

# WINTERMAIL

EAA CHAPTER 25

MINNEAPOLIS / ST PAUL, MN

NOVEMBER 2015



## Young Eagles Update



*By Kris Olson*

Chapter 25 flew 27 kids on September 19<sup>th</sup> at Air-lake Airport. Frank Ahlman, Don Eide, and Paul Pankratz flew kids. Our ground crew was Ron Oehler, Ron Hoyt, Bob Dunst, and Bob Styer. Thank you all for helping that day.

*(Continued on page 4)*

*Chapter 25 also helped to fly 209 Young Eagles at the Global Girls in Aviation Day event held at the Downtown St. Paul Airport on September 26, 2015.*

## Fixing Spark Plug Threads in Aluminum Cylinder Heads

*By Patrick Hoyt*

I took a break from the construction of my current project to do a quick rebuild of the engine in my other airplane. As an early check after reassembling that engine, I wanted to perform a differential compression test. While doing that, I discovered that the threads in one of the aluminum cylinder heads were

*(Continued on page 5)*



*#1—Time Serts*

Craig's "Flight Lines"  
November Meeting, October Minutes

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Final Approach Trivia Quiz

P3

# Flight Lines

—from Craig Nelson,  
EAA Chapter 25 President



It's the day after Veteran's Day as I sit to write this column. Many of our fellow chapter members have served our country and I wish to extend a very grateful "THANK YOU" to them and all veterans for their service to our country. It is through their sacrifice that we enjoy the many freedoms that we share in this great country. Please add your voice to mine

and thank our veterans for their service.

The Kitfox has a new home. I recently moved to a different hangar at Flying Cloud Airport. I will miss my old haunt. It was next to the Modern Avionics gas pumps so I saw the coming and going of airplanes refueling. I also had a great view of the airfield and the activities of the flight schools that have been based on the west end of the Modern Avionics building (Air Trek North is now located there). My new hangar is quite a bit nicer and I am enjoying the dry space as I complete my annual inspection.

Several Chapter 25 members are joining a team from Anoka Chapter 237 to form a work party that is going to EAA Headquarters in Oshkosh this weekend. The group will be doing maintenance work on EAA aircraft. It sounds like a fun time and I'm looking forward to a report on the experience. It is nice to see our two chapters joining forces again. You might remember we worked together at the AOPA fly in.

During our October meeting I neglected to put forth the list of individuals that are running for office next year. All current officers are running for their same position. I did not receive any additional nominations. For clarity, here is the list which we will vote on during our next meeting.

- Craig Nelson - President
- Mamie Singleton - Vice President
- Kim Johnson - Secretary
- Gordon Duke - Treasurer

The Chapter 25 Christmas Party is slated for Sunday December 13 starting at 3pm. Dan Carroll has graciously offered to host the party at his beautiful hangar at Anoka Airport. This will be a pot luck event. Chapter members with last names starting with A-M should bring a food item. If your last name starts with N-Z please bring a beverage. Of course, bring enough to share with other chapter members. Spouses and significant others are welcome. I hope you will be able to attend. Directions to Dan's hangar will be sent out prior to the party.

Our meeting this month will be at the BSAEC at Airlake Airport. There is a change in the presentation topic from what *(Continued on page 8)*

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# This Month: Wed Evening Nov 18th—BSAEC at Airlake

Grill on at 6:00 pm, Meeting at 7:00 pm

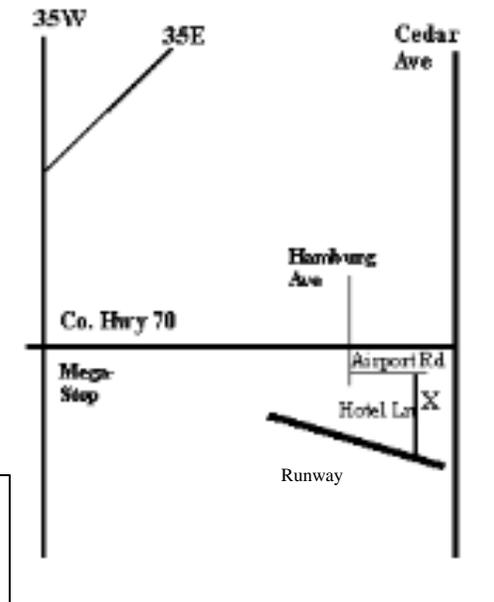
Please bring something to share (meat and buns provided): deli salads, chips, cookies, utensils, soft drinks and water.

**Program:** Dr. Randy Corfman, President of the Minnesota Pilots Association will join us to talk about “Survival Medicine for Aviators”. He will also give an update on the Pilots Bill of Rights 2.

**Saturday, November 21st: Young Eagles** Contact Kris Olson, pilots/ground crew needed: 651-675-6826, ksimpson2@yahoo.com

**Sunday, December 13th, 3pm: Christmas Party** Will be hosted by Dan Carroll at his hangar at Anoka this year. Thanks Dan!

**Saturday, December 19th: Young Eagles**



## EAA Ch. 25 Minutes of the October 21, 2015 Chapter Meeting

The meeting was called to order by President Craig Nelson at 7:00 pm at the BSAEC. Lt. Col. Lou Martin led us in the Pledge of Allegiance and asked us to observe a moment of silence for all those in harm's way tonight and for all who paid the ultimate price for America since its inception. He told us the following:

Last American Revolution veteran died in 1869 at age 110

Last veteran from the War of 1812 died in 1905 at age 105

Last Mexican American War veteran died in 1929 at age 98

Last Civil War veteran died in 1951 at age 104

Last WW I veteran died in 2009 at age 113

There are approximately 1,720,000 WW II vets still living, but are dying at the rate of 600 per day

There are approximately 2,391,000 Korean War vets alive, but are dying at the rate of 400 a day.

There are approximately 7,401,000 Vietnam vets living, but are dying at the rate of 390 a day.

Lou recommended the movie, “Bridge of Spies”, about the 1962 exchange of Gary Powers for a Soviet spy.

### Final Approach Trivia Quiz

By John Schmidt

In WWII, due to materials shortages, airplane designer Wallis Rigby designed airplanes using a unique material. What material did he use?

**Answer on page 5**

Guests – Matt Kelliher, a pilot and mechanic; Alan Knutson, also a pilot and mechanic, Ken Juno and Greg Boyston, a builder.

**Treasurer's Report** – Gordon Duke, Treasurer, informed us that our finances are in a healthy state. The bills have been paid and the books are current. We have \$15,371 in the checking account.

**Young Eagles** – Kris Olson reported that we flew 17 kids on Oct. 17. We have flown 450 – 460 kids so far in 2015. All pilots and ground crew members who have participated in Young Eagle events in 2015 were asked to stand and be recognized. The next event will be on Nov. 21. Pilots and ground crew are always needed for these events! Please advise Kris if you can serve.

**Fund Raising** – Craig announced that members have contributed \$2,176 toward our scholarship commitment to date in 2015, 72% of our goal of \$2,750. He encouraged members to try to help us meet our goal before the end of the year.

**Banquet Report:** Craig thanked Pat Halligan for organizing the banquet again this year. He reported that members told him that they had a good time. The following people were presented awards: Ron Oehler Award: Pat Hoyt; Top Gun; John Schmidt; Ramp Camp: Bob Dunst.

**Officer Nominations** – Craig announced that all current officers offered to run for their current positions. No additional nominations were received. The following are the nominees we will vote on at our November meeting.

Craig Nelson - President

Mamie Singleton - Vice President

*(Continued on page 7)*

# Young Eagles Update

(From page 1)

Some Chapter 25 pilots and ground crew also helped with a large Young Eagles event at the St Paul Downtown Airport on Saturday, September 26<sup>th</sup> from 9 am to 4 pm. 209 kids were flown, mostly girls and a few boys. Stars of the North Women in Aviation and AirSpace Minnesota held an event called Navigate Your World for Global Girls in Aviation Day. Some local EAA Chapter Young Eagles pilots and EAA members helped fly the kids and many ground crew were there to help with the rides. The pilots were Pete Gabrail, Sam Weigel, Nate Bruss, Steve Bruss, Joe Gmitter, Brad Johnson, Gregg Strathy, Dan Marrs, Morgan Maxwell, Chris Mayer, Nathan Ruedy, and Steve Wiza. The Chapter 25 members that helped with ground crew were Jeff Coffey, Kim Johnson, Ned Lebens, Dave Olson, Kris Olson, and Ron Oehler. Hundreds of girls and their parents visited the career booths during the morning and afternoon sessions. The Girls in Aviation Day event will be an annual event.

—Kris Olson



## Answer to Final Approach Quiz (see page 3)

Paper. Rigby was a toy airplane designer for kids. War materials restrictions ruled out metal for toy airplanes. There was also a shortage of ink, which led to bizarre-colored paper models. Some Rigby models were even published in newspapers as part of the Sunday Comic Section. Rigby's models (Douglas Dauntless) were so popular that they led to newsreel coverage showing the steps used to design, build, and fly one of the paper models. Simplified paper-airplane models, similar to those of Rigby, were used as cereal premiums for General Mills in 1944. Mail in two box tops from Wheaties cereal and you received a pair of paper airplanes. General Mills gave away thousands of these models as part of a nation-wide contest. Backing this was a publicity campaign, showing Veterans in hospitals building the models. A contest held at Nebraska's Boy's Town garnered national Newsreel coverage, too. These airplanes gave thousands of kids (and adults) their first try at model building.

<http://library.thinkquest.org/trio/TR0110764/paper.html>

<http://www.fiddlersgreen.net/models/miscellaneous/Wallis-Rigby.html>

### HISTORY OF PAPER AIRPLANES

It was during WWII that materials were in short for toys. The materials that were available had restricted use. These restrictions ruled out metal toys, thus all that was available was paper and wood. This led to airplanes as well as other toys that were normally made from metals to be prepared with paper or wood. There was also a shortage of ink that led to bizarre-colored paper models.

Willis Rigby developed one of the most popular styles of constructions used for airplanes. Rigby was an Englishman who had just moved his company to the U.S. in the late 1930s. His models were published as individual books and boxed sets. Some models such as the Douglas Dauntless was

even published in newspapers as part of the colored Sunday Comic Section. Rigby's products got so popular that it even led to newsreel coverage showing the steps used to design, build, and fly one of these paper model airplanes. They range from simple folded-paper darts to complex 3-dimensional models. Cereal makers, too, felt the material-shortage pinch for premiums. Simplified paper-airplane models, similar to those of Rigby, were used as cereal premiums for General Mills in 1944. Mail in two box tops from Wheaties cereal and you received a pair of paper airplanes. General Mills gave away thousands of these models as part of a nation-wide contest. Backing this was a publicity campaign, showing Veterans in hospitals building the models. A contest held at Nebraska's Boy's Town garnered national Newsreel coverage, too.

These airplanes gave thousands of kids and adults their first try at model building. After WWII however things returned to normal, and paper models rapidly disappeared. Only a few publishers continued to print paper models afterwards.



## Fixing Spark Plug Threads

(From page 1)

chewed up pretty bad. It's hard to do a compression check with bad spark plug threads, and they don't get any better...

My first attempt at repairing these threads was to take an old spark plug and make a Thread Chaser out of it by cutting a diagonal slice across its threads with an angle-grinder. While that did work to some degree, I wasn't very confident of the long-term prospects of the health of that spark-plug hole, and I figured that the best opportunity I would ever have to "fix it right" was going to be right now, while I had the engine off the airplane and sitting on my workbench.

This particular engine has 6 cylinders arranged in two horizontally opposed banks of 3, with each of the two cylinder heads spanning across 3 cylinders. One cylinder head already had thread repairs done on the plug holes on all 3 of its cylinders, so I decided to go ahead and fix the other 3, thus giving all of the cylinders good spark plug threads.

I chose to use steel Time-Serts to fix the spark plug threads (photo 1).

Installing a Time-Sert involves running a special "step sided" tap down the old spark plug



#2—Time Sert Tap



#3—Alignment of the Tap

(Continued on page 6)

# Fixing Spark Plug Threads

(From page 5)

hole, which expands and re-taps that hole to the thread size matching that of the outside of the Time-Sert. This tap is "necked down" to an initial narrow size which engages the pre-existing threads to guide the tool, which is followed by a "necked up" region which actually cuts the new threads (photo 2).

The first thing I did was to rotate the engine so that the piston in the cylinder that I was working on was all the way down, and thus out of reach so I wouldn't accidentally damage it while I was running the tap into the head.

From having installed Time-Serts in cylinder heads one other time, I knew that a challenge was going to be keeping the tap aligned with the original orientation of the threads. To help in that regard, I inserted the threaded probe for a differential compression tester into an adjacent spark plug hole, to simply serve as a visual reference to help "keep the tool straight". This is the yellow colored rod which is visible in the background of photo 3.

The tapping tool is rotated in by hand, with the aid of a ratchet (photo 4). Once the "big end" of the threading tool has tapped its new threads all the way through the head, it is carefully backed out. Then a counter-sinking tool is slid down the shaft of the tapping tool, and a counter-sink is gently cut into the cylinder head by hand (photo 5). The counter-sink tool is kept in perfect alignment by virtue of it sliding down the shaft of the tapping tool, which in turn is threaded into the head.

Next, the tapping tool is withdrawn, lightly lubricated with oil, and a Time-Sert insert is threaded onto it (photo 6). The entire assembly is then threaded back into the hole by hand, following the newly cut threads. After the assembly has been threaded in most of the way, some resistance is felt, which is soon passed. After the point where the amount of force needed starts to "get easy", the tapping tool is backed out, leaving the Time-Sert installed (photo 7).

I installed Time-Serts in the remaining spark plug holes on that head, which gave me fresh, steel threads that I believe are superior to the original aluminum ones in all 6 cylinders. I performed the procedure with the head installed on the engine, so numerous chips were deposited inside the cylinder, which needed to be cleaned out. After I finished installing all of the Time-Serts, I removed the head and cleaned out all the cylinder bores. I also used a Dremel tool to gently clean up any sharp edges that were protruding into the combustion chambers (photo 8, which shows the view of the Time-Sert from the inside of the combustion chamber), and then reinstalled the head. The spark plugs were installed with black anti-seize and copper crush gaskets.

Following reinstallation of the cylinder heads, a differential compression check confirmed that all cylinders were similar, and appeared to be good. The engine was reinstalled on the airplane and an initial startup was done, holding to a low RPM. When all looked good, a subsequent test was conducted to verify the ignition timing up to wide-open throttle, followed by test flights which provided final confirmation of functionality.

Patrick Hoyt--N63PZ



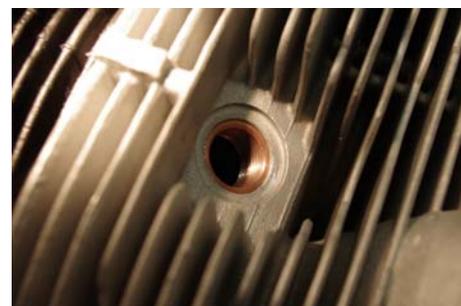
#4—Cutting New Threads



#5—Countersinking Tool onto Shaft



#6—Time Sert on Tool



#7—Time Sert Installed

#8—Looking up at the Head from Inside the Cylinder



*October Minutes (Continued from page 3)*

Kim Johnson - Secretary

Gordon Duke - Treasurer

Ch. 25 member Steve Wozniak has a Challenger at Winstead that he is willing to donate to the Chapter. Chapter 25 could serve as an agent to sell an airplane, but we are not allowed under EAA rules to own one. Craig is looking for members willing to help move the airplane to the BSAEC.

Randy Poore added a little follow-up to Dr. David Schall's presentation about Doolittle's Tokyo Raid at the banquet. As you know, the Japanese attack of Pearl Harbor took place on 12/7/1941. The U.S. Military thought it was important to retaliate to boost U.S. morale and damage Japanese morale by planning a bombing raid on the Japanese homeland as soon as possible. B-25 bombers were identified as the aircraft capable of carrying out the raid, as long as they could be modified quickly to carry the larger gas tanks necessary to complete the mission. The Mid-Continent company, located at the Minneapolis Airport Wold-Chamberlain Field, was selected to install the larger fuel tanks on the sixteen B-25's that were to be used in the mission. Twin City residents, including Randy and Bob's father, Roger Poore, worked on the installation of these larger fuel tanks on the B-25's that flew in Doolittle's Raid. All of the planning, designing, overhauling, training and transportation necessary to complete the mission took place in only 4 months, 11 days.

**Other Local Aviation Opportunities**

Mark Julifs is looking to rent hangar space for his RV project. He is not allowed to do his Phase I testing out of So. St. Paul Fleming Field. He knows of a builder of a Long EZ that is looking to rent hangar space. Contact these individuals if you know of available rental space.

**Upcoming Chapter Events**

11/18/2015 - Chapter meeting – Ryan Mohr will be speaking on shooting good aviation videos.

11/21/2015 – Young Eagles Event

*(Continued on page 8)*

*Next Chapter Meeting: Wed, Sept 16th*

*Young Eagle Events: Sept 19th*  
 contact Kris Olson (see p2) if you can volunteer

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# Flight Lines

(from page 2)

has previously been communicated. Dr. Randy Corfman, President of the Minnesota Pilots Association will join us to talk about "Survival Medicine for Aviators". He will also give an update on the Pilots Bill of Rights 2. Since we are having a Christmas Party, we will follow our normal tradition and not have a chapter meeting during the busy last half of December.

Finally, Chapter 25 will be supporting the Tree of Hope program which supplies toys to hospitalized kids over the holiday season. Please bring a toy to the November meeting and we will see that it is delivered to the collection site for distribution to kids in hospitals around the state.

Since "On Final" will not be published in December I want to take this opportunity to wish you a joyous and safe holiday season. Thank you for being a part of our aviation family. Peace and happiness to you and your loved ones.



## October Minutes (Cont'd from page 7)

12/3/2015 – Holiday Party – The 2015 Ch. 25 holiday party will be at the Anoka Co. – Blaine Airport. Please put the date on your calendars.

Presentation – Doug Evink, CEO of Tanis Aircraft Products, talked to us about the importance of pre-heating engines when ambient temperatures are less than about 20 degrees Fahrenheit. Starting cold engines in cold weather is a great cause of engine wear, so engine warming systems can save a huge amount on engine maintenance and upkeep. Tanis believes in data driven science, meaning that they are constantly studying data to make their products up to date and efficient. He told us that it is important that all engine parts, including the upper parts, be above dew point temperature to keep condensation from forming. You can keep their engine warming systems running 24 hours a day for about \$1 a day leaving it plugged in 24 hours a day. You can purchase their product for approximately \$500 for a 4 cylinder engine and approximately \$800 for an 8 cylinder engine.

Respectfully submitted,

Kim V. Johnson, Secretary and Membership Coordinator



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