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JOT 1115 1211+11 9900+05 2105+01 2727-11 2826-23 294737 276347 288259

Newsletter of EAA Chapter 790 April 2011

IN THIS ISSUE:

April Meeting – 3rd Tuesday: April 19
President's Message
Report: Cozy Workshop
Tech Stuff: Understanding HP and Torque
Yokes and Spokes Fly-Out
790 Aviation Scholarship Details Announced
Board Meeting Minutes
Overheard

APRIL MEETING ON 3RD TUESDAY

The meeting will be held one week earlier than usual, on April 19, on the 3rd Tuesday instead of the 4th Tuesday. Read President Elton's Message below and join us on the 19th at the Barrington Public Library where the starting time is 7:30 PM with social time starting at 7 PM.

PRESIDENT ELTON'S MESSAGE

Hello all! I want to give you a heads up on **April's meeting**. Due to scheduling conflicts at the Barrington Library we are holding our April meeting a week earlier. It's now on Tuesday, **April 19**. This will also be the last meeting at the library until fall due to our meetings moving out to Lake-in-the-Hills Airport.

This month, **Paul van den Heuvel** will be our guest speaker. Paul is the second U.S. owner of a **MIG-21** since it was imported in 1992. Come hear Paul's story of his growing adventure of owning one of the fastest aircraft in the world. He will also share his story of making it to the airlines without a military background. You don't want to miss this meeting!

Also at this meeting, you will hear about our chapter's **activities planned** so far for this year. Let's hope for good weather so we will be able to get the most out of our events. You can start planning now by going to our 790 website (<http://www.eaa790.org>) and checking out the schedule.

Remember that you are a part of a chapter of many members that bring different experiences for all to learn from. We have so many experienced aviators that can share a great wealth of information with our members. Also, bring a friend that can be introduced to the world of flight!

We need your help! May 21 is going to be a big day at Lake-in-the-Hills Airport. It is our first **Young Eagles Day** of the year.



May 21 is also **International Learn to Fly Day**. This special day was first announced at EAA AirVenture Oshkosh 2009 as an effort to increase interest in flying and to encourage the aviation community to get others involved in Aviation. The goal is simple: introduce someone new to aviation. Come to the meeting and we'll be able to give you more information about the day.

Please consider coming out and being a part of this big day. We need your help and it takes more than just pilots to run a Young Eagles day. There are many areas in which we can use your help:

* Registration - Help with registration before

Young Eagles (YE) go to preflight demonstration. This is where the YE paperwork is checked and entered into the system, YEs are put with aircraft and certificates are printed out.

* Young Eagle preflight instruction - Hand out ground school materials and prepare YEs for flight. This ground school instruction consists of a walk around an aircraft and a description of the flight.

* Crowd Control/greeters/runner - Lead Young Eagles to and from preflight demonstration. Direct YEs to/from aircraft for flights. Control access to flight line and talk with parents and other interested guests.

* Flight Line - Coordinate aircraft parking

2011 Young Eagle Dates

Saturday, May 21

Saturday, June 18

Saturday, August 13

Saturday, September 17

Saturday, October 8

You can sign-up for Young Eagles Volunteering: [790 Young Eagle Volunteers Signup](#)

Volunteer Work Weekend

At our board meeting we selected July 9-10 for our chapter's volunteer **work weekend at Oshkosh**. The work varies from many different tasks including carpentry, grass cutting, painting, general maintenance, cleaning, gardening, etc. EAA provides accommodations in the bunkhouse for the weekend as well as meals in the volunteer kitchen. This is a fun weekend that you'll really enjoy, seeing the grounds coming together for the big event. Sign up at the meeting on Tuesday night or on line at: [790 Work Weekend Signup](#).

Until Tuesday night, take care and see you at the meeting!

Elton

JOHN'S COZY WORKSHOP

On March 19th we had a workshop visit to John Peroutka's shop in Algonquin. John is building a Cozy MK IV airplane and all the major structures have been substantially built – but not completed. We were able to see the fuselage, the wings and the attached ailerons, the canard and its elevator, the winglets and rudders and the main center section spar. This is an all composite construction and John has obviously become very good at doing this kind of work.

There is still a lot of things to do. The engine selection has not been finalized, but a Subaru is high on John's short list. No work on systems like landing gear, fuel and electrics (incl. avionics) has been done yet, but this is not to say that John has not thought about it.

We were eight people attending, including three Technical Counselors or Flight Advisors, so not much was overlooked. Also present were Jeff and Barbara Wilson, also in the process of building a Cozy MK IV.

We were treated to gorgeous sandwiches and other snack items prepared by DeAnn – all together a very worthwhile outing.

TECH STUFF: UNDERSTANDING HP AND TORQUE

In February this year there was an article in EAA's Experimenter online magazine – Volume 3, number 2. In this article Jack Kane, who has a long history of designing, building and modifying engines, writes about the poorly understood controversies concerning engines in aircraft and that of horsepower versus torque. I highly recommend reading the entire article if you have an interest in this subject. However, I will here attempt to summarize the concepts. Certain paragraphs are direct copies from Jack's article, *Power and Torque*.

Engine builders, camshaft consultants, and other technical experts have been known to ask their customers, "Do you want your engine to make horsepower, or do you want it to make torque?"

The question suggests that these experts believe power and torque are somehow mutually exclusive. In fact, the exact opposite is true, and we all need to be clear on the following facts. Power is defined as the amount of work done per unit of time, or the rate of doing work. Torque and rpm are the measured quantities of engine output. Power is a quantity which is calculated from torque and rpm by the following equation:

$$\text{hp} = \text{torque} \times \text{rpm} \div 5,252$$

The number "5252" is simply a constant which is required to make the formula work. (See Jack's article if you want to know more about this.)

Torque

Torque is the turning force and the unit of torque (force) is one pound-foot, while the unit of **work** is one foot-pound. If you are turning some type of crank, and applying a force of ten pounds to the crank and if the arm of the crank is one foot long, you are exerting a torque of 10 pound-feet

An engine produces power by providing a rotating shaft which can exert a certain amount of torque on a load at a certain rpm. The amount of torque the engine can exert usually varies with rpm. A dynamometer substantiates the power an engine produces by measuring the torque as well as the rpm of the engine shaft, and from those two measurements, it calculates power after factoring variables (air temperature, barometric pressure, relative humidity) in order to correct the observed power to the value it would have been if it had been measured at sea level-standard atmospheric conditions (corrected power)..

Power

Power is the measure of how much work can be done in a specified **time** and is measured in **horsepower**. In the same way that one ton is a large amount of weight (by definition, 2,000 pounds), one horsepower is a large amount of power. In the English speaking world, the definition of one horsepower is 33,000 **foot-pounds** per minute. An example would be lifting a 33,000 pound weight one foot in one minute or a ten pound weight 3300' straight up in one minute.

If a constant 100-pound force is applied to a handle mounted on a one foot arm (100 pounds-feet of torque) causes a crank to rotate at 20 rpm, then the power the shaft is transmitting is 0.38 hp, calculated as follows:

100 pounds-feet of torque x 20 rpm ÷ 5,252 = 0.38 hp. That is a lot of work if done by single Homo sapiens, but if we substitute a small engine to do the work at 2000 RPM, we get:

100 pounds-feet of torque x 2,000 rpm ÷ 5,252 = 38 hp. A real life example: It would take 75 HP to lift an airplane weighing 2475 lbs to 1000' in one minute. (ignoring drag and propeller efficiency). $2475 \times 1000 \div 33,000 = 75$. See conclusion in the last paragraph.

In order to make the concept clearer, here are a couple of examples of real-world systems which produce

300 hp.

Example 1: How much torque is required to produce 300 hp at 2,700 rpm? Since $hp = \text{torque} \times \text{rpm} \div 5,252$, then rearranging the equation to solve for torque produces: $\text{torque} = hp \times 5,252 \div \text{rpm}$.

Answer: $\text{torque} = 300 \times 5,252 \div 2,700 = 584$ pounds-feet.

Example 2: How much torque is required to produce 300 hp at 8,000 rpm?

Answer: $\text{torque} = 300 \times 5,252 \div 8,000 = 197$ pounds-feet.

Example 3: How much torque does the 41,000-rpm turbine section of a 300-hp gas turbine engine produce?

Answer: $\text{torque} = 300 \times 5,252 \div 41,000 = 38.4$ pounds-feet.

Example 4: The 300-hp engine in Example 3 drives a gearbox which turns a propeller at 1,591 rpm. How much torque is applied to the propeller shaft?

Answer: $\text{torque} = 300 \times 5,252 \div 1,591 = 991$ pounds-feet (ignoring losses in the gearbox, of course).

The point to be taken from those numbers is that a given amount of horsepower can be made from an infinite number of combinations of torque and rpm.

It is the job of the propeller to convert the **horsepower** provided by the engine to **thrust** which will move the airplane. Thrust is another word for **force** – in this case the forward pulling force on the crankshaft (or pushing for those of us flying “pushers.”)

Conclusion: You could conclude that if you want an airplane with good performance including the ability to climb at 1000 feet per minute, you have to provide an engine with sufficient horsepower. In the above example, you may want to install a 180 HP engine to have 75 HP available for climbing since it may well take 100 HP just to fly straight and level at climb airspeed.

Keep the blue side up (unless you fly aerobatics).

Ole

YOKES AND SPOKES FLY-OUT

Ole and Joe Rossi have planned a fly-out with bicycles to Fort Atkinson, Wisconsin (61C) on Saturday, June 4th.

Fort Atkinson is 50.4 nm/334deg from 3CK by air, and 69 miles by car. After arriving, we will have a leisurely and relaxing three mile bicycle ride into this lovely town on the Rock River and visit a number of interesting attractions which include:

- ÿ Rock River Canoe Company-This place is not to be missed! There are around 6 to 8 canoes in various stages of construction. These are all being hand built from strips of wood, glue, tacks, fiberglass, etc. A complete woodworking shop is in the basement. A plane builders/pilots paradise!
www.rockrivercanoe.com
- ÿ Downtown Riverwalk-A nice place to take a stroll in the sun.
- ÿ The Hoard Historical Museum-A local history museum with many interesting exhibits. The museum's new permanent exhibit, *Mysteries of the Mounds*, is now open for viewing. www.hoardmuseum.org
- ÿ Antique shops-If you buy a dresser, you'll need to ship it home!
- ÿ Lunch-We'll meet at Velvet Lips restaurant for lunch! www.velvetlipslounge.com
- ÿ Whatever else we find!

Aircraft/auto departure is set for 09:00 from 3CK main ramp and arrival 10:00 AM at 61C.

Joe Rossi will be out at 3CK main ramp at 08:00 to help with collapsing the bikes and with any maintenance issues. He'll have all the appropriate tools, air pump and flat tire kit necessary so we can keep rolling. Joe suggests bringing one spare inner tube. Flats can be repaired in 1½ minutes. Joe reminds to be sure to have the correct size tube and valve type (Presta or Schrader).

Standard bicycles can be disassembled into quite compact packages. Ole and Joe have flown with two full size bikes with a minimum of fuss. Call Joe any time to discuss bicycle details.

Eva Sindberg has offered to drive four bikes in their van if needed. We can all drive if the weather does not cooperate.

Be sure to register on the signup sheet at the next meeting or contact Joe: 312-215-1525 or rossimetalcraft@yahoo.com

790 SCHOLARSHIP CONTEST DETAILS

Scholarship chairman Elton Eisele reports that entries for the Chapter 790 Aviation Scholarship award are due by Tuesday, June 28, 2011. We will award \$500 to the flying instructor or FBO of their choice for flight instruction and/or aircraft rental. The applicant must be from 14 to 20 years of age and have the consent of a parent or guardian. The contest entry consists of a 200 to 250 word, doubled-spaced typed paper (12-point New Times Roman font) with one-inch margins. The entry should describe goals and career interests in aviation and a brief statement of financial need.

Entries are to be submitted to Elton Eisele, 1538 Coventry Road, Schaumburg, IL 60195 by the June 28 Chapter meeting at Lake in the Hills. Every effort by applicants should be taken to use their best writing skills. The entry should consist of at least three paragraphs paper: introduction, body, and conclusion. The effort will be rated on:

- * Focus (main idea throughout the paper)
- * Support (the evidence you use to support your ideas)
- * Organization (of thoughts and presentation)
- * Conventions (your use of standard written English)
- * Integration (the paper as a whole)

The scholarship will be awarded to the winning candidate at 790's general meeting on August 23, 2011.

BOARD MEETING MINUTES

EAA Chapter 790
Board Meeting Minutes
April 5, 2011

The EAA 790 Board meeting was held at Pilot Pete's Restaurant, Schaumburg, IL. The meeting began at 7:35 p.m. Attendees were Nancy Blazyk, Glen Brisson, Lon Danek, Elton Eisele, Ron Liebmann, Mike Perkins, and Ole Sindberg.

Welcome to Guest: Welcome Joe Rossi to the board meeting, with information on the upcoming fly/bike event.

Young Eagles: The next two 790 dates are May 21 and June 18 and will be held at 3CK. Volunteer signup can be done on our website. The times are 8:30 briefing with rides from 9 – noon.

Learn to Fly Day: After Young Eagles on May 21 from noon to 2 PM, the EAA's Learn to Fly Day will be run at Lake-in-the-Hills Airport. Participation is separate from Young Eagles. The event is held to catch the interest of flying-minded adults, and flights are optional.

May Meeting: Lake-in-the-Hills Airport, Ted Lipinski's hanger, cookout of brats and hamburgers at 6 PM, meeting starts at 7 PM. Members should bring their own chairs. Program is TBD, but a hands-on-aircraft theme has been suggested, perhaps a preflight contest.

Chapter Outings:

Yokes and Spokes Fly-Out: Set for June 4th to Ft. Atkinson, fly-out and ride bikes to town, an interesting place. Thanks to Joe Rossi for thinking up this creative name, which according to a Google search has never been used before by anyone. Joe and Ole are co-chairing this event.

Greenfield Village and Henry Ford Museum Fly-Out: Set for September 30 to October 2 to this Michigan museum location. Lon Danek volunteered to chair this event.

By-Laws: Lon presented EAA-approved boilerplate by-laws for us to consider as starting point to replace our old by-laws that date back to the origination of our chapter. Two members agreed to look over the boilerplate version and suggest how it should be customized to our present needs.

Chapter Scholarship: Elton Eisele volunteered to be chairman of this committee. June 28th was selected as the deadline for entries. The \$500 award will be presented at the August meeting. Guidelines will be posted on our website. The applicant age range was set at 14 – 20.

The meeting was adjourned at 9:05 p.m.

Submitted,
Mike Perkins as stand-in Secretary for Tom LeGates as Interim Secretary

OVERHEARD

Zach Brown writes: *I overheard the following tower transmission after a King Air made a particularly short landing at Metro Airport near Denver. The King Air landed in less than a thousand feet and cleared the runway much earlier than the tower anticipated.*

Controller (*obviously stunned - and in good humor*): "King Air, would you mind telling the tower exactly what was wrong with the other 9,000 feet of our runway?"

- Copyright AVweb April 2011 (really, really recent)

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Pre-meeting Checklist

- ✓ **Name Tags**
- ✓ **Article(s) For The Newsletter**
- ✓ **Program And Outing Ideas**

The Newsletter is always looking for interesting articles and pictures by our chapter members. If you have written anything or would like to write something or have pictures that you believe would be of interest to the chapter members, please submit what you have. The newsletter staff prefer that you e-mail your articles to michael.perkins@rauland.com or trlegates@comcast.net. We prefer text written in Microsoft Word, however, you may submit the material any way that is easiest for YOU! We also accept hand-written copy, floppy disks (IBM format), Zip disks (IBM format), and CD's. Bring your article to the meeting or mail it to Mike Perkins at 17787 Sherwood Forest Rd, Havana, IL 62644.

EAA CHAPTER 790 2011 Dues Payment (Last Issue Without Renewal)

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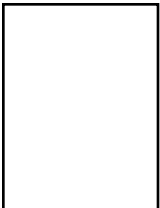
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