

EAA Mount Rainier Chapter 326 Newsletter

Thun Field - November 2004

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Meeting Notice

**Tuesday, November 9th, 7 PM
CAP Building, Thun Field**

Program:

"New Private Space Exploration: X-Prize and Beyond."
by local rocketman Mark Russell.
More about Mark on this page.

Refreshments: Marv Scott

Adjournment: TBA

- Brice Johnson – RV9A

Project updates – RV's galore, Zenith, Longeze, Lancair 360, and many more...

November program: Rockets & X prize contest

We still need a portable trailer for Chapter item storage. Any ideas on the subject, call Kevin.

Andy

From the Secretary

Minutes: October 12th, 2004

Amazingly enough, Kevin Behrent opened up the meeting!

George Giboney came and talked about his Thunder Mustang project. Afterward we saw the real thing at his hangar.

Chris Smith brought some great pies. Thanks Chris!

Dues are due for 2005, get your \$15 in to Mark. It's the cheapest entertainment around town and goes to a great cause.

Our two-year election / appointment of Officers is coming due this fall. Voting appears to be a formality this year as we have a group of willing people, so let's run them into office!

- Gordy – President
- Lance – Vice President
- Andy – Secretary
- Andy – Webmaster
- Paul – Treasurer
- Darrin – Young Eagles
- ??? – Photographer
- ??? – Equipment Custodian

Christmas party will again be held in Kevin's hangar at 6 PM.

Visitors:

- Chick Masoner – Q200 project
- Don & Karen Jackson – Visiting the area
- Bud Heinzig – RV7
- Ben Doolin – Helping Darrin build his RV9A

Mark Russell

Mark's talk is titled: "New Private Space Exploration: X-Prize and Beyond." The talk will cover Mark's personal footage and commentary on Spaceshipone's program as well as the June spaceflight and will also cover his own rocket/aircraft flight testing with some test-flight and simulator video & comparisons. A general discussion will address where private spaceflight exploration is going in the near future. Mark authored the Aug 2002 Sport Aviation article: "Spacecraft Homebuilding: X-Prize Re-usable Launch Vehicle (RLV) preliminary design"

Mark lives here in Graham. He is co-founder of RL Aerospace LLC, a propulsion R&D company and founder of Deep Sky Explorations, Inc, an aerospace flight vehicle development company. Mark is a longtime EAA member, aircraft homebuilder and pilot. Mark holds a BS in Aeronautical Engineering from RPI in New York, an MS in Aero/Astro Engineering from Stanford University and is a licensed PE in Washington State. He worked as a project engineer for Van's Aircraft on the RV-8, he engineered aircraft structures for the Boeing 737 and developed spacecraft separation systems for Boeing's Sea Launch rocket and was a systems engineer for the Kistler K-1 re-usable launch vehicle program. (Talk ~ 30 min + 10min Q&A)

Electronic Ignition & Starter Kickback

At Mattituck, we sell all brands of starters and they all have warranty exclusions for kick back damage...including B&C. And in my opinion, rightfully so. Starters don't cause kickback damage! It doesn't matter if the kickback is caused by an electronic ignition system or a mag ignition system.

All ignition systems retard, or should retard, the ignition timing to TDC or just after for starting purposes. LSE (Lightspeed Engineering) retards the timing for starting, so does Emag, FADEC, LASAR and Electroaire. LSE and other

electronic systems run at the same timing advance as mags when at full power. The electronic systems advance the timing during cruise operation or partial power operation, to as much as 40-45 degrees BTDC while the mag stays fixed at 20 or 25 BTDC depending on the engine.

On the kick back issue, if the voltage drops significantly during the starting sequence from a low battery or large resistance in the starter circuit, some of the electronic ignition systems will malfunction and not produce a spark at TDC for starting. This may result in kickback against the starter, breaking the starter or even separating the starter from the engine. If you get spark at TDC it can't kick back! If you get spark before TDC it can. When we configure a half LSE and half mag engine, we supply an impulse coupling mag and want the engine started on the mag half of the ignition system; this prevents any possibility of kickback from low voltage. When we supply an engine with two LSE systems on the same engine, we recommend the LSE system be powered by the backup battery and the starter supplied from the primary battery. This again prevents the possibility of kick back from low voltage in the ignition circuit from the starter. If the customer doesn't use a dual electrical system with dual LSE (not recommended) we tell him to get the engine cranking at speed before turning the LSE on. This helps reduce the possibility of a low voltage kickback but it can still happen in extreme cases.

In my opinion, if you run LSE or Electroaire and don't observe the above precautions you will eventually get a kickback during a starting sequence unless your starting circuit is perfect and your engine cranks effortlessly. Hopefully, if it does happen, you won't damage your starter.

Mahlon Russell
Mattituck

Wrist Watch

So the question...soon...will be: Can you really fly your airplane with what's on your wrist?

I am a watch buff. This seems to be common among pilots. Tom Wolfe in *The Right Stuff* says of test pilots..."... the pathetic-looking civilian suits and the enormous wristwatches. The wristwatches had about two thousand calibrations on them and dials for recording everything...."

I only own one decent watch, but soon I will have to buy the Casio Solar Atomic...WWV atomic time and solar powered, under \$100...barely believable. It has several other features of course. Each feature seems to add ten dollars to the price. But what features! There are wristwatches that have altimeters, GPS locations (!), thermometers, barometers, internet connections, digital compasses, depth gauges, pulse meters, cameras, E6B's, databanks, radios, translators, calendars, lap timers, tides, lunar phases, and oh yes, they tell time.

Not to mention the \$4,400 to \$32,000 Breitling Emergency Locator Transmitter 121.5 MHz Watch for which the FCC had to issue special exemptions. If the rescue team discovered me with a broken back and wearing a \$32,000 Breitling wristwatch, hmmm. A friend bought a \$3,000 Bell & Ross Hydromax

diver's dress watch good to 11100 METERS in saltwater...oil filled you betcha. I blinked my eyes and squinted but it still said 11100 METERS.....jeezzz...!

Eric M. Jones

Pressure Testing Hoses at Home

Another good hose tester is your standard grease gun. Just remove the zerk nozzle, screw on a T fitting, screw a gauge to the center T leg and suitable adapters and your test hose to the through fitting. Hold the whole mess vertical by the far end of the hose, fill with hydraulic fluid, cap and pump away. You can get up to 3000 psi if need be.

Ron van Bladeren

Be careful if you check them yourself with a homebrew rig; several hundred pounds pressure can be destructive if it gets loose or there is a hose failure and your eyes or other valuable bits end up on the receiving end! Many shops will put the hoses in a water tank when testing them so a catastrophic failure can be contained.

Sam Buchanan

The RV-List

The RV-List is an Internet Email Group with over 2000 members dedicated to the support of building and flying the Van's Aircraft RV series of homebuilt aircraft. At the same website you will find similar lists for many other aircraft types.

Matt Dralle is the host. He has provided this service free of charge for many years. And there are no pop-up advertisements.

On these email lists, builders ask questions, exchange ideas, help each other, etc. You don't have to respond; most people simply read the mail...or some of it. That's part of the problem. There is too much of it and it can be a colossal time waster if you try to read it all. That's what the delete button is for. Just scan the subject lines and read what interests you.

The most beneficial feature is the searchable archive. You don't have to read any of the daily chatter. Just do a search on your particular question. If you aren't satisfied with the info there, then post your question to the list via email. It is amazing how generous builders will be, taking their time to help some poor soul with his problem. There are usually many ways to skin a cat, good and bad. Everybody has an opinion. The good thing is that there are so many people reading the list that bad info gets sifted out real quick.

According to Matt, the number of messages processed by the Matronics Forums continues to increase. In the last 12 months, there have been over 70,000 unique messages posted across the various lists, amounting to well over 32 MILLION messages that have been redistributed to List members in that same period! The List web site also sees an equally high level of

traffic with some 148,000 Archive searches performed last year and a staggering 13 million web site hits!

The RV list is the most popular and it is monitored by a lot of people **not** building RV's. Many building problems are common to all aircraft. Another good list is the Aeroelectric List for electrical matters...again, not aircraft specific.

Here are a couple main links of interest. Check it out.

Subscribe: <http://www.matronics.com/subscription>

Search Engine: <http://www.matronics.com/search>

Do I Need a Fuel Primer?

I am a believer in having a primer. Many aren't. When you are installing your carb, if you let some fuel go into it and then pump the throttle you will see that the carb will shoot a stream of solid fuel 10 feet or so across the room. A large amount of non vaporized fuel.

If you look up into the intake manifold you will see that that stream shoots into the manifold when the carb is installed, and hits the roof of the intake manifold directly above the carb 3-4 inches in and splashes all of that fuel back toward the carb and air box. That is why some say to make sure you are cranking the engine when pumping the throttle...to draw the raw fuel into the intake pipes and thus toward the cylinders.

If you pump a few times with out cranking several ounces of fuel will accumulate in the air box, or nacelle if the air box has a drain hole. If the engine sneezes during starting it can ignite this fuel. It doesn't happen often with a Lycoming engine but it does happen. The colder it gets out, the more pumping you have to do and the more likely an induction backfire might occur.

When you install a primer, you are delivering VAPORIZED fuel to the intake port at the cylinder, much closer to its intended destination. If you prime without cranking, the fuel from priming can un-vaporize and drain back down the intake pipes but there is a lot of real estate between the primer nozzles and the air box for it to accumulate on. That keeps that puddle in the air box or nacelle from developing.

If you prime while cranking the engine you will get vaporized fuel directly into the cylinder. To me this is better then trying to draw raw fuel from the carb. I really think it is safer and better for the engine because it can make starting the engine easier when it is cold out. It really isn't necessary in warmer climates but if you are going to make cold starts in temps below 25-30 degrees, my recommendation would be to install one.

Most certified aircraft use a push pull type manual primer that is different than the electric solenoid one that Van's uses. I have found the push pull type to be very reliable and easy to install. I wouldn't think the weight would be a big consideration. I don't have any experience with the Van's setup so I don't know if it is troublesome or not. Sometimes just loading the primer and pushing it in after the engine starts is a good thing and will be enough to keep one going when it would have quit on the accelerator pump type prime.

When you get into the start and quit scenario during cold weather, it is very easy to frost the plugs due to condensation issues when the cylinders only fire briefly. Then you have to re preheat or take the plugs out and clean them to get them to spark. That is if you figure out that that is what happened before the battery goes dead.

Another possible benefit from the primer is it can be used to supply fuel to the engine in the event of a carb or fuel delivery malfunction. Pumping the primer can get you intermittent bursts of power that can help, if you need just a little bit to clear an obstacle. I have a very good friend that pumped the primer and cleared the trees at the end of a runway because of it, after the engine quit due to a screwed up carburetor.

I see on the email groups that many feel the primers aren't necessary and many don't install them. I still think it is a good idea, so much so that when we configured the TMX engine we made it a point to have every carb type engine configured with primer nozzles and lines where applicable. Like I said, I am a believer...many aren't

Mahlon Russell
Mattituck

Camouflage Trivia

"During WWII there was a camouflage scheme called Yehudi. (For you younguns, Yehudi is the little guy who turns on the light when you open the refrigerator door.)

Patrol bombers hunting subs in the North Atlantic could be seen a long way off. Yehudi hid the bombers in the background sky light.

It works like this: there was a row of lights along the leading edge of the wings and around the nose of the plane. The brightness of the lights was controlled by a rheostat to match the brightness of the sky. The bomber would blend into the background and could get a lot closer before being spotted.

So, you drive with your lights on all the time? Does that include when you are driving out of the sunset? A motorcycle can disappear completely under those circumstances."

NEWS FLASH!

Oklahoma's worst air disaster occurred when a small two-seater Cessna 150 plane, piloted by two University of Oklahoma students, crashed into a cemetery earlier today.

Search and rescue workers have recovered 300 bodies so far and expect the number to climb as digging continues into the evening. The pilot and copilot survived and are helping in the recovery efforts.

End

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