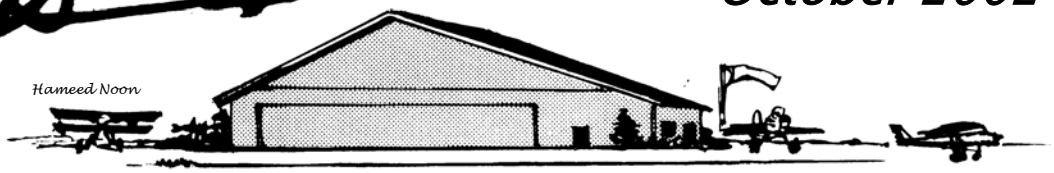
Wingtips

Experimental Aircraft Association
Chapter 55
October 2002



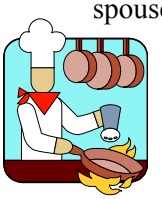
Meetings are the 2nd Saturday of each Month at the Hangar, Mason Jewett Field, Breakfast at 0800, Meeting at 0930.

Pres: Mike Arntz 694-4601 Vice Pres: Gary Long 676-3867 Treas: Gregg Cornell 351-1338
Sec: Drew Seguin 332-2601 Editor: Warren Miller 393-9385

Climb and Maintain Flight Level 55

This weekend has been quite a treat. Saturday I got to see 15 - T-6's come into KAZO in formation, land and leave the same way, shadowed by a P-51 and a Bearcat Shades of Oshkosh. Today four T-6's and a T-28 that spent most of the day doing flybys, military style landings and lots of noise, Cool!

Four new members have joined our Chapter. I would like to welcome Barbara Bacon, Richard's copilot and spouse. I received an email about our steak fry from a couple who said that they would miss the pancakes from our previous fly-ins. I invited them to come to the meetings for pancakes; they came to the steak fly-in and joined the Chapter. Welcome Ken and Vickie Vandenbelt .



John Kennedy is the owner of that beautiful Stinson 108 we see on the field doing those fine wheel landings. One day I spotted John and his plane in the hanger, so taking the opportunity to check out his plane and chat with one of the new kids on the block I stopped. He also has joined our Chapter.

Speaking of the steak fry fly-in, I was told that we had 37 aircraft on the field, including some War Birds, Stearmans and other interesting experimental and certified aircraft. We cooked some steaks and had fun; I hear we even turned a profit not bad for the first time.

It looks like we will be having another Young Eagles rally on October 19. This came about at the fly-in it.

Seems the food inspector who came to check us out, is home schooling his children. There are about 150 families in the organization. So come on all you pilots and ground crew, lets' do it again. Wouldn't it be cool to get one kid per family. Our total for the year is at 220. Last year we flew 232 and rumor has it that a certain young eagle coordinator is out to beat last years record. I wonder who that could be.

Again I would like to **Thank** all who take time out of your lives to make our events successful without the support of chapter members none of the events would take place.

Remember if you are going flying take a Chapter member with you.

Mike

Board of Directors' Meeting

Wednesday, **October 9, 2002**
7:00 pm at Hangar

Chapter 55 Meeting

Saturday, **October 12, 2002**
8-9:00 am Breakfast
9:30 am Chapter Meeting

Teams for 2002

OCTOBER TEAM #9

Glenn Trommater
Mary Nestell
Richard Wilke
David James
Jack Toman Jr.
Ivan Rowell
Joe Whitesides

NOVEMBER TEAM #10

Robert Smith
Bob Noelp
Jennifer Wells
Mark Jacob
Thomas Sheehan Jr.
Bart Smith
Ed Zdybel

EAA Board of Directors Meeting

Board of Directors Meeting – September 11, 2002
Not Available

EAA Chapter 55 Business Meeting

General Membership Meeting – September 14, 2002
Not Available

Notes from Cape Juby

By Terry L. Lutz, Chapter 55 Flight Advisor

Having just returned from Los Angeles, and the 46th Annual Symposium of the Society of Experimental Test Pilots, this month's report will be about the exciting flight test work accomplished during the past year. So, sport aviation fans, grab some coffee, find a chair, and fasten those seat belts!

Sean Roberts, President of the National Test Pilot School at the Mojave Airport, talked to us about flight testing a turbo prop version of the DeHavilland Caribou for both Canadian and U.S. certification. Originally equipped with reciprocating radial engines, the Caribou is an STOL transport with outstanding short field capabilities. The immediate challenge was to calibrate the airspeed system, which would become critical to certification because of the low speeds possible in Caribou operations. It was also critical to determine minimum control speed on the ground, Vmcg. Sean had lots of video of Vmcg testing, showing the airplane on takeoff, with the critical engine winding down to zero rpm following fuel cutoff and auto feathering of the prop.

The U-2 now has a glass cockpit, which will be retrofitted to all the existing airplanes. It consists of three 6x8 color flat panel displays containing all the previous round dial functions and then some, including control of all the avionics. One of the big challenges was to get the buttons around the displays large enough so you could push them with your finger in the glove of a full pressure suit. Believe it or not, up until now, the U-2 pilots were using a pencil eraser to push buttons! First flight with the system was a bust. The software was not dynamically compatible with the pitot-static hardware, and as a result, airspeed and altitude fluctuated wildly in flight. Plus, the Master Warning system came on and stayed on the whole time. The good thing was that the standby electronic display worked fine.

The F-15 now has a new radar, called an Active Electronic Scanned Array, or AESA. The antenna is now fixed, and the scanning is done electronically. A 100-degree scan angle change that used to take 1 second with a hydraulic drive unit, now takes just 1 millisecond! It is quite easy now to track multiple targets while scanning for more. To test this thing out, they shot down a perfectly good F-4, knocking the nose of it clear off. It went into a flat spin, and rotated slowly down with no nose and no vertical fin, while fully engulfed in flames. I cried.

Then came the Carter Copter test pilots. This is flight-testing on the cutting edge. If you haven't given the Carter Copter a second glance, it really isn't a helicopter at all. It's an autogyro with a rotor that can be spun up for short takeoffs and continues to rotate in-flight. It also has a wing below the fuselage. The technical challenge is to fly the Carter Copter at a speed where the ratio of rotor tip speed and forward airspeed, or Mu, is greater than 1.0. What happens is that as speed increases, the loading of the rotor disc causes the advancing blade to have more lift than the retreating blade. This can be compensated for, but tends to destabilize the airplane. The main wing stalls at 165 knots, so they have to get the thing going pretty fast for a Mu of 1.0. Above that speed, the rotor continues to rotate, but should be less destabilizing and contribute only 10% to total cruise drag. They had one engine failure and dead stick landing, which was caused by the prop spinner disintegrating in-flight, causing excessive engine vibration.

NASA gave a fine presentation about Autonomous Formation Flight. They set out to find out if there was a drag reduction by flying with overlapping wingtips and riding under the wingtip vortex of the lead airplane. Duh, 14 zillion Canada Geese can't be wrong! So they hooked up a data link between airplanes so that with GPS they could hold a precise formation position using the autopilot and autothrottles on the F-18 to within ONE FOOT in three-dimensional space. Sure enough, on a two-hour flight while so engaged, they realized a reduction in fuel burn of 14%. That's a big number. But the sinister finding is that they can precisely fly formation without a pilot, which is going to lead to autonomous formations of pilotless airplanes, and the ability for pilotless airplanes to air refuel. Scary stuff.

The F-22 program is having a problem with tail buffet, causing structural problems with the twin vertical fins. In-flight video identified the problem after loads testing showed loads building up faster than expected. They put tufts on the airplane, which showed a lot of disturbed flow at the tops of the vertical fins. Analysis showed that the

cause was a high-energy vortex shed from the intersection of the engine and the wing leading edge, which was breaking apart right next to the fins. So they had to find a test technique to test a large number of airspeed/angle of attack combinations in minimum time. The result was the "Zorch Maneuver", in which the pilot rolls inverted and starts a steep nose down spiral. Roll rate is varied to control airspeed and aft stick is varied to control angle of attack. Using this technique, they were able to cover over 700 airspeed/angle of attack combinations in minimum time. Pretty cool stuff!

Then, Ricardo Traven, the Boeing test pilot on the F/A-18E/F, gave a talk on what to consider when doing an in-flight demonstration. The details aren't as important his words of wisdom. When you fly these demonstrations, adrenaline keeps you from feeling any g force, positive or negative, and your brain is running at 300 mhz instead of 30 mhz. Adrenaline is great for reactions, but bad for judgment. You might as well drink a 5th of whiskey while taxiing out. We all hear the stories: "Great guy, smart, good pilot, but why did he do that??" Please think about this the next time someone comes rolling in with a Zoombat 31, and you ask him to do a fly-by when he leaves.

Doug Shane (Burt's test pilot) and Jim Brown of Lockheed Martin gave a presentation on flight test safety. Their words are something we all should consider when building and flying homebuilts, or tinkering with the store bought machines. Safe flying is a combination of luck and skill. Seek good mentors, and have them check your progress along the way. There is no substitute for preparation and vigilance. Know how it's supposed to work, and how it's supposed to fail. I spoke with Doug about his test flights on Burt's newest creation, and we saw the video of the first flight. On takeoff, the roll spoilers on both wings began fluttering between full up and closed on both wings, making the wing tips move up and down about a foot. The video footage included a cockpit shot of Doug calling out the airspeeds at rotation, then coolly noting the vibration and stating that he was bringing the airspeed back to control it. First flight. Vibration. Pulling power back when you want to climb. Real test flying by a real test pilot. His biggest clue to what was going on was from an onlooker with a hand held radio who said "Doug, your spoilers are flopping up and down." Remember the EAA Flight Advisor Program, and remember to designate your "ground angel".

Finally, the big event arrived, which is always the Awards Banquet. Scott Crossfield was there, with Jeanna Yeager on his arm. The President of the Society, Jim Doolittle III (yes, Jimmy's grandson), named three Honorary Fellows, one of which was a British pilot from World War II named Air Commodore C.B. "Cyclops" Brown. This guy flew Spitfires early in the war, and during one air-to-air engagement took a round which destroyed his right eye. No sooner than he recovered from the injury and got used to wearing a patch, he was posted to command a night flying squadron! About two months later, Headquarters discovered all of this and sent a board of inquiry to investigate. They found Cyclops Brown carrying on and flying quite nicely. So much so that after the war, he was assigned to attend the Empire Test Pilot School at Boscombe Down. The Commandant at the time ALSO wore a patch, and when he saw Cyclops come in the door he said: "Welcome, old chap. I think it's time we made the loss of one eye a requirement to attend this school!"

When Lou and I were at Oshkosh this past summer, we pitched our tent a short distance from another tent housing Phil Schultz, a GE test pilot. Phil gave us a rundown in a test he was planning to fly with a GE-90-115 engine on the number 2 pylon of a Boeing 747. He went through all the thrust settings to assure directional control with the loss of any combination of engines. At the time, he figure the max thrust he could use on the new engine was about 90,000 lbs (this is a monster engine, folks!) It turns out that Phil and his test team were able to perform takeoffs at the full rated thrust of the engine at 115,000 lbs. After flying first flights on over 40 different engine types in 32 of test flying, Phil Schultz was given the J. H. Doolittle Award for excellence in technical management and engineering in a flight test program.

The flight test safety award was given to Bruce Peterson, who for many years was Director of Flight Safety at NASA Dryden. But what you may not know is that Bruce IS the $6 Million man. Remember that footage of an airplane tumbling end over end on the lakebed that started each episode of the TV show with the same name? Bruce was the pilot of the lifting body vehicle that developed severe, divergent roll and yaw oscillations on short final, resulting in the crash. He didn't fly much after that, but made an indelible contribution to the safety of testing at NASA.

Finally, I have to tell you about what Scott Crossfield is doing. He is deeply involved the Wright project that will culminate in a re-creation of the Wright Brothers first 4 flights at Kitty Hawk. The four pilots picked to fly the airplane are practicing at Ken Hyde's grass airfield with a Wright glider pulled behind a pickup truck. The glider has some lightweight wheels to make it easy to handle on the ground. It is very difficult to control with accuracy. Pitch control is very difficult, and most landings are barely wings level, and in a slideslip. Scott had lots of video, and many of the runs were with him actually flying the glider. He mentioned that in the final clip, what we would see was the use of the first ultra simple ejection seat. Sure enough, you see the 81-year-old Crossfield up about 50 feet in the air, and trying to do gentle bank turns left and right. As he

settles in for landing, he runs out of pitch control, lands a bit nose first, and you can clearly see Scott as he is pitched forward and right out of the airplane!!

Make no mistake, next year will be a year we will remember for all of our aviation lives. The Young Eagles Program will accelerate, and we will rally to complete the goal of flying 1 million kids. Celebrations will take place throughout the year, ending in Kitty Hawk on December 17th. So whether you are strapping in and flying, or watching from a lawn chair, hang on to your hat, because you won't want to miss a minute of it. And remember, as always, don't forget to help your fellow pilot when they need it.

Russ Hilding Video

While interviewing Russ Hilding for the profile which is on our www.eaa55.org website, I learned that he had two videos from 1994 and 1998 of interviews about his wartime experiences flying a B-17, being shot-up over Munich, Germany and bailing out over France. I was able to borrow the original 1994 video from my friend, Ron Springer who did the interview, and had it copied for our Chapter Library. I hope you enjoy it.

Dick Wilke

Steak Fly-In

Several people took time to stop by and say how good the meal was and what a great idea for a fly-in. One individual said, "You are setting a precedent." Perhaps for this area but we know of two others offering Steak-In's – the Chesaning and St. Ignace chapters. Everyone seemed to enjoy themselves and had fun.

A couple of times we got behind the steak-curve but soon caught up. In the future, we would need additional BBQ grilling ability. We could rent a 3' x 6' grill that would hold about 100 steaks, or strengthened is Bill's idea of a permanent or portable grill of our own. Brining in several small grills and having people prepare their own steaks is an unnecessary hassle with people milling around constantly opening and closing the lids, checking. It's a delay in eating not favored by the public. Let them approach the grill and select one to their liking as much as possible with minimum delay.

Once again, we note the efforts above and beyond by two ladies. First, Renee Arntz – late in the game she took charge and brought us up to speed in food menu and buy. Spent a lot of time getting ready. Next, Debbie Groh – she was in there pitching at the Ercoupe Convention and repeated her efforts for this event. With boundless energy, she was a silent blur setting up this arranging that, cleaning, organizing and placing like items that were scattered about. Kept an eye on the food line. We consider Debbie an "Honorary Member". How about making it official, Directors" Ladies, you DO make a difference!

Ted Lakin

Smokin' Stearmans

Bart & Carl

Warbirds

Stearmans

BIG PLANE!

Mason Balloon Festival

Ted and Dave

RV

Mike Arntz