his F1 Rocket painted there last

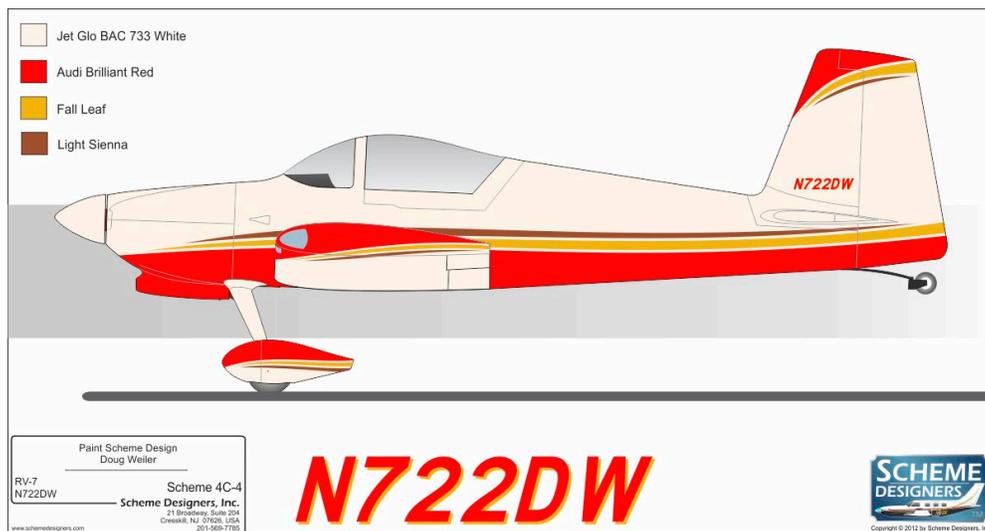
summer and I liked what I saw. Yep, it was not going to be cheap, but we all know that RV building is not for the fiscally faint of heart. In January of last year, I shamelessly joined the ranks of social security retirees and began stashing away my checks into the paint-job kitty. It seemed a little more painless that way and besides, think of all the thousands of American taxpayers that helped fund the project. Truly a national effort and I thank you all!

I had done about 75% of the fiberglass finishing and priming of the composite parts of the airplane. I didn't knock myself out on doing everything perfect as that is primarily the paint shop's job. I had most of the hard stuff close to what is acceptable.

The next task was a paint scheme. On the RV-4, I always liked Van's old "standard" design that has been around quite a while. My first RV-4 used this design, which was built by Mike Eesley. For my second RV-4, I modified it slightly with a painted horizontal stab and thought it looked good. RV aircraft are small and I feel are very sensitive to looking short and stubby if the paint design

doesn't "stretch" it out. I'm no design expert, but it seemed to me that RVs look best with the nose being a light color and the trim running along the fuselage with most of the color in the rear. Just my own opinion.

We wanted to do something different than the RV-4 and Dave at Wipaire suggested contacting Scheme Designers in New Jersey. They use them exclusively for anything more than a stripe down the side. We found a design on a Lancair that we kind of liked so we asked Scheme Designers if they could adapt it to an RV-7. They said that they certainly could so I signed up and we began the process.



For one fixed fee, they will work with you over and over again until you have the exact design you want. I had a brief conversation with owner Craig Barnett and he said they have designed over 10,000 paint schemes for aircraft from light sport machines to airliners. When we talked he told me they were currently working on over 400 different design projects and 78 of these were RVs!! I was amazed. In short order, Alicia Solsman was assigned to our project and the next day she had some basic layouts for us to look at. Over the next 3 weeks we probably exchanged over two dozen emails tweaking the design and colors. I couldn't have been more

pleased with their quick service and attention to detail. We now have the design finished and colors picked out and we are ready to go.

The first week of June, I delivered the RV to Wipaire, took it all apart for them and they are hard at work as I write. It should be finished by July so stay tuned and the website for the end result. Hopefully I can report a pleasant experience shortly!

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## *Flyin' Bob*

- Doug

After a LONG and exceedingly well documented building period, MN Winger Bob Collins' RV-7A finally took to the skies on June 3, 2012.

Tom Berge was the PIC for the first flight out of Fleming Field and then a direct route to Lakeville where all of the flight-testing will be accomplished. N614EF is powered by a Mattituck IO-360 with a fixed pitch prop. Here is Bob's report from his blog, Letters from Fly-Over Country:

"Just 11 days shy of the wedding anniversary for which it's numbered, N614EF became an airplane today when it flew under the tutelage of test pilot Tom Berge. June 14, 1942 was my parents' -- Eileen and Fred -- wedding date and this year would be the 70th anniversary. There's very little about this plane that doesn't incorporate almost everyone I know. Even a piece of carpet in the workshop was made by my grandmother, who died in 1986, years before I even contemplated the project. And, as you probably know, the signatures of people who

helped or inspired [dot the innards of the plane](#).

Before my Dad died, our few phone conversations always ended with, "you be careful in that thing." And I recalled that last week when I finally decided that the first flight should be done by the best pilot I could find, not only for the safety of whomever is flying the plane, but for the people in the houses surrounding this city airport.



I didn't miss out on anything. Standing next to my wife of (nearly) 30 years to watch the plane we built while our kids

grew was about as good as it gets.

When I started this project 11 years ago, I wanted to end up with two things: (1) An airplane and (2) The same person next to me who was next to me when we started. By the way, that's not in order. What I got out of it that I didn't anticipate was a great number of friends I met along the way, managing to keep most of them.

When I reached Airlake Airport some time after Tom touched down, he stuck out his hand and said, "Congratulations, you have a nice airplane."

The only major items were a heavy left wing -- which is normal and can be fixed relatively easily, and a balky left brake, which I'd already expected.

There are many people to thank for this, which is why I'm not going to attempt to do it now.

I still have some transition training to do before I fly it, but that'll happen within the next few weeks, maybe on June 14th.

Meanwhile, today was a big day. My son, Patrick, turned 24."

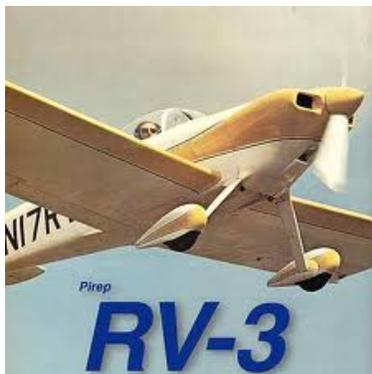
## California Transfer

- Tom Berge

Earlier this spring, a gentleman interested in some transition training contacted me. His plan was to purchase an RV3 and he wanted to experience the excitement of what flying an RV was all about. The fact that I train in a tri-gear RV didn't bother him too much since he had lots of tail-wheel time, so I thought, sure, why not.



April Fools' Day rolled around and off we went to bring another pilot into the ever-growing fold of RV drivers. Stan, also known as "Stitch" to his cohorts, did just fine. The usual over-controlling and so forth, but a quick study and in short order, we were done. Stan had found what appeared to be a great RV3 out in



Los Angeles and his plan was to go and get it himself. We ended up in a coffee shop and Stan drilled me on flying through the mountains, the routing, how long it should take, etc. Turns out he had never been in that part of the country. Now I've been as far as Flagstaff, AZ so I too was not com-

pletely sure of what lays ahead. The conversation ended and Stan returned home.

Within a day, Stan was back on the phone asking if I would consider going out to LA to pick up the RV and bring it to Wisconsin. Bare in mind I've never flown an RV3 and it was a very long flight in a very small cockpit. After some soul searching, considering the terrain I'd be flying over and once the first nanosecond had passed, I agreed. The end of April worked out with my schedule and the process was put into motion.

First thing was getting an airline ticket to LA. Since Stan was based in the Milwaukee area, I figured that I should fly my RV7A there from the MSP area, and catch my flight out of MKE. Early on the morning of the 29<sup>th</sup>, I took off for the two hour trip to Stan's home base, arriving three hours before the airline flight was to depart, figuring that would give me enough time to get the RV into Stan's hangar and make it to MKE. On the way to the airport, I went through the paperwork Stan had been sent on the RV3 to make sure nothing was there that needed to be in the airplane, and sure enough, there was the airworthiness certificate, the weight and balance and the operating limitations. I packed those documents up along with the pink slip of the new registration form and was now legal.

The flight to LA had a layover, and wouldn't you know it, I ended back in MSP to catch the next leg out to LA. It took me 2 hours to fly to the MKE area, and it took Delta a little over 1 hour to bring me back.

Arriving in LA, the seller, Terry picked me up and took me to Oxnard, CA where the RV3 was based. Terry did mention that if the powers that be would only change the city name of Oxnard to something else, his property value would increase. I couldn't argue that opinion. After dinner we went out to look at the RV3 to see what I had gotten myself into. This RV was bought sight unseen, and one never knows for sure until laying eyes on it if the excitement to fly it was still as bright as before seeing it. It was beautiful! The build was great, the paint the same and the color red to boot. I couldn't find anything that would prevent me from getting into it.

Terry took the time to go over everything on the airplane, making sure I knew where all the switches, controls, and such were and how they operated. Getting into a new to me home-built airplane is never a quick process and I was going to take my time to making sure it all made sense. Terry and his wife Susan, a newly minted private pilot, put me up for the night and now all I needed was for the usual marine layer to stay away until I could get out the next morning.

Ah, yes, the best laid plans of mice and men are soon to go awry. Morning brought 800 OVC and 5 miles. Well, guess we go out for breakfast and wait. And wait. And wait.



The dreaded marine layer was being persistent. While there were times that a local pilot would have departed, I elected to wait it out. A new to me airplane, unfamiliar surroundings, mountains, these things all added up to a case for being patient.

After lunch, the weather had risen to 1400 OVC and 10 miles and that looked doable. A call to one of Terry's friends at Santa Paula airport 10 miles away brought the good news of clear skies above. I hopped into N51RV and got her started, listened to the ATIS and wouldn't you know it, the report was now 1000 OVC and 6 miles. Grrrrrr. With the actual weather 10 miles away being clear, I decided to depart. Lift-off, turn north, follow the creek bed up towards Santa Paula between two mountains, and sure enough, clear above. Thank goodness!

After getting ahold of departure to get onto flight following, I settled in at 7500 MSL and pointed the nose towards Barstow, CA then direct Laughlin, NV. Lots of desert out there! But then again lots of places to land if needed, proving there are always silver linings in the clouds. Eventually ATC had me climb to 9500 MSL for radar coverage, which beat the alternative of losing flight following, so up I went.

Laughlin NV was to be my first fuel stop, and while my hope was for a low wind landing, that was not to be. Winds were gusting to 17 knots but only 10-20 degrees off the runway and actually, for my very first RV3 landing, not bad. No one came out sweeping parts off the runway, which is always a good sign. A quick calculation predicted if I could depart by 4:30 I could make Albuquerque 10 minutes after sundown. I managed an on-time departure, just like all the airlines and did arrive exactly 10 minutes after sundown.

My basic route from Barstow, CA eastward was to follow I-40, or at least stay within sight of it. The freeway would wander back and forth as the miles went by, but for the most part, I kept pretty close to it.



Flagstaff was as beautiful as ever and seeing the crater impact near Winslow, AZ made for a visually stunning flight. At ABQ, Cutter Aviation took very good care of me, taking me to a nice hotel and picking me back up in the morning. I've stopped there a number of times over the years and can't say enough good things about them.

The following morning, I was off at daybreak heading for Liberal, KS. I no longer had the freeway underneath me, but at least was out of the mountains and air was smooth. It's been my habit when I go on long cross country flights, to always stop at larger airports, not that Liberal is a sprawling metropolis, but there were at least services available.

My first airplane issue occurred there when I sampled the fuel and couldn't get the sump to stop dripping fuel. Dripping may not be the best description, perhaps pouring would better. Yup, pouring fit the bill perfectly. I put in \$6 a gallon av-gas and now it was pouring onto the ramp. Wonderful! I stuck my finger into the sump to save the gas and summoned a mechanic. They didn't have a replacement valve but did have a plug, so in it went.

By now, weather was starting to become an issue between Liberal and my next stop of St. Joseph, MO so I headed north a bit, then turned direct to STJ. After another high wind landing there and a much-needed stop for lunch I ran into airplane issue number two. For those who don't know, I am not a fan of fuel-injected engines and here's why. I flooded the darn thing! I hate hot starting injected engines and some of you may say it was my fault, and I can't argue that since it was me who didn't turn on the ignition. Seems this whole trip had me spraying gas on the ramp.

Finally after letting it sit for an hour, followed by lots of cranking, I got one cylinder to start, then another and finally all of them. Thank goodness for a well-charged battery.

The delay turned out to be not such a bad thing. With not so good weather between STJ and my final destination of UES,

during my initial departure time, I had planned to just head for home and deliver the plane a few days later when the weather cleared. Having departed an hour later, and approaching Des Moines, IA while looking to the east, I decided to call Flight Watch on 122.0 and see what their thoughts were on making it to the Milwaukee area. I got ahold of a great briefer that was not the “VFR not recommended” type and was told with a slight detour up towards Watertown, IA, and then direct, I shouldn’t have any problems.

The rest of the flight went smoothly. The new owner thought I was heading to the MSP area, so wasn’t expecting me and when I was 10 minutes out, I sent a message that read “Arrive UES, 10 minutes”.

I flew the RV3 with an I-Pad strapped to my right leg and a Garmin 696 with weather strapped to my left leg.



This was my second long cross-country flight with the I-Pad and I can’t say enough positive things about the experience. Paper is dead as far as I’m concerned. The seat was less than ergonomic, there was no fuel flow and no autopilot but I wouldn’t trade the trip for anything. If I were allowed by the powers

that be to have a second airplane, I would snap up an RV3 as fast as I could. What a wonderful airplane to fly.

Not including the final leg of the trip, I used 53 gallons over 8.7 hours giving me a consumption rate of 6 gallons per hour, averaging around 170-175 knots ground speed. Yes, I had bit of a push, and yes, I’m basking in the rarity of having a tailwind. Total trip time was 11.2 hours.

The best part was seeing Stan’s face light up when he finally saw his new baby. Kind of like a kid in a candy store. I spent time with Stan to show, as Terry did with me, all the switches, controls and such, making sure he was comfortable. We spent the evening having dinner and I relayed the small list of squawks as well as how the airplane flew. The next morning while filling up for the return home, the sun was out, the breeze light and I thought to myself, “Does it get any better than this?” No, it certainly does not.



Stan, left and myself at UES



Stan concentrating hard

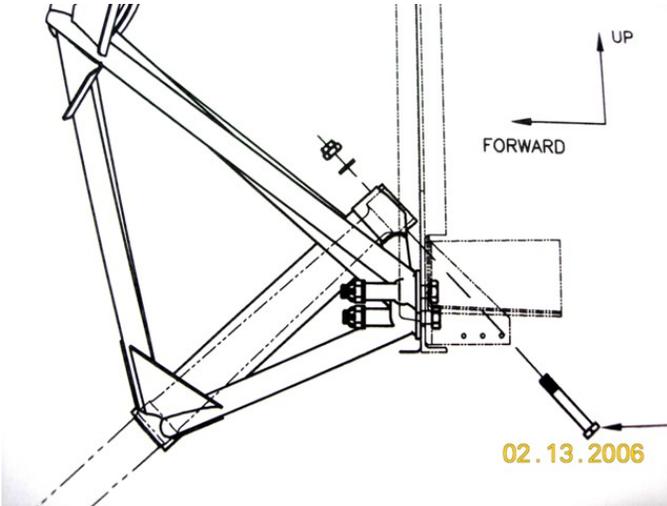
## Nose Gear Strut Attachment

*ED note: MN Winger Tom Briden brought this article to my attention*

*- by Jim Ellis on the Matronics Email List*

Over the years some builders have reported problems with the nose gear strut becoming loose in the engine mount socket.

The problem is created when the bolt moves slightly in the socket due to twisting loads created by the movement of the strut from side to side. This causes the hole to oval and as a result the strut becomes loose. Nose wheel shimmy can lead to very fast elongation of the hole. No matter how closely the bolt fits the hole unless the bolt is a press fit this movement can occur.



Lower engine mount and strut assembly.

A way to repair this problem or, better yet, prevent it from happening in the first place is to replace the AN5-20A bolt that holds the strut in the socket with a taper pin. A taper pin by design provides zero clearance between the hole in the strut and the hole in the socket making any movement impossible.



Taper reamer and taper pins with washer and nuts.

If you decide to do this you will need a #3 Brown and Sharpe taper reamer. [Aircraft Spruce](#) sells these, [P/N 12-09900](#).

You will also need the following hardware:

- AN386-4-13 Taper Pin
- (1) AN975-5 Taper Pin Washer
- (1) AN310-5 Castle Nut (or AN320-5 Shear Castle Nut)
- (1) AN380-2-3 Cotter Pin

Finding AN386-4-13 taper pins can be difficult. One place you might try is [Jay-Tex Aviation Inc.](#), (903) 572-3688. They do have a minimum order amount so you might want to combine this with your other hardware needs.

Reaming the hole for the pin must be done with the engine mount removed from the firewall. Insert the nose gear strut and align the hole in the strut with the hole in the engine mount socket. Drill the assembly with a letter size "S" or 11/32" drill. Ream the hole starting from the aft and working forward. This will place the attachment nut on the upper forward side of the weldment. Go slow and use lots of cutting fluid. A socket that fits the shank of the reamer and a ratchet wrench will make driving the cutter easier. Remove and clean the reamer frequently and go very slowly as you reach the correct depth. Insert the taper pin to check the fit. The pin shoulder should not protrude through the hole more than 1/16" when fully inserted.



Assembled strut and mount with taper pin installed.

Clean the hole and install the nut, washer and cotter pin to retain the taper pin.

If you need to insert the taper pin after the engine mount is bolted to the firewall there is a trick that makes this easy. Loop a 12" piece of thin safety wire through the cotter pin hole in the taper pin. Insert the two ends of the wire into and through the aft side of the tapered hole. Push the large end of the taper pin into the hole in the firewall that is provided in the plans for bolt insertion. Grasp the wire and pull the taper pin up and forward through the tapered hole. Remove the wire and install the washer and nut.

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**The following information comes from Bill Palmer:**

For those interested in purchasing the AN386-4-13 taper pin to mod their nose gear attachment per Jim Ellis' instructions.

I just finished working with Aircraft Spruce (West) to set-up a part number for ordering an individual AN386-4-13 taper pin. The new ACS part number is 04-01939. The price is \$10.50. ACS has placed an initial stocking order with their supplier. If enough orders are received, ACS will continue to stock this particular taper pin and retain the individual part number 04-01939.

Bottom Line: No more special orders or minimum quantity. Please place your AN386-4-13 order with Aircraft Spruce.

Best Regards,

Bill Palmer Chino Hills, CA

P.S. ACS already stocks for individual order the other hardware listed by Jim Ellis as follows: AN975-5 Taper Pin Washer, AN310-5 Castle Nut, and AN380-2-3 Cotter Pin. Personally, I substituted the slightly more expensive MS17825-5 Self-Locking Castle Nut for the AN310-5.

## ***Avoiding a Bad Day***

*-Doug.*

When my RV-7 went in the paint shop the first week of June, I had logged just over 60 hours on it. As I have mentioned, the glitches have been very minor and in general it has been just a great flying machine. It has all of this cool "stuff" on the panel, which dazzles not only my passengers, but this PIC as well.

As a club, we have discussed this topic before, but now as an owner-operator of a "technically-advanced" airplane, I am beginning to be personally effected by the dazzle-factor of the gizmos I have scattered across my instrument panel.

In the early 90's, I was working in the training department at Northwest Airlines and the Airbus A320 was just arriving on the property. Many of the pilots checking out on the new high-tech "Bus" were highly-experience Republic DC-9 guys who had been flying the old steam-gauge jet for many years and tens of thousands of hours.

It was amazing how many captains and f/os were having trouble adapting to the "glass". It was a quantum leap in technology between the old Douglas and the new 320 and the due to a pilot contractual agreement resulting from the merger of Republic and Northwest, the "Republic-side" of the seniority list had first shot at the new machine. Unfortunately the failure rate was off the charts as the old guys tried to learn the "magic" of the new Airbus.

So too with our new glass-cockpit RVs. I spent the vast majority of my 40 hours of flight test time, figuring out the bottonology of my AFS 4500/3500 panel. Way too often, I found

myself heads-down in the cockpit punching buttons and not looking for traffic.

This was brought home a couple weeks ago when I had a too-close encounter with a Citation just north of St. Paul airport. I was busy trying to wrassle those wayward electrons darting in front of my eyes instead of out looking for traffic. I do have a Monroy Traffic Watch box, but for some reason, it didn't go off. I was at 2700 feet and the Citation probably was at 3000 feet going into STP. Way too close for comfort.

Allow me to mount my soapbox.... the MSP area is a high-density traffic area. Yes, we steer clear of the Class B airspace were the real big guys are, but that just crams everyone else under the controlled airspace ring. Frankly I can count at least four uncomfortable situations over the years all with bizjets going into STP. So here are my thoughts:

1. Save your pennies and have SOME SORT of traffic advisory box in your airplane. This can range from a \$600 transponder detector like I have, to a multi-thousand dollar TIS or TCAS system. ADS-B is almost here and will eventually provide more readily available traffic avoidance information. I will not fly around here any more without some type of traffic detector. None are fool-proof but all are better than nothing.
2. Stay well clear of the Class B airspace. Know the higher altitude arrival pathways going into MSP. Airline traffic is usually around 11000 feet descending to 7000 outside of the Class B along four arrival routes: EAU from the east, FGT from the south, FCM from the west, and GEP from the north. See the MSP local VFR chart for more information.
3. WATCH for jet traffic under the class B airspace going into St. Paul. That is the big surprise. They can be at 3000 under the 4000-foot ring.
4. My theory is that the lower you fly around the MSP area the safer you are from this type of traffic. Fly an oddball altitude like 2200 feet or 1800. Stay away from 3000 MSL when flying under the 4000 ring.
5. Listen to MSP departure on 121.2 which handles IFR in and out of STP. ANE has some heavier iron arriving and departing as well.
6. Have your landing lights on ALL THE TIME under the Class B airspace (the USAF also taught us that lights can help birds see you coming... don't know for sure but it can't hurt.). Strobes on of course.
7. Solicit all of the available eyeballs in your aircraft to look for traffic.
8. Don't fly non-standard traffic patterns at any uncontrolled airport. That means no straight-ins and no base-leg arrivals. Don't descend into the pattern. If you are at pattern altitude or slightly below, other traffic will be more visible above the horizon.

Just use caution and assume always that other traffic is VERY difficult to see because it is!!!!

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First Class

## ***Minnesota Wing September Meeting***

**This will be our September Fly-In and Picnic  
at Sky Harbor Airpark**

***Details in the September newsletter coming in August. Till then, happy RV building  
and/or flying!!!!!!***