EAA Chapter 100

September 2015 Newsletter

http://eaa100.org

The next Chapter 100 fly-in will be September 12th at the Dodge Center Airport. At about 0900, bring your airplanes and friends. Dwayne Hora is hosting so it's free coffee and rolls until he runs out. Come out and have fun.

September 29th 2015 EAA Chapter 100 Business Meeting Agenda Items

1. EAA HQ read our bylaws and said we need term limits for our officer positions. Please bring your ideas.
2. Young Eagles program committee discussions – who, what, how, when
3. The chapter tool policy. The discussion revolves around deciding who should have access to the tools and how the tools could be controlled. For some members, it does not seem right that someone could make themselves a paid-up member, use the tools and never add anything to the chapter, volunteer to help, attend a meeting or show any interest – except to use the tools. For others, the thought is we should be willing to help those needing specialized tools to work on their projects and to do it as a gesture of our promoting good will and kind-heartedness to other builders even if they are not interested in helping our chapter.
4. Gordy may be able to report on the specialty tools purchased from Al Coborn. At a previous meeting we decided to purchase the tools for up to $500.
5. Report from the hangar committee's review of the hangar policy update.
6. The next business meeting will be Tuesday, September 29th.

Member Directory: The first member directory was published and distributed at the August 2015 picnic.

August Chapter Picnic.

We had a great turnout – but I failed to get a picture of the crowd. Dwayne ordered lots of great food from HyVee and we all had a delightful time. This picture shows Dave Nelson's Velocity (222) which placed 2nd in the Cup race to AirVenture 2015 for his category. The Glasair was built by Phil Conway and won an Outstanding Workmanship award at AirVenture 2015. The Hatz belongs to John and Jeff Hanson which won the highest award – The Gold Lindy for Grand Champion Plans Built at AirVenture 2013.

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EAA Chapter 100 is a nonprofit association involved in the promotion of aviation through adult and youth education, hands-on training, building and maintenance of experimental aircraft, and through community awareness programs.

Reader submissions and comments are strongly encouraged.

Aviation Biography – Joe Connell.

Joe after his 2015 Flight Review – thanks for the ride Joe ☺

As a farm boy living in northwest Iowa, I was fascinated with aviation from the very beginning. I launched cats from the top of our barn using mom's dish towel as their parachutes. Neither mom nor the cats appreciated the adventure! Model airplanes hung from my bedroom ceiling. I would leave the dinner table to identify any airplane that passed over our farm.

When Sputnik was launched on October 4, 1957, I was a college freshman. Several friends and I launched rockets on frozen Storm Lake that winter. My dad later terminated my rocket career when I had a "small" propellant fire in our basement!

To pay for college I scrubbed floors in our county hospital at night. After two years of work, college, courting a girlfriend, mediocre grades, misdirection, and general fatigue, I decided to put college aside and explore military service to get my priorities aligned.

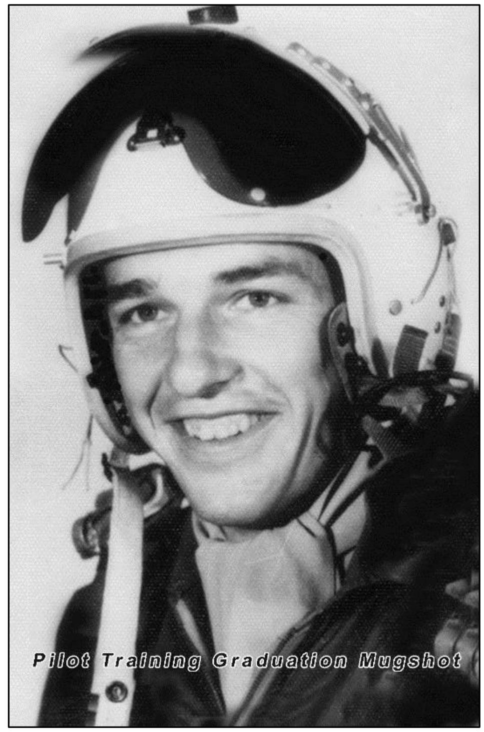
I was informed of the Aviation Cadet program by our Air Force recruiter. Upon completion, I would be commissioned and would receive my wings. Upon completion of all tests, if I passed, I would be assigned to a pilot training class even before I had incurred an obligation to the Air Force. In January, 1960, I joined the Air Force at Offutt AFB in Omaha and flew commercial to Lackland AFB near San Antonio, TX. I was 21 years old; I got airsick on the flight down; and I wondered what I was getting into!

"Pre-flight" was the Air Force version of boot camp. We had a gentle drill sergeant (and that was all he taught us - to march.) The real power structure was our upper class cadets and they relished their assignment. Much of our day was spent in academics: math, geometry, trigonometry, geo-politics, history of the Air Force, Code of Conduct, and much more. The rest was marching, meals, physical training, etc. We were the last class of Aviation Cadets, 61-G. All future pilot training candidates would have college degrees. This would create challenges several years later for promotion considerations.

Three months later I was assigned to Bainbridge Air Base in SE Georgia for primary flight training. Our instructors were civilians. There we flew and soloed in the Beechcraft T-34. After 30 hours in the T-34 we moved into the Cessna T-37s. We began night flying, aerobatics, instrument flying, solo cross-country navigation. We lost a fellow cadet from vertigo while night flying and another, possibly from hypoxia, on a cross country flight. The latter part of our syllabus required us to fly dual with two cadets in a T-37. This eventually led to unauthorized formation flights, dog fights, and other life-challenging escapades. From this I learned an important lesson: NEVER FLY WITH SOME WHO IS BRAVER THAN YOU ARE! After a total of 130 hours at Bainbridge I was assigned to Vance AFB near Enid, OK.

T-34, T-37 and T-33

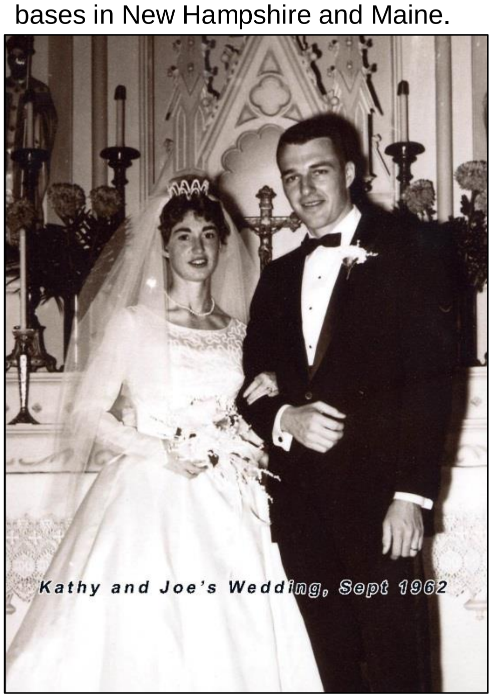
At Vance our instructors were Air Force and our aircraft was the Lockheed T-33. I really enjoyed the plane. We moved heavily into instrument flying, formation, aerobatics with emphasis on precision and standardization. After 130 more hours of flight time and 50 hours of simulator I graduated and was commissioned in June 1961. Aircraft choices for me were F-102s, KC-97s, B-47s, C-130s, C-124s, a C-119(!), and helicopters. A handful of F-100 slots went immediately. The majority of assignments were in SAC. That meant a lot of alert duty – the same for F-102s. The rest of the aircraft were heavy haulers. My instructor went ballistic when I selected helicopters!



Pilot Training Graduation Mugshot

I had 3 weeks of survival school at Stead AFB near Reno before starting helicopters. Helicopter school was also at Stead. We flew H-19s and H-21s for about 5 months. It was a different kind of flying: no trim, no hands-off flying, motorcycle type throttle, heavy constant use of rudder pedals, a lot of concentration. The first approaches seem very steep and it was alarming to see the airspeed fall to almost nothing on the approach and yet not fall out of the sky. It seemed to violate everything I had previously learned. In time it became easier and automatic. Reno altitude is close to 5,000 feet. We did a lot of mountain flying around 8,000 feet. Performance was marginal and we flew with half loads of fuel during the summer.

I took 30 days leave after completing helicopter training in February 1962. During my Air Force time I had gained a pen-pal. Kathy was a college classmate of my sister Jean. Kathy had been writing me daily for most of two years. During that time Jean married and Kathy came to the wedding and met my parents. During leave I drove from IA to eastern IL where Kathy was teaching. On the way through her home town I met her parents. We had met each other's parents but not each other! Ten days after I finally met Kathy she asked when I was going to ask her to marry me! We married in September 1962. We lived on Air Force bases in New Hampshire and Maine.



Kathy and Joe's Wedding, Sept 1962

During this time I cross trained into HH-43B helicopters for search and rescue coverage in the regional area. Three weeks after our marriage the Cuban Missile Crisis loomed. I was confined to base, Kathy was isolated to our apartment off base, and our helicopters were scheduled to be positioned in southern Florida. After 3 weeks everything settled down.

Our daughter Carolyn was born in November 1963.

Rescue activity was busy in Maine. My crew rescued an F-106 pilot from his burning plane after his ejection set failed. We performed numerous rescues of fisherman and hunters in the area – some in winter.

FSK Sling Load


Practice Crew Extraction


Jungle Extraction

The Gulf of Tonkin Incident occurred in August 1964. Kathy was now pregnant with our second child. In early September I was alerted for a combat search and rescue assignment in Vietnam. Two weeks were spent in Panama for Jungle Survival School. Kathy and Carolyn returned to Iowa to live with her parents.

I spent a month in Reno as we formed two detachments for deployment. One afternoon was spent firing a 38 revolver on the firing range. We were able to get about 10 hours in the HH-43F which we would be flying in Vietnam. It had a bigger engine, a bit of armor plating around critical areas, a 200 feet hoist cable for deep jungles, and self-sealing tanks. In late October our detachments boarded a C-130. We flew to Travis AFB in California, to Hawaii, Wake Island, and Clark AFB in the Philippines. Following 2 days of briefings, we flew into Bien Hoa, South Vietnam, about 30 miles NE of Saigon. Our sister detachment was assigned to Da Nang, South Vietnam, near the Demilitarized Zone separating the two Vietnams.

We replaced 2 H-43B crews that had been there on temporary duty (TDY) since the Gulf of Tonkin Incident. The first few days were spent receiving and assembling our 3 HH-43Fs followed by several training and area orientation flights. Extensive briefings covered recovery procedures, remote fuel sites, operational frequencies, call signs, personal equipment and authentication codes, and all of necessary information to become operational.

Five days after we arrived our base was heavily mortared. Four service men were killed, 72 injured, 18 aircraft were either destroyed or damaged including 1 of the TDY HH-43Bs. I found myself “defending” a concertina wire barrier with a 38 revolver while dressed only in my underwear. We were subsequently issued M-16 rifles.

Our base has about 2 dozen B-57s, large number of A-1Es and A-1Hs, a dozen or so O-1s, many UH-1B gunships and UH-1D transports ("slicks"), and a U-2. During my year just about every kind of transient aircraft landed at the base.

Our major mission was local base rescue for battle damaged aircraft. We could attach a 1,000 pound fire suppression kit (FSK) on a sling under the helicopter; transport it the scene of a crash; off load the FSK along with 2 crewmen trained as firefighters; foam a path to the cockpit; extricate the crew; and transport them to medical facilities. Helicopter rotor wash would knock down, cool, and suppress flames. A normal response time to start the helicopter, hover to and attach the sling load, and depart to the crash site or enter orbit off the end of the runway was around 90 seconds. On one day one of our crews responded to 12 aircraft emergencies in 24 hour period. Hung ordnance was our greatest concern. It was heart-stopping to see a bomb or napalm depart the aircraft and tumble down the runway while we were intercepting the aircraft.

Our helicopters were one of the few equipped with hoists in Vietnam. We covered the majority of rescue missions (either aircrew members or troops on the ground) in jungle areas. On a number of occasions ground troops used explosives to blow holes in the jungle canopy for facilitate hoist operations. In one instance we were able to descend directly to the jungle floor with our helicopters. We later carried chain saw as part of our equipment.

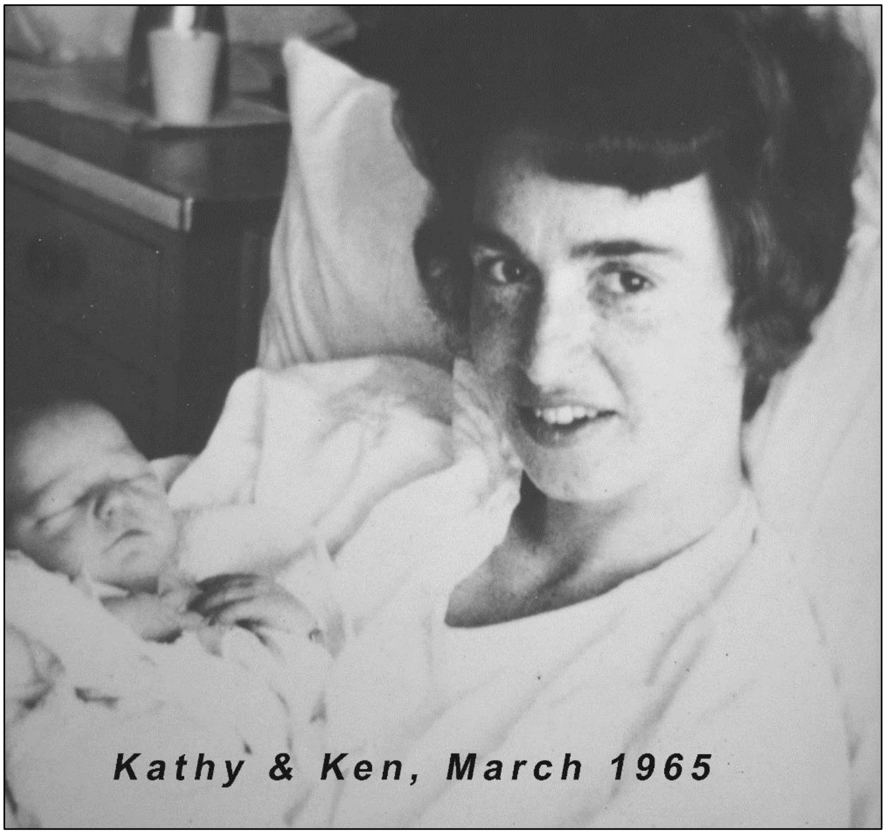
With exception of providing direct rescue coverage for scheduled Agent Orange spray missions (Operation Ranch Hand) few of our missions were scheduled or predictable. We had numerous medevac and search missions where the downed pilot had radio contact. Our helicopters had about a 75 mile range depending upon configuration, loiter time, and hover time. As such, we knew the location of available fuel from the Mekong Delta to the Central Highlands. I don't recall any missions exceeding 100 miles although low fuel lights were a common occurrence!

During my tour, all of our missions were in-country. We would launch immediately and draw on local airborne resources for ground fire suppression, usually A-1s, Huey gunships or a combination of both. To this day I can recognize the sound of an Army Huey helicopters and I'm flooded with memories. The sound of the emergency locator beacon during the yearly ELT check still affects me. Our mission call sign was "Pedro". It is still used on combat search and rescue missions today in the Middle East.

We maintained 2 of our 3 helicopters on an immediate launch status. We stationed 2 crews 24 hours a day housed in a sand-bagged trailer immediately near the helicopters. A 3rd crew was 5 minute standby.

In event of an off base mission, the 3rd helicopter assumed an immediate launch posture. One of our crewmen in each helicopter was a Pararescue Specialist – SCUBA, EMT, and parachute trained.

Our son Ken was born in late March of 1965. He was 7 months old before I saw him for the first time. Mail took 5 days to reach home. Kathy and I wrote daily – even if it was just an "I'm OK" note. This was particularly true if a major newsworthy incident happened on base or around Saigon.


Kathy & Ken, March 1965

On May 16th 1965 there was a major explosion on the flight line. There were 27 fatalities, 14 aircraft destroyed, countless aircraft damaged including 1 of our helicopters. Apparently a delayed-action 500 pound bomb detonated prematurely. We were heavily involved in medical evacuations.


Bien Hoa Flightline Explosion, May 1965

HH-43Fs were also used for combat search and rescue in North Vietnam. The helicopters were staged from sites near the Demilitarized Zone, from border bases in Thailand and from several "Lima Sites" in Laos. Its short range, wooden rotor blades, and lack of defensive weapons lead to the deployment of HH-3E in 1965 and HH-53 "Jolly Green Giants" somewhat later. These twin-turbine helicopters featured air-to-air refueling with HC-130s, extensive range, and defensive weapons.

I returned home in October 1965 after a year in Vietnam and 459 missions. I was assigned detachment commander of a helicopter unit in West Texas. During this time our unit covered numerous emergencies including a flash flood in eastern New Mexico, a T-38 crash, a C-130 crash, and an SR-71 crash near Tucumcari, NM. In the following year I separated from the Air Force and joined IBM in Texas as a field engineer then moved to marketing. My career with IBM spanned 34 years in Texas, Iowa, and in Minnesota. During these years Julie, Jim, and Sharon increased our happy household. Kathy died of cancer in 1994. Sometime later Jan entered my life and I have been forever blessed by her gentleness and love.

In the 1990s I built a Kitfox-II, and upon retirement, Jan and I built an RV-9A. While I like to fly, I am passionate about anything dealing with aircraft, their history, and their construction.

Here are links to a couple soundbites and a video clip Joe sent along. Emergency locator beacon sound, Helicopter start up sound, video clip of HH-43F counter rotating blades.

Joe's Wife, Jan, playing the Rosie the Riveter on their RV-9A

RV-9A, N95JJ (John Hanson and Dick Fechter having fun with Joe's Girl)

Cancer – Most of you know I've been fighting cancer for about a year now and no third class medical for just as long. I have a couple words of advice. If you want to build an airplane so you can fly it – don't put it off, move it up on your priority list. If you ever produce black poop see your doctor no matter how great you feel. Watch and heed the information in this link:

Oct. 1 end date for 'Flight Watch' frequency 122.0
August 18, 2015
By Dan Namowitz

AOPA is reminding members that the FAA will discontinue the universal Flight Watch frequency 122.0 MHz for in-flight weather services on Oct. 1. Weather services provided under the Flight Watch program En route Flight Advisory Service (EFAS) will continue to be provided via charted frequencies pilots use to obtain weather information, open and close flight plans, and for updates on notams and temporary flight restrictions (TFRs). Pilots also may continue to use the universal frequency 122.2 MHz, the FAA said.

The FAA also will end the little-used Remote Airport Advisory Service in the continental United States on Oct. 1.

The changes come as pilots transition "from traditional Flight Service assistance to more automated and web-based tools to obtain services. Through the use of updated technology Flight Service is taking the opportunity to eliminate redundancies and underutilized services," the FAA informed pilots in a message on its website.

Providing the weather services on local flight service frequencies will resolve issues of bleed-over and frequency congestion that have occurred on 122.0 MHz. Another advantage of the change will be the availability of the services on Flight Service frequencies monitored 24 hours a day, seven days a week, as opposed to the limited monitoring of 122.0 MHz, said Rune Duke, AOPA director of government affairs for airspace and air traffic.

AOPA has worked with the FAA to make pilots aware that the frequency 122.0 MHz will be decommissioned, and is working to assure pilots that the in-flight weather services will continue to be provided on other frequencies.

After Oct. 1, the FAA will continue to monitor 122.0 MHz for several months to assist pilots in locating a local frequency, the agency said.

The Remote Airport Advisory Service to be ended affects 19 airports, and is provided remotely by Flight Service personnel. The FAA has cited a substantial decrease in demand for the service now that many of the airports have been equipped with automated weather and air traffic control.

The FAA will issue notams for each airport at which the service will be discontinued, and will update flight information publications during regular publication cycles.

Pilot Insights – Who's Flying?

Tell me if this situation sounds familiar: You are flying with a friend in her aircraft. All is well until you set up for landing and hear ATIS is calling for some strong gusty crosswinds. Although you have more total flight time than your friend, she has a lot more experience in this particular plane. Not dissuaded by the rough winds, your friend executes a safe, albeit scary landing. After exiting the runway, you each say, "I never would have done that if I was by myself, but I figured you knew what you were doing."

Or maybe you can identify with this situation: During a flight with your buddy in the left seat, you notice that he seems engrossed in his iPad. You then realize that the plane has wandered off course and altitude a bit, so you nudge it back to wings-level. Your partner notices your action, but does not say anything. After a while, you again notice the aircraft veer off course, and you correct it a second time. A few minutes later, Center asks if you are on your requested heading and altitude, since you seem to be straying from your intended flight path and are no longer at your hemispheric altitude. After a bit of embarrassed radio conversation, the airplane is back on desired heading and altitude. The two of you then look at each other and simultaneously say, "I thought *you* were flying!"

These two situations highlight the importance of determining who's really in charge during a flight. Let's start by reviewing some common misconceptions about pilot in command (PIC) time. Title 14 Code of Federal Regulations (14 CFR) section 1.1defines Pilot in Command, while section 61.51 describes who can log PIC time. According to 14 CFR section 1.1:

Pilot in command means the person who:
(1) Has final authority and responsibility for the operation and safety of the flight;
(2) Has been designated as pilot in command before or during the flight; and
(3) Holds the appropriate category, class, and type rating, if appropriate, for the conduct of the flight.

Note that nothing in this definition relates to actually manipulating the controls.

14 CFR section 61.51, on the other hand, deals with logging PIC time, and it states in part, that a person can log PIC time:

(e) (i) When the pilot is the sole manipulator of the controls of an aircraft for which the pilot is rated, or has sport pilot privileges for that category and class of aircraft, if the aircraft class rating is appropriate…

So, there is a bit of conflict between who logs PIC time, and who acts as PIC. For the purpose of this discussion, I want to concentrate on "who's in charge here?"

In both of these situations, we need to address who has "the final authority" and who has been "designated as PIC." I often think that when two pilots fly together, the topic does not come up because one or both pilots may feel embarrassed or intimidated to mention it. After all, the PIC is the person responsible to the FAA and the insurance company if something goes wrong. And secondly, when declaring who is PIC, you are agreeing that in an emergency, that person will be telling the other what to do. Hmm. That could be touchy.

Here is how I handle that. Whether I am flying with a friend I know well, or with someone I just met, we agree — on the ground — who will be in command. In our pre-flight briefing, we agree on our destination and what we plan to do while enroute. And of course we agree on who is PIC.

Then there is the question of who is actually in charge of manipulating the controls: PIC, or the non-PIC. Obviously, the person who is actually flying needs to be qualified to do so, but again, both of you need to agree on this. A conversation such as this can provide a simple solution:
"Would you take the plane for a minute?"
"Sure. I've got it."
"Right. You have the plane."

Then, when you are ready to take the plane back:
"OK, I've got the plane again."
"Roger, you have the plane"
"I have it."

A little communication goes a long way in preventing that, "Oh, I thought *you* were flying*"* situation.

From Pilot Workshops .com,
Pilot's Tip of the Week
Engine Failure on Takeoff
Featuring Tom Turner
Subscriber question:

"Engine failure on takeoff - what is the minimum altitude you need to even consider turning back?" - Pete B.

"Many years ago I taught Beechcraft Bonanza simulator training at the Beech factory airport in Wichita. Engine failure immediately after takeoff provides the least margin and the greatest chance for disastrous results, so it received special emphasis. Simulators provide the only opportunity to practice this emergency safely.

In the preflight briefing I would ask my student what he or she felt was the lowest altitude at which the engine would quit and the pilot could make it back to the runway. The most common answer I'd get was 800 feet above ground level. So I'd tell my student that's exactly what we'd do. With plenty of warning the engine would quit at 800 AGL. The pilot then had to bank to 45 degrees at the best-glide pitch attitude, while simultaneously pulling the controllable-pitch propeller control to the low rpm position to attain maximum glide performance. In four years or presenting this scenario I don't recall a single pilot successfully making it back to the runway from 800 feet above ground level the first time he or she tried—even when knowing beforehand exactly when the engine failure would occur.

Next we'd try it from 1000 feet AGL. Again, the pilot knew exactly when the engine would quit. He or she would also have just practiced the procedure. A few pilots would make it back to the runway from 1000 feet AGL, with advance warning and very recent practice. But most still could not.

What I found was that most pilots could make it back to the runway if the engine quit at 1200 feet above ground level, but only after two practice attempts immediately before the successful turn back, and only with precise knowledge of when the engine would quit.

We'd then try it from 1500 feet AGL. On an average-length runway in calm winds, pilots could easily get the airplane turned around and aligned with the runway from this height, but in most cases they were too far away from the runway to glide all the way back to the pavement.

Then, I added a little realism to the exercise. To account for the element of surprise, I'd set the pilot up for a fifth takeoff, telling him or her the engine would quit at 1200 feet AGL. I told the pilot, however, to hold attitude straight ahead for five seconds to simulate the time it takes to recognize the problem, choose a response, and initiate corrective action. With this simulation of surprise, almost no one in four years made it back to the runway...even though they had significant recent experience practicing the turn back maneuver.

What can we learn from this experience? There is really no option of turning back to the runway if an engine quits shortly after takeoff. It may be possible to make a slight turn to the left or right for the best landing option. But the standard guidance is correct: if an engine quits on takeoff, keep the wings level and land straight ahead."

Video Link - [Top 6 reasons to build an Experimental Airplane]

Video Link - [Spirit Of Flight Thrives At Mojave]

Rhapsody In Yellow (Not)

From AVweb By [Paul Bertorelli] **|** August 30, 2015

I get a certain perverse pleasure out of fishing for stupidity and not to make light of my fellow aviators' misfortunes, the Grand Banks of stupidity is found in the NTSB accident database. Here, you will find a vast and ever varied trove of trained, government-certified airmen enlisting the aid of perfectly serviceable airplanes to commit appalling acts of incompetence.

Some of these are truly 10^{-9} random events that no one could have avoided, but just as many are palm-slap-to-forehead triple gainers into an empty pool. That suggests there really ought to be a check box on the NTSB 830 form that says "What The ^%& Was I Thinking?" The honest and self-aware among us should admit that in a long flying career, we've come perilously close to our own entry in the Darwin sweepstakes once or twice. Maybe more. I certainly know I have and, unfortunately, quite recently. And not for a reason I would have ever imagined possible. On any metric of stupid acts, the guys who let an airplane they're propping get away from them are your 90th percentile in brain numbness. How hard is it to keep this from happening, right? Yet it happened to me and I'm still not certain why. On to the gory details.

Propping is an act that tempts fate in the way that dancing on thin ice or squirting lighter fluid on smoldering charcoal does. I have a love-hate relationship with the process. I love it because it means I'm about to fly an airplane reduced to its most basic elements; no farting around with master switches, batteries, lights, glass gizmos and all the other peripherals that don't relate to just flying. I hate it because as much as I realize the previous sentence is utter bulls&^t, no matter how careful you are, propping is flat out dangerous for reasons I needn't enumerate.

I am, therefore, obsessively careful when propping. I double chock the wheels, tie down the tail and I'm acutely aware of throttle and switch position before I touch the prop. And as a crusty old instructor whose name I have forgotten taught me 40 years ago, I always assume the mags are hot. And I never, *ever* pull the prop through to clear the cylinders with the throttle wide open, whether the switch is hot or off, whether it's tied down or with someone in the airplane. I'd rather let it sit until the next day than take that risk. Last, if I have a choice, I don't use the self-serve pumps so I can avoid at least one start cycle. I call the fuel truck or use the gas cans in the hangar. Like an extra $1.60 on a fill-up isn't worth avoiding propping a hot engine?

Yet when you fly an old airplane like our Cub and you fly alone, you make certain compromises. You can't, contrary to what's wisely recommended, have an experienced hand in the cockpit to handle the switch and throttle. That means you have to reposition the prop with the mags hot between swings or else do a hell of a lot of walking. No one I know does that. Where to stand when propping is negotiable. I like to stand in front because that's what I learned and my swing through ends with a vigorous backwards step. Some people like to prop from the rear, standing between the strut and prop; others stand to one side. Whatever works. It's a comfort-level thing that I don't think matters much in the absolute.

All airplanes have a propping personality of sorts and all are probably different. Our Cub, with a 75-hp Continental conversion, likes two shots of prime and three pull throughs with the switch off. Then it will start on the second or third blade when the switch goes hot. A cracked throttle gives it a brisk enough idle to run with a will. But the day it got away, it didn't behave that way. Ten blades into the effort, not even a pop. Odd.

Switch off, another shot of prime and a couple of pull throughs. Switch back on, throttle cracked and it fired on the first blade. Then came the surprise. After a shaking, snorting idle, it roared to, if not full power, pretty close to it. No risk to me, I was 10 feet away and to one side. But the Cub jumped the chocks and headed straight for the shade hangars across the alley for a line of new sun hangars. Would have made it, too, but the tail tie did its job and stopped it cold, but not without pulling the hangar door off its track, which is how the tie was secured. By the time I got around to snap the throttle back to idle, it was already at near idle. WTF? (And by the way, I know the trick of turning the fuel off for starting; wouldn't have made a difference here.)

I ran this scenario by a couple of friends, both of whom suggested the extra shot of prime may have caused this. But that's not possible. Engines need fuel *and* air to generate power and one without the other generates nothing. In other words, to roar up to near full power, the throttle had to be open or at least more than cracked. How it got that way, I haven't a clue. Just as I always do, after the prime, I pushed it back to the closed stop, then cracked it off the stop. I know I didn't intentionally advance the throttle beyond that, but it sure as hell got advanced somehow. I was the only mook on the ramp.

The reason it jumped the chocks is that we have several pairs; a jet-sized pair normally used for starting and a smaller set that goes in the baggage compartment. That set was missing, so I used another small set in the hangar because I knew I'd need them for starting at the field where I was planning some photography and wanted to take them with me. Those chocks, clearly too small, went to the scrap heap and I replaced them with a pair suitable for securing an F-18 at takeoff thrust. These consume the *entire* baggage compartment, but desperate times call for desperate measures. Also, returning home with unsoiled underwear has a price that might include no room in your already minimal baggage compartment.

Other than the bigger chocks, I haven't changed anything about how I prop the airplane much. I can't be any more careful with the throttle and switch because prior to this fiasco, I was being as consciously careful as I knew how. One small change, I guess. I discovered that the engine will start with the throttle fully closed. It kicks over in a clanky idle that keeps the impulse coupling banging away, but it runs and it's altogether less frantic.

Summing all this up, more good than bad came of it. We got a set of ass-kicking chocks and the hangar door, which used to be slightly off kilter and stiff to operate, now works better than ever. Best of all, thanks to a presciently placed length of ¾-inch Dacron, I avoided becoming just another hapless mullet in the NTSB's remorseless list of idiocy. Close may count only in horseshoes and hand grenades, but I'm gonna go with this: It counts in propping, too.

Here's another great article from AVweb
Long engine life begins with a good start.
By Dave Prizio **|** August 6, 2015

The first time you start the engine on your airplane, you should be really close to completion. Not 90% done and 90% to-go close, but really, really close. This is because you will be removing the preservative measures that should have been in place all through the construction process, and you will now expose your engine to the corrosive elements of the atmosphere. You are now moving from not worrying about engine maintenance to being concerned about its regular use to maintain it in a relatively corrosion-free state. There is no point in doing this too soon. Ideally, your first engine start should occur no more than one month before your first flight.

Un-preserving the Engine

Your engine should have been preserved, either by the factory or your engine builder. If you got the engine as a factory-new engine from your kit manufacturer, it arrived at your door in a properly preserved state. In fact, no matter who you got it from, it should have been properly preserved. During construction certain parts were no doubt opened up to install the carburetor or fuel injection and the exhaust system, but after they were installed, they should have been sealed up again wherever possible. Now is the time to remove all of that.

Place a one-gallon plastic food storage bag over your oil filter before you remove it to catch oil that drips out once the filter is unscrewed.

The first step is to drain the preservative oil from the sump. Make sure your drain bucket can hold at least two gallons, so it won't overflow. Recycle the drained oil at an approved disposal site, one of which can be found at most airports. Remove and replace the oil filter, too, since it will be filled with preservative oil. Now is a great time to install a quick drain in the oil sump. That will make future oil changes much easier and eliminate the risk of cross-threading the drain plug when you insert it back into its hole. All of the popular aircraft supply vendors sell quick-drain devices. And don't forget to safety wire the quick drain and the filter after installing them.

Next remove all the desiccant plugs from the spark plug holes. Since there may be oil in the cylinders, be sure to have a drain pan in position to catch the dripping oil. With the plugs removed, turn the engine over a few times by hand to push out all the oil. Do not install new plugs yet.

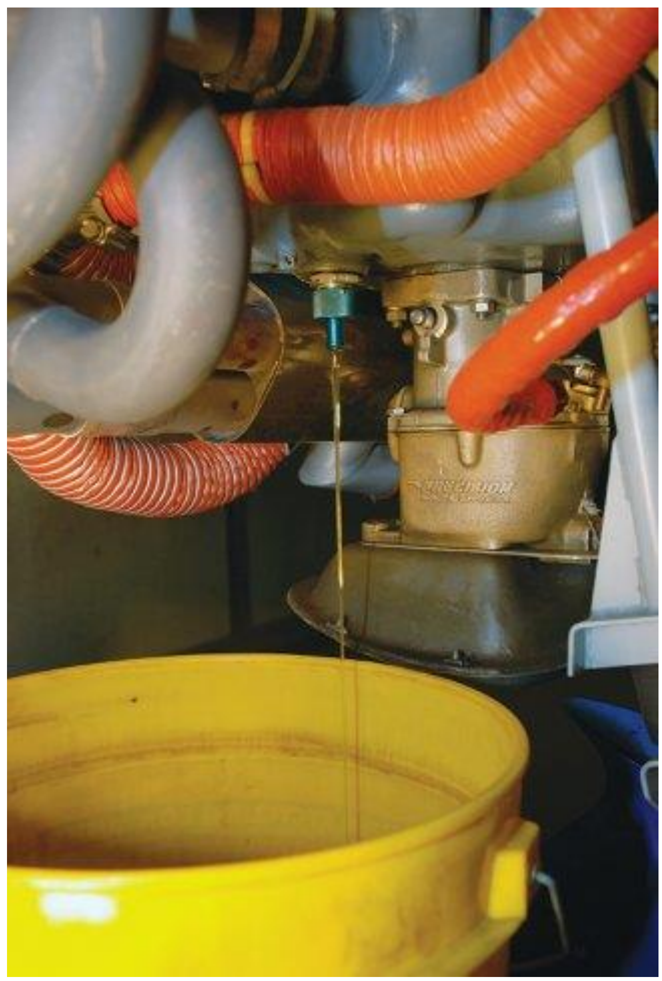
Install a quick drain for your oil when you remove the preservative oil. You will save yourself a lot of mess and frustration with this one simple accessory.

Pre-oiling the Engine

Prior to starting a new or overhauled engine, or an engine that has been out of service for some time, it is important to make sure oil is flowing throughout the engine. This process is called pre-oiling and is addressed by Lycoming in Service Instruction No. 1241C, which is available on the Lycoming web site. Other engine manufacturers should have similar information available for you.

For Rotax engines, it is imperative that you follow the instructions in the Rotax Installation Manual (available online), because of the very different, dry-sump oil systems used in these engines. These engines do not use traditional aviation oil, and they require a different pre-oiling procedure. Although many of the first-start steps are the same as they are for a Lycoming engine, many are not. No attempt should be made to run a Rotax engine for the first time without a thorough review of the factory-recommended procedures.

Drain your oil after the first test run, and be sure to dispose of it properly.



With the preservative oil drained out and a new filter and quick-drain in place, put in the recommended amount of mineral oil. Do not use ashless dispersant oil for breaking in non-turbocharged Lycoming engines, except 76 series engines such as the O-320-H2AD or O-360-E series. Mineral oil is now available in straight 50W or 20W-50 multi-viscosity oil. AeroShell Grade 100 Mineral Oil is a straight SAE 50 oil, and is popular among aviators for engine break-in. Phillips makes Type M 20W-50 aviation oil that can be used for engine break-in if lower temperatures are expected during that time period. AeroShell also now has a multi-viscosity mineral oil available for break-in purposes. As a general rule, straight 50 weight oil is best used in temperatures of 60˚F or above, whereas 20W-50 is suitable for temperatures down to 0˚ F. Fill the oil cooler at this time and disconnect the oil cooler return hose where it connects to the engine near the top of the accessory case. Make sure the crankcase vent line is installed and clear of any obstructions.

Phillips Type M 20W-50 or AeroShell Grade 100 mineral oil are popular choices for engine break-in.

Be sure that all tape, rags, temporary seals, and desiccants have been removed from the intake and exhaust systems. Make sure that everything firewall forward is secure, including such things as engine mounts, propeller bolts, wires, hoses, SCAT ducting and so on. Nothing should be loose or hanging. Verify that the mixture control will bring the carburetor or fuel injection to the full idle cut-off position. Make sure the full arc of the propeller and the surrounding area is clear of all people and other obstructions. With the airplane secure, the brakes set, the master switch on and the spark plugs out of the engine, turn the engine over with the starter until you see an indication of oil pressure. This should not take more than 10 to 15 seconds. Once you see steady oil pressure, stop cranking and let the starter cool off. After a brief cooling period you can crank the engine over for another 15 seconds to be sure you have steady oil pressure.

If you are unsure if your airplane's oil pressure gauge is working, you can temporarily install a mechanical gauge, readily available from an auto parts store.

If pressure is intermittent, you may have air in an oil line somewhere. Disconnect the oil cooler return line and check for steady flow by cranking for not more than 15 seconds. Steady flow should appear quickly if there is sufficient oil in the engine. Avoid overheating the starter by excessive cranking. If there is no indication of oil pressure after a total of 60 seconds of cranking—in 10 to 15 second increments—stop turning the engine over and check these items:

• Make sure there is oil in the engine.

• Make sure all oil lines are secure and not leaking.

• Make sure you have connected the oil pressure sender to a suitable point on the engine where pressurized oil is available.

• Check the wiring to the oil pressure sender and the oil pressure gauge or engine management system.

• Make sure that the engine ground wire or strap is in place and secure. Note: Some engine sensors are sensitive to good grounding and may require a dedicated wire from the engine management system to the engine, especially if you are using the airframe for your ground conductor.

• Check to be sure that the parameters for the oil pressure sender you are using are properly programmed into the engine management system.

• Check to make sure there is no obstruction in the oil line from the engine to the remotely mounted oil pressure sender.

If all of these items check out, you must now determine whether the engine is not making oil pressure or the oil pressure gauge is just not reading properly. One way to do this is to get a mechanical oil pressure gauge from an auto parts store and connect it to the engine. Turn the engine over again as before and see what happens. If the gauge works, you have a sender or engine management system problem. Refer to the manufacturer's literature for troubleshooting suggestions. If the mechanical gauge does not indicate oil pressure, you have an engine problem. That means you need to contact whoever sold you the engine and ask for help. If you put it together yourself, you are hopefully competent enough to also do your own troubleshooting. If not, get some professional help. If you are working with a used engine that you have not previously run, you may be about to get a nasty surprise, but hopefully not. Find a good mechanic and have him work with you to determine the problem with your engine.

In all likelihood, the pre-oiling process went well and you are ready to move to the next step. Check the engine oil level to be sure you still have sufficient oil, install the spark plugs, and prepare the airplane for its first engine start. Of course, spark plugs should be properly installed by using new gaskets, anti-seize compound on the threads, and torqued to the manufacturer's recommended value—usually 35 foot-pounds for Lycoming engines.

One last point: Do not run the engine without the propeller in place. The engine needs to have a load on it to function properly, and damage to internal components can result if you run the engine without a prop. Besides that, there is nothing to secure the starter ring gear to the crankshaft if there is no prop installed.

Engine Start and Break-in

Proper break-in is vital to a long and trouble-free life of any engine. Considering the substantial investment you have in your engine, it is important to take your time and do things correctly. Lycoming covers this procedure in Service Instruction No. 1427C, which is available online. The main points of that publication are covered below, but consult this publication for the full description of the engine start and break-in procedure.

If you have a new or factory-overhauled Lycoming engine, your engine has already been run in a test cell prior to delivery to you. If your engine has been assembled, overhauled, or top overhauled by someone who does not have a test cell, then you will need to do the initial run-in. Here are the steps:

• Make sure the engine is completely assembled with all baffling and inter-cylinder baffles in place. This includes all engine-related parts necessary for flight such as the complete exhaust system, oil cooler, propeller (and governor, if applicable) and all engine controls. Do not run the engine without these parts in place.

• Make sure all engine sensors are properly installed and working. This includes programming the engine management system for the sensors used and setting up the various limits for each engine parameter being monitored.

• Pre-oil the engine as per Lycoming Service Instruction No. 1241C or other manufacturer's recommendation.

• Install the engine cowling.

• Secure a fully-charged fire extinguisher for the engine test. It should be rated for gasoline fires.

• Locate the airplane outdoors in a safe and secure area, chock the wheels and turn it into the wind.

• Make sure the propeller area is clear, and start the engine. Look for oil pressure within 30 seconds. Stop the engine if oil pressure does not come up, and determine what is wrong before continuing.

• If a fire starts during the starting procedure, keep cranking the engine in an attempt to draw the fire into the engine. If fire continues, turn off the engine, shut off the fuel, and extinguish the flames with a fire extinguisher.

• If adequate oil pressure is noted, run the engine at 1000 RPM until the oil temperature stabilizes or reaches 140˚ F.

• Perform a magneto check or ignition system check as appropriate for your engine installation.

After your first engine run, remove the sump screen to be sure there is no debris present. The safety wire has already been removed from this sump-screen plug. Be sure to replace the safety wire when you reinstall the plug.

• Continue running the engine for 15 minutes at 1000 to 1200 rpm. Monitor engine temperatures and shut the engine down if necessary to keep temperatures within limits. If any malfunctions are noted, correct them before proceeding. Engine oil temperature should not exceed 210˚ F, and cylinder head temperatures should not exceed 420˚ F.

• Run the engine a second time for five minutes at 1500 rpm and cycle the propeller if applicable. Conclude this test by running the engine at full power for 10 seconds. Be sure the airplane and the surrounding area are secure before doing so.

• Check the engine for leaks, remove the oil sump screen and check it for debris. Remove and inspect the oil filter. If everything is clear, the engine is ready for flight testing.

First Flight Preparation

Your first flight should not be conducted until a number of important steps have been completed. It is not the intent of this article to present a comprehensive list of things involved in a first flight. That is best worked out with an EAA Flight Advisor and yourself, taking the particular features of your airplane and your airport into consideration. But here are some key points to consider:

• All FAA paperwork, including the issuance of an airworthiness certificate, must be complete before any flight testing. That includes so-called high-speed taxi testing, which does occasionally acciden- tally turn into a first flight.

• The entire airplane should be carefully inspected, including a thorough preflight inspection, prior to any flight.

• Make a plan for the first flight with the help of an EAA Flight Advisor. Due consideration must be given to emergency plans in case of an engine failure at any point in the first flight. Do not make the first flight yourself if you have any doubts about your ability to execute any part of the first flight plan.

• Be sure your first flight plans conform to the Phase I Flight Test restrictions listed in your Operating Limitations.

Be sure to check the engine compartment for leaks or other problems after the first engine run and after each test flight.

• Make sure your insurance coverage is in effect and that the proposed first flight pilot is named on the policy.

• Notify ATC and/or the airport manager, depending on your local airport situation, of your intention to conduct a first flight.

First Flight

From an engine perspective, these are the things you need to think about on that first flight:

• Start your engine and perform a thorough run-up.

• Do not apply takeoff power until oil temperature has reached 100˚ F.

• Take off at full power, closely monitoring oil pressure and temperature, cylinder head temperature, and fuel flow. Be prepared to execute your emergency plan if there are any problems.

• Climb at Vy to pattern altitude, then at cruise climb airspeed to flight test altitude, carefully monitoring temperatures.

• Reduce power to 75% power and conduct first flight tests as per your plan.

• Return to airport and conduct a thorough inspection of the engine and related systems.

• On the second flight, cruise for one hour at 75% power and then for a second hour varying power between 65 and 75%.

• Finally fly at maximum power for 30 minutes if the airplane is performing within expected parameters.

• Avoid low manifold pressure at high RPM. Descend at low cruise power. Avoid rapid descents, especially at low power settings.

The sump screen should be checked after your first test run and at least annually when you change oil after that.

• Remove engine oil, oil sump screen, and oil filter to check for contaminants.

• Refill with mineral oil and resume flying at 65 to 75% power until break-in is complete.

• Change to ashless dispersant oil at 50 hours or when oil consumption stabilizes, whichever occurs first.

• After your first flight, be sure to log the date and any notable particulars in your engine and airframe logbooks.

Phase I Flight Test Period

Phase I testing is more than just flying off the time—it involves testing the aircraft's stability and control, performance, and systems. From an engine perspective, here are the things you need to remember:

• Make a log of power settings and fuel flows at various speeds and altitudes. This information will be added to your Pilot Operating Handbook later.

• Note temperatures in various configurations and make adjustments to the engine cowling and baffles to produce the best possible results. Inspect the engine compartment frequently to detect any problems that may develop.

• Note any repairs or modifications made to your engine in the engine logbook.

• Note the successful completion of the Phase I Flight Test period in the airplane logbook.

These recommendations are targeted specifically at Lycoming engines, because that is the brand of engine most commonly found in Experimental/Amateur-Built airplanes. If you are using another brand of engine, be sure to familiarize yourself with the installation and operating recommendations of that engine's manufacturer. If their recommendations are different than those described here, by all means follow your engine manufacturer's recommendations. However, some general principles apply to all engines. Minimize ground running time on a new engine and fly at higher power settings during the break-in period. Babying a new engine will impede the break-in process. Take whatever steps are necessary to keep temperatures under control. Excessive heat is the enemy of long engine life. And last, don't forget that your first job is to fly the airplane. Look outside for traffic and keep things under control. It is easy to get your head buried in the instruments during the flight test period. Use the data recording function of your engine management system, if you have it available.

If you have done a good job preparing yourself and your airplane, your first flight should go smoothly.

Once your Phase I Flight Test period is complete and you have made the appropriate logbook entry, you are free to explore the world in your new airplane, always subject to the airplane's Operating Limitations, of course. Remember to change your engine oil every 50 hours or four months, whichever occurs first. If you do not have an oil filter, that should be shortened to every 25 hours. With good maintenance and good flying habits, your engine should provide you with many years of safe and fun flying. Now go fly somewhere!

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You know you are getting old when you dread the physical more than the check ride.

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