VOLUME 21, ISSUE 7

THE SLIPSTREAM

THE NEWSLETTER OF GREEN RIVER EAA CHAPTER 441 KENT, WA

JULY 2019

INSIDE THIS ISSUE:

SPECIAL POINTS OF INTEREST:

Wings and wheels, Cottage Grove, Or
See Poster, Page 10

Wings and Wheels
Fly and Drive in
Saturday August 17, 2019
Richland, Washington
See Poster on Page 11

EAA 292 From Independence
Oregon Fly-In and STOL Expo
August 16-18 2019
See Poster on Page 12

FLIGHT CONTROL CABLES, DYNON SKYVIEW AML UPDATED, DARINS RV ADVENTURES:

Flight Controls; Cable Terminals Used on 14 CFR Part 23 and CAR Part 3 Airplanes with Mechanical Flight Control Cables - Small Airplanes

SAIB CE-19-13

In summary, stress corrosion cracking on flight control cable swaged fittings, general issue with the aging GA fleet. Common MS fittings also likely to be used in home-builts. Bonanzas seem to be a bit more prone to this failure. Attached pdf has pictures of failures.

Recommendation to remove safety wire on turnbuckles for better corrosion inspection of turnbuckle. (annual) Carefully examine all cable terminal fittings that attach to all turnbuckles for corrosion and/or cracking (in addition to inspecting the turnbuckles and the entire length of the cables as you normally would).

- Use of a 10X magnifier is recommended.

- Apply a corrosion preventative to the swaged fittings if recommended by the manufacturer.

3. If any sign of corrosion, pitting or cracking is present on any fitting, replacement of the associated fitting and/or cable assembly is recommended.

4. For those airplanes with a history of significant exposure to warm, humid, salt air environments, replacement of all primary flight control cables that have been in service for 15 years or longer is recommended. Additionally, replacement of any cable that has a turnbuckle fitting located in an area of the airplane subject to elevated temperatures, the prevalence of condensation, or in close proximity to the airplane battery, and has been in service for 15 years or longer is recommended.

Dynon Skyview HDX STC Approved Model List has been expanded.

To get the updated list, Click Here

To read more about their Aircraft approvals for the Dynons SkyView HDX ATC, Click Here

To read more about the Skyview HDX, Click Here

Darin's RV Adventures:

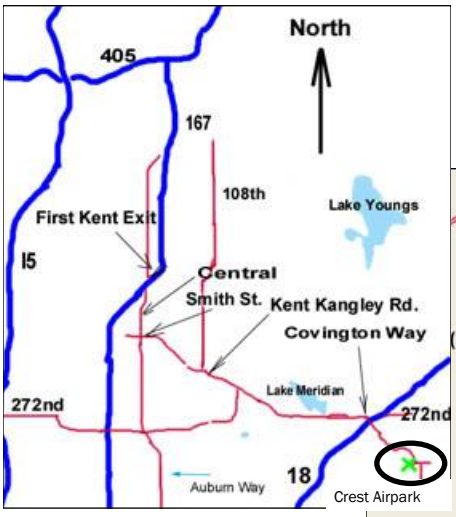
SUNDAY, JULY 7, 2019

Doors - the beginning

Based on the experiences of others I have decided to do the doors next. This will allow me to fit the strut brackets before I install the overhead console. As such this post begins what I expect to be a couple of months worth of door posts...

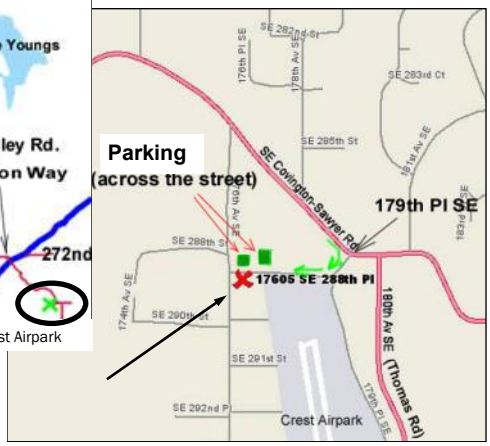
First step is to trim the door skins to a more reasonable size and then begin the process of fitting and (even more) trimming to fit the opening in the cabin. The initial trimming is complete, the doors are bonded together, and the final door assembly has been trimmed yet again to fit into the open-

WHERE DO WE MEET THIS MONTH?



Meets 4th Mondays 700 pm
17605 SE 288th PL, Kent

The Mellema Hanger



JULY PROGRAM

No Meeting in July We return to the normal meeting schedule in August

Program

We return to the regularly scheduled time and place in August.

2019

OFFICERS

President:

Brian Lee

(253)-639-0489

Vice-President:

Mark Owens

Secretary:

Jake Schultz

Treasurer:

Steve Crider

Tech Counselors/ Flight Advisors:

Brian Lee

(253)-639-0489

Dave Nason

Jonathan Lee

(253) 508-1376

Newsletter Editor:

Roger Schert

(206) 713-9910

windridershaman@gmail.com

DARINS RV ADVENTURES, CONTINUED:

ing. The hinges have been attached and the doors actually operate as intended!

One other item of note is I've moved the fuselage over to the big side of the main garage bay and I've disassembled the divider wall. I can still fit both cars in the garage and I now have room to install the motor mount, tail components, and maybe even the engine (without the tail installed). I did have to order and install a new garage door opener for the small bay and while I was at it I decided to upgrade the lighting in the garage to all LED.

MONDAY, JULY 17, 2019

Cabin Top

This week has been all about the cabin top initial fitting. Travis helped me get it down from the overhead last week and its been a dusty several hours since then. The good news is the top is on and fitted with most of the holes drilled. I still have to drill the center support post but once that's done it will be time to remove it for lots of upgrades/modifications. I'm glad to get this part of the project almost done because of the magnitude of fiberglass to be worked. I don't really mind working with fiberglass but with the size of this piece it made it much harder to move around. Not only that but I cut my hands several times on sharp edges trying to manhandle the darn thing.

Next up is to fit and install the overhead console. Then there is a huge list of tasks that I want to get done before I do the final install. These final steps include riveting the last two skins on and I think I want to take advantage of the access to install wiring, brackets, nut plates, firewall stuff, you get the idea.

One thing you will probably notice is that I moved the airplane into the main part of the garage. I just didn't have room in the small bay to work on the cabin top. I may take down the temporary wall at this time but I'm not sure that now is the right time. I don't like leaving any of our cars in the driveway more than necessary, especially during the hot summer months.

To Read More: Click Here

EAA News:

Battle-Tested Avenger Wows in Warbirds

July 25, 2019 - It's big, it's blue, and it's bad. And that's good. It is a TBM-3E Avenger torpedo bomber of World War II, parked in the Warbirds area and proudly shown by Brad and Jane Deckert of Eureka, Illinois. This Avenger comes with a combat pedigree. Accepted by the U.S. Navy on March 17, 1945, the bomber entered combat in the Pacific with Marine Torpedo Bombing Squadron 234.

Flying from the aircraft carrier USS Vella Gulf, this Avenger's combat record includes sorties in the Marianas and during the grueling campaign for Okinawa. Battle repairs have been found in the structure, Brad said. This TBM survived the war and the postwar scrapper to fly on as a firefighting air tanker and a large-

TECH COUNSELORS AND FLIGHT ADVISORS

Chapter 441 is fortunate to have two tech counselors. Feel free to call Brian (253)-369-0489 , or Dave Nason any time. You don't need to wait for some significant milestone in your project. Remember, this is not an "inspection".

The shop doesn't need to be cleaned for a visit. All are quite used to looking at pieces, parts, and assorted bits, and will be happy to answer questions, offer advice, and generally talk about projects, building, flying, or whatever.

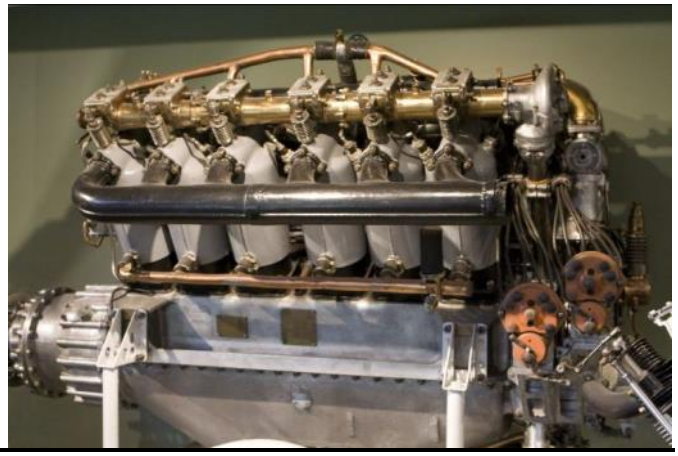
GUESS THAT AIRPLANE; GUESS THAT ENGINE

This months entry:

Go to Page 8 for Junes airplane

This months entry:

Go to Page 9 for Junes Engine



EAA NEWS, CONTINUED:

area sprayer in the United States and Canada. Brad said the bomber's career as a working warbird ended with spraying in the 1980s; the following decade a different owner started restoration in Colorado.

To Read More: Click Here

Fun and Affordable Vintage Aircraft

Plenty of impressive, huge, and potentially pricey aircraft flock to Oshkosh for EAA AirVenture every year, but not every flyer on the field is unaffordable. Enjoyable and accessible vintage aircraft can be found both in a special section just south of the DC-3s, as well as all around the grounds.

Fun and affordable aircraft holding type certificates include many models from the following aircraft manufacturers: Aeronca, Cessna, Ercoupe, Piper, Taylorcraft, Interstate, Luscombe, Culver, Porterfield, and Stinson. Pictured here are some of our favorites from AirVenture 2019.

To Read More: Click Here

Bowers Fly Baby Returns to Oshkosh

Charlie and Steve Gay's 1965 Bowers Fly Baby 608X has returned to Oshkosh for the first time since 1970.

The Fly Baby is a single-seat, folding-wing monoplane, originally designed in 1960 by Pete Bowers to compete in EAA's design competition.

Charlie acquired the Fly Baby in 2004 from family friend Don Hoover. Don built the airplane in 1965 and flew it until 1980, putting more than 1,000 hours on it.

To Read More: Click Here

A Safer Way to Flight Test

July 26, 2019 - After its launch in late 2018, the EAA Flight Test Manual has sold more than 2,000 copies and has been praised throughout the aviation community. In addition to providing a useful resource for builders, the FTM also illustrates the utility of task-based flight testing.

The 47-page manual is a comprehensive program for amateur-built aircraft flight testing. It includes outlines for each essential test point, as well as a booklet of 19 test cards that can be carried in the aircraft for quick reference and data collection while in flight. Those test cards are similar to those used by professional civilian and military test pilots, and they're an exclusive resource for amateur-built aircraft pilots using the EAA manual.

"This manual is the result of many years of work by EAA, our volunteer Homebuilt Aircraft Council, and the EAA board of directors' safety committee," said Sean Elliott, EAA's vice president of advocacy and safety. "It builds on other recent EAA projects to improve flight test safety, such as the Additional Pilot Program approved by the FAA. In addition, this manual is part of EAA's comprehensive effort to meet and exceed the National Transportation Safety Board's recommendations for enhancing amateur-built aircraft safety, especially in the initial hours of flight testing."

The EAA Flight Test Manual provides the guidance and data collection process to bring simplicity to a flight testing program. It allows pilots to have a full understanding of an aircraft's performance, charac-

EAA NEWS, CONTINUED, EDITORS CORNER, NIXUS PROJECT:

teristics, and limitations. It is also designed to be a handy reference that accompanies the aircraft for future flights. The manual is one segment of EAA's work with the FAA to create a new, alternative Phase I flight testing program using a requirements-based foundation. That could bring a significantly reduced flight-test hour requirement in exchange of successful completion of the step-by-step flight testing program.

To Read More: Click Here

Editors Corner:

Hi all: Well July and half the year is over already. I hope that you got to at least one airshow if you didn't make the pilgrimage to Oshkosh. I was hoping to go back there this year, but trips by other family members and duties required to cover those trips took precedence.

Please share your stories with us, just a few words and some photos of your trip to Oshkosh and any other airshow would be great.

I am going to write an article about a PBY crash in Canada during the war for next month. My daughter and her boyfriend had gone to Vitoria Ca and in their travels they took a seaplane ride that went over the crash site and they also visited the site and gave me some photos of their walking visit.

I have a few photos of the June picnic to share.

See you in August

Build Straight

Roger

Sail by Wire:

The Nixus Project

Todays sailplanes are very efficient aircraft. They have large aspect ratios and can produce high lift with low drag. The competition sailplanes use a combination of flaps and ailerons to adjust the camber of the wing for different regions of flight. Flaps and sometimes the ailerons are lowered for the high lift regions of circling in lift to regain the altitude lost during a cross country flight . When speeding from one source of lift to the next, the flaps are reflexed upward to reduce the camber, which reduces the lift and gets higher penetration (into the wind or further distance per loss of altitude). Forces on the wing such as gusts and a nearly continuous changing of

angle of attack, stick movement, flexing and twisting of the wing forces the pilot to continuously adjust the flaps and aileron position to change the camber of the wing to get the most out of the aircraft.

Paulo Iscold (He works as a race engineer with Kirby Chambliss of the RedBull Air Races, Designed a winning wing for a Cassutt racer and an aerobatic) is leading a project to redesign the wing of an ASH-30 sailplane (it has an 87 foot wingspan). He designed new airfoils and worked with LLM Boemans a famous aerodynamicist at the University of Delft in the Netherlands, first to check his work and then to collaborate on the design of the airfoils and wing layout.

The heart of the wing is the Fly-by-Wire system that from root to tip is divided into five (5) separate control surfaces. The outer surfaces are the aileron and are strictly moved by the manual control of the stick for safety. The remaining surfaces are servo operated. Paulo ultimately decided on a triple bus redundancy factor. The Nixus project is flying and gathering data. Paulo decided to use Dynamixel servos made in South Korea. He wrote a program to run the servos at 50% of load continuously for 3 months. They showed a little free play after 2000 hours of continuous operation. The Dynamixel uses an RS-485 bus and provides a wide range of servo data to the FBW system.

The Nixus project is flying and gathering data. The Fly-by-Wire system does reduce the pilots work load. I will leave the technical details to the actual article.

To Read More:

JUNE GATHERING:

Kitplanes: Click Here
Mustang News: Click Here
Reddit.com: Click Here
Nixus Project Home: (Facebook) Click Here

June Gathering:

June is our picnic month and we got together and a great time was had by all. Here are a couple of photos of the June Picnic.

Photo Credits:

Unmodified
Originalfoto Fa. Alexander Schleicher, Mail Uli Kremer 2011-05-09
Wikipedia: Click Here

ASH-30 as designed by the manufacturer

GUESS THAT AIRPLANE:

Mitsubishi G3M Type 96 Land Based attack aircraft "Rikko" Allied Reporting Name "Nell"
The Mitsubishi G3M was a Japanese bomber and transport aircraft used by the Imperial Japanese Navy Air Service (IJNAS) during World War II.
Design and development
The G3M has its origins in a specification submitted to the Mitsubishi company from the Imperial Japanese Navy requesting a bomber aircraft with a range unprecedented[citation needed] at the time. This principally stemmed from Admiral Isoroku Yamamoto's influence in the Naval High Commission. The bomber was to have the capacity to accommodate an aerial torpedo capable of sinking an armoured battleship. The speed requirement submitted by the naval department was again also unprecedented, not only in Japanese but also in international bomber aviation, where in relation to the envisaged Japanese battlegrounds of China and the Pacific, the bomber would need to not only cover long distances, but necessarily have exceptional speed to strike distant targets with a minimum attack time. Thus the G3M was an embodiment of Japanese military aircraft design in the brief period leading to the Pacific War, with powerful offensive armament (in this case in the form of bombs and torpedoes) and range and speed emphasised over protection and defensive capabilities.
Two G3M2 bombers - the nearest Model 22 and the other a Model 21
The G3M was originally designed without any form of defensive weaponry, with its high-altitude performance being regarded as sufficient to evade enemy anti-aircraft guns and its high speed in combination with the planned high performance Mitsubishi A5M fighter envisaged as an armed escort considered sufficient to counter any enemy fighters. Even in the low-speed, low-level role of torpedo bomber, the superior fighter escort – combined with the G3M's high speed – was considered sufficient against any form of ship-based AA guns or carrier-based fighters.

To Read More:
WikiPedia: Click Here
History of War: Click Here
Pacific Eagle: Click Here
Military Factory: Click Here
Smithsonian National Air and Space Museum: Click Here

Specifications (Mitsubishi G3M2 Model 21)
Data from The Mitsubishi G3M "Nell";[2] Imperial

Japanese Navy Bombers of World War Two

General characteristics
Crew: 7
Length: 16.45 m (54 ft 0 in)
Wingspan: 25 m (82 ft 0 in)
Height: 3.68 m (12 ft 1 in)
Wing area: 75 m2 (810 sq ft)
Empty weight: 4,965 kg (10,946 lb)
Gross weight: 8,000 kg (17,637 lb)
Fuel capacity: 3,874 l (852.2 imp gal; 1,023.4 US gal)
Powerplant: 2 × Mitsubishi Kinsei 14-cyl. air-cooled radial piston engines, 791 kW (1,061 hp) each

Performance
Maximum speed: 375 km/h (233 mph; 202 kn)
Cruise speed: 280 km/h (174 mph; 151 kn)
Range: 4,400 km (2,734 mi; 2,376 nmi)
Service ceiling: 9,200 m (30,200 ft)
Rate of climb: 6 m/s (1,200 ft/min)

Armament
Guns:
1× 20 mm (0.79 in) Type 99 cannon in rear dorsal turret
4× 7.7 mm (0.30 in) Type 92 machine gun in cockpit, left and right side positions, and in retractable forward dorsal turret.
Bombs: 800 kg (1,800 lb) of bombs or one aerial torpedo

GUESS THAT ENGINE:

The Franklin Engine Company was an American manufacturer of aircraft engines. Its designs were used primarily in the civilian market, both in fixed wing and helicopter designs. It was briefly directed towards automobile engines as part of the Tucker Car Corporation, returning to aviation when that company failed. The company was later purchased by the Government of Poland.

History

The firm began as the H. H. Franklin Co. in 1902 in Syracuse, New York, USA, to produce Franklin air-cooled automobiles. Barely surviving bankruptcy in 1933, the company was purchased by a group of ex-employees and renamed Aircooled Motors in 1937. While the company kept the name of "Aircooled Motors," its engines continued to be marketed under the Franklin name. Engineers Carl Doman and Ed Marks kept the company alive through the depression by manufacturing air-cooled truck and industrial engines.

Franklin O-335 engine

During World War II Aircooled Motors was very successful producing helicopter and airplane engines. Several aircraft carried its engines, including the Aero-Flight Streak, Bartlett Zephyr, Bell 47, Bellanca Cruisair, Brantly B-1, Goodyear Duck, H-23 Raven,

Hiller 360, Piper J-3F Cub, Seibel S-4, Sikorsky S-52, Stinson Voyager, Taylorcraft 15, Temco TE-1B, and the YT-35 Buckaroo.

Aircooled Motors was purchased by Republic Aviation Company in 1945 to produce engines for its Republic Seabee light amphibious aircraft. After the war, demand for the engines dropped dramatically and Republic was unsure of the company's future.

To Read More:

Wikipedia: Click Here
Franklin Service Manual: Click Here
Franklin Aircraft Engines: Click Here

V – ENGINE SPECIFICATIONS

Model	6A4-150-B3 & B31		6A4-165-B3	
Number of Cylinders	6		6	
Bore	4.5"		4.5"	
Stroke	3.5"		3.5"	
Piston Displacement	335 cu. in.		335 cu. in.	
Compression Ratio	7:1		7:1	
Rated Speed in RPM	2600		2800	
Rated Brake Horsepower	150 HP at 2600 RPM		165 HP at 2800 RPM	
Idle Speed in RPM	500 to 600		500 to 600	
Crankshaft Rotation	Clockwise		Clockwise	
Propeller Shaft Rotation	Clockwise		Clockwise	
Propeller to Crankshaft Ratio	1:1		1:1	
Maximum Cylinder Temperature	520°F Maximum Spark Plug		520°F Maximum Spark Plug	
Maximum Oil Temperature	230°F		230°	
Oil Pressure	30 to 50 PSI Maximum		30 to 50 PSI Maximum	
Oil Pressure at Idle	10 to 20 PSI Minimum		10 to 20 PSI Minimum	
Oil Capacity	8 Quarts		8.8 Quarts	
Oil Specifications	Free Air Temperature	Viscosity	Free Air Temperature	Viscosity
Heavy Duty	Above 40°F	SAE 40	Above 40°F	SAE 40
Heavy Duty	Below 40°F	SAE 20	Below 40°F	SAE 20
Maximum Operating Time between Oil Changes	25 Hours. More often if conditions warrant.		25 Hours. More often if conditions warrant.	

WINGS AND WHEELS RICHLAND WA FLYER:

WINGS OVER WILLAMETTE FLYER: