EAA CHAPTER 80 NEBRASKA IOWA

News!

AUGUST 2019

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From the President

Hello, everyone!

I hope everyone had a safe trip to and from AirVenture 2019.

Bruce Mundie has been relentlessly pursuing the 501(c)3 status for our chapter. In the latest, and my understanding, last round of questions with the IRS, the chapter needs to update our charter. The IRS is going to grant the status with a signed affidavit that the chapter will pursue and update the charter in a timely matter. I'm not 100% sure what verbiage needs to change and I haven't looked at the requirements for changing the charter, but I'm certain there are notification of change and voting/quorum requirements for the proper passing of the changes. So, stay tuned.

The Plattsmouth picnic is coming up September 8. It coincides with the Young Eagles rides that day. There will be more details to follow. Remember there are Young Eagles rides August 10 at Millard.

Bruce Mundie will be our August speaker. He will be talking about working with the Afgan Air Force.

See you August 12, 7 PM at Oracle!

Chris Halfman

General Aviation History

Metal-Skinned Aircraft

Centennial of Flight Essay - Evolution of Technology
Used with permission

Most of the 170,000 airplanes built during World War I were constructed of wooden frames with fabric coverings. These materials were relatively lightweight and available. Anthony Fokker, a Dutch entrepreneur working in Germany during the war, developed a welded-tube steel fuselage to take the place of wood. German manufacturers built more than 1,000 of these aircraft, which had wooden wings. Hugo Junkers, a German designer, built all-metal aircraft, first using sheet iron. He soon switched to duralumin, a high-strength aluminum alloy developed just before the war. After the war, Junkers developed several all-metal passenger transports.

In the spring of 1920, the American pilot John M. Larsen began demonstrating an imported Junkers all-metal passenger plane designated the JL-6. It created much excitement within the American aviation community. The U.S. Postal Service bought six of the aircraft. The enthusiasm over the JL-6 caused many aviation leaders to call for the development of all-metal aircraft. The National Advisory Committee for Aeronautics (NACA) declared in its 1920 *Annual Report* that metal was superior to wood because "metal does not splinter, is more homogeneous, and the properties of the material are much better known and can be relied upon. Metal also can be produced in large quantities, and it is felt that in the future all large airplanes must necessarily be constructed of metal." NACA immediately began research into all-metal construction, and the U.S. Navy developed duralumin fabrication techniques at the Naval Aircraft Factory. In 1924, the first all-metal commercial airplane, called the Pullman, was produced by William Stout. Glenn Martin Aircraft also developed all-metal aircraft for the U.S. Navy in 1923 – 1924, where the only wooden structure was the engine mount.

Airplane designers also felt that metal offered other significant advantages over wood, including protection from fire, but in reality, early aircraft metals provided little protection against airplane fires. In fact, despite the enthusiasm over the JL-6, the aircraft had a faulty fuel system causing it to catch fire in flight and the thin aluminum skin between the engine and cockpit melted, allowing flames to burst through at the pilots' feet. Two airplanes were lost within months, and the Post Office quickly sold the remaining four at a huge loss

Despite the initial great enthusiasm over all-metal construction within the U.S. aviation community and the widespread belief among designers in the superiority of metal in the early 1920s, engineers soon found that metal was not inherently superior at the time. Wood was still lightweight and easy to work with. Over the next decade, aeronautical engineers had a difficult time designing metal wings and airframes that weighed as little as wood.

In late 1920, the Army Air Service contracted with the Gallaudet Aircraft Company for a monoplane bomber with an all-metal fuselage and metal framework wings. The prototype, designated the DB-1 and delivered in late 1921, was grossly overweight and considered a miserable failure. It was quickly retired. By 1929, nine years after the JL-6 had created so much excitement about all-metal airplanes, an

aeronautical textbook estimated that metal wings still weighed 25 to 36 percent more than wood wings. By 1930, a decade after the NACA declared metal superior to wood, only five percent of the aircraft in production were of all-metal construction.

One of the big problems with metal was that it buckled when compressed, just like a piece of paper will bend when its ends are pushed together. In comparison, wood does not buckle as easily. By the 1930s, another aircraft design trend known as stressed-skin structures made this problem more acute. Before this time, aircraft achieved much of their structural strength through their internal frameworks. But in a stressed-skin structure, the covering contributed much of the structure's strength and the internal framework is reduced. This provided a streamlined external surface for the airplane, but made metal buckling failures more likely.

In order to combat the problems of compressive buckling, metal structures had to be complex, with curves and riveting and reinforcement. This dramatically increased the costs of such an aircraft. By 1929, some manufacturers were making metal wings that were as light as wooden ones, but by the end of the 1930s, all-metal airplanes were significantly more expensive than wood and fabric airplanes.

Metal also presumably was more durable than wood, which warped, splintered, and was eaten by termites. But duralumin also had severe corrosion problems. It turned brittle. Unlike iron or steel, which rusted from the outside in, duralumin weakened internally and could fail suddenly in flight. Duralumin corroded even more in salt spray and the U.S. Navy eagerly sought a solution. The Aluminum Company of America (Alcoa) and the Federal government cooperated to develop a material known as Alclad, which consisted of an aluminum alloy bonded to pure aluminum. Alclad solved many of the corrosion problems of duralumin. Soon other alloys were developed that proved effective as well and during the 1930s, all-metal airplanes became much more common.

By the mid-1930s, wood was no longer used on American multi-engine passenger aircraft and U.S. combat aircraft. But in 1938, the British airplane company, de Havilland, began work on a fast, unarmed bomber named the Mosquito. It was one of the most successful British aircraft of World War II, able to fly faster and higher than most other aircraft. More than 7,700 Mosquitoes were built. They were made of spruce, birch plywood, and balsa-wood, proving that even in the era of all-metal planes, older materials could still achieve impressive results.

The lesson of the development of all-metal airplanes is that just because engineers may think that a new material is superior, that does not mean that it will be immediately useful. It may take many years before designers and materials specialists are able to adapt a new material to a new task.

--Dwayne A. Day

http://centennialofflight.net/essay/Evolution_of_Technology/metal_plane/Tech15.htm

Minutes

July 2019

The chapter meeting was held on July 8th at Millard Airport, Oracle Aviation. The meeting was called to order at 7 PM by President Chris Halfman.

Guests included the speaker Charles Daubs, and Kevin who has started taking flight lessons at Oracle.

Meeting Minutes: The June 2019 meeting minutes were approved as published.

Treasurer's Report: The treasurer's reports for July was presented. The opening balance was $14,076.59. Chapter receipts totaled $75 (dues, FDMS deposit). Chapter expenses totaled $179.93 (YE labels & STEM breakfast, FDMS fees, and battery). Ending balance $13,971.66. The treasurer's report was approved as published.

Membership: Bob Condrey reported 102 members. Eleven of the 102 members need to pay dues for 2019. Bob still has 38 members that need head photo shots for the chapter directory (either have Bob or Mike Howard take a picture, or email him a picture).

Tech Counselors: Mike Howard had nothing to report, Bob Condrey is now a Tech Counselor.

Young Eagles: This Saturday is the next YE flight at KMLE, pilot briefing at 0740. There was a discussion on the YE flight routing when using Runway 12, with a suggestion to consider flying southbound after takeoff rather than a crosswind to downwind departure, crossing the approach to the active runway while westbound. Pilots to discuss the suggested southerly routing on Saturday.

Tools: Nothing to report.

Builder Reports:

1. Ken Shoemaker stated that things are coming together on their RV-7A with the help of Jerry Ronk.
2. Greg Ross reported his tail cone is complete on his RV12is.

Builders Meeting: None scheduled.

Fly-outs: Mike Howard reported that he and Paige flew out to Emmetsburg IA for breakfast. If anyone wants to be included on the fly out email notifications contact Mike to be added. In September Mike is hoping to fly out to the Fagan Fighter Museum in Granite Falls, MN. This would be an all day trip as it is 215nm away.

Social Coordinator: Lincoln EAA chapter Christmas party on December 7th.

Old Business:

1. No report on the status of the signage board.
2. 501c(3) application – IRS has requested more information.

New Business: None to report

Announcements:

1. Tom Wieduwilt (TW) misplaced his Millard airport keys. They have a USAF tag on them when last

seen. Please let him know if you find them.
2. TW has some (entry level builder) airplane tools for sale. Used for an RV aluminum type aircraft. For sale for ~1/4 the cost new.
3. Chris Halfman reported the Wing Nuts annual event is coming up in Tarkio, MO. Chris also gave away some excess scat tubing he mistakenly received.
4. Tommy Ostlund suggested that the EAA Chapter 80 pilots attending Oshkosh get together for a pot luck meal in the campground. TW is willing to be a point of contact if there is interest.

Raffle Drawing: Half the drawing ($33) was won by Ed Siudzinski.

Presentation: Charlie Daubs gave a presentation on flying the SR-71. Charlie was raised in Illinois and was one of the first 25 to fly the SR71. The SR71 is a Mach3+ aircraft capable of flying above 80,000' with a very low radar signature. The limited production A11 and A12 models preceded the SR71 and were used by the CIA with only a single pilot. The SR71 was a two crew aircraft that required a space suit to be worn for flight. Thirty-two of the aircraft were built (from 93% titanium) and 12 were lost/destroyed, with no aircrew losses. The aircraft was pitch and yaw divergent and required a stability augmentation system and autopilot to fly the aircraft, which used round dial "steam" gauges. Special use JP7 was used to power the aircraft. A very interesting presentation.

August Meeting: The next meeting is August 12th, 7pm, at Millard Airport Oracle Aviation.

Webinars

August

I Wanna Sue Someone

Wed, August 7 – 7 p.m. CDT
Presenter: Mike Busch | *Qualifies for FAA WINGS and AMT credit.*
Register Now >>

Rotax 912iS Sport Engine Overview

Wed, August 14 – 7 p.m. CDT
Presenter: Jorge Tavio | *Qualifies for FAA WINGS and AMT credit.*
Register Now >>

What is Scenario-Based Training: How to Use it In Your Everyday Flying

Tues, August 20 – 7 p.m. CDT
Presenter: Tom Johnson | *Qualifies for FAA WINGS credit.*
Register Now >>

Loss of Control - Root Causes and Innovation Opportunities

Wed, August 28 – 7 p.m. CDT
Presenter: Loss of Control Committee Members | *Qualifies for FAA WINGS credit.*
Register Now >>

September

Double Standard?

Wed, September 4 – 7 p.m. CDT

Presenter: Mike Busch | *Qualifies for FAA WINGS and AMT credit.*

Register Now >>

Staying Current: Where Rules and Skills Collide

Wed, September 11 – 7 p.m. CDT

Presenter: Prof H. Paul Shuch | *Qualifies for FAA WINGS credit.*

Register Now >>

Competition Aerobatics - 101

Wed, September 17 – 7 p.m. CDT

Presenter: Susan Bell | *Qualifies for FAA WINGS credit.*

Register Now >>

Inflight Weather Hazard Avoidance Strategies

Wed, September 18 – 7 p.m. CDT

Presenter: Scott Dennstaedt | *Qualifies for FAA WINGS credit.*

Register Now >>

How to use EAA's SkillScore Tracker to Maintain Proficiency

Wed, September 25 – 7 p.m. CDT

Presenter: Radek Wyrzykowski | *Qualifies for FAA WINGS credit.*

Register Now >>

October

ADS-B Update: Equipping for 2020 and Reviewing the Latest Portable Receivers

Wed, October 9 – 7 p.m. CDT

Presenter: John Zimmerman | *Qualifies for FAA WINGS credit.*

Register Now >>

These are the current webinars listed on eaa.org. Please check the site at https://www.eaa.org/en/eaa/news-and-publications/eaa-webinars to see if there are other webinars available.

EAA 80 MONTHLY TREASURER REPORT

Aug-19

Checking				
Acct. 310				
Opening Balance			$13,971.66	
Receipts				
	FDMS Dep			
	50/50			
	Dues	Chks		
		Cash		
Expenses				
7/3/19	FDMS Fee		$4.95	FDMS is First Data Management Syste
	FDMS Discount			(Credit Card)
				As Info the Y.E. Expenses Should be Reimbursed by Nat'l in January
	Jim Beyer			
	Refresh			
(Note: Credit Card amounts will be accounted on cash basis when recorded on bank statement)				
Ending Balance			$13,966.71	AS INFO Aug 2018 $16,028.21

Mail checks to:
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Bellevue, NE 68005

EAA CHAPTER 80
2019 APPLICATION FORM

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CONTACT INFORMATION			
NAME		EAA NUMBER	
ADDRESS			
CITY, ST, ZIP			
SPOUSE NAME			
HOME PHONE		CELL PHONE	
E-MAIL ADDRESS			
PROFESSION		RETIRED	

MEMBERSHIP PROFILE									
OWNED ACFT						N-NUMBER			
ACFT BUILDER		TYPE:				COMPLETE %			
LICENSE									
SKILLS 1/SOME - 3/LOTS	WOOD		METAL		TUBE/FABRIC		COMPOSITE		
EMAIL GROUPS	FLY-OUT		BUILDERS		YOUNG EAGLES				
PUBLISH INFORMATION IN CHAPTER DIRECTORY		HAVE A NAME TAG		YEAR JOINED CHAPTER 80					
YOUNG EAGLE VOLUNTEER		YOUTH PROTECTION TRAINING CURRENT							

OFFICE USE: (DUES $25 PER YEAR)									
2017		2018		2019		2020		2021	
PAYMENT	TYPE		AMOUNT		DATE				

Last updated: 11/17/2018