

FARM Newsletter

AMA Charter 1654

February 2022

SAFETY OFFICER'S CORNER

Gordon Collyer



Welcome to February! If you are like me, you've hibernated enough and are again looking at the aviation weather forecasts, anticipating the return of another flying season. Just a reminder, take time to inspect each plane that you are pulling out of storage. Look for those loose things, worn or damaged items that were overlooked after last year's last flight or put on the winter "should fix" list and forgotten.

This is my first time on the F.A.R.M newsletter, so if we haven't met, I began modeling in middle school, 55 years ago, building as we all did then control-line and freeflight models. I worked my way up to a failed, first RC plane before a brief 42 year interruption for college, army, family, and career, returning to RC flying in 2008.

Some recent discussion at CMB about accidents and medical emergencies, along with my assignment this year as your safety officer lead me to one of my hot buttons: electric motor safety inhibits. As a past target of a runaway "40" class electric RC plane I tend to take an interest in the topic. So bear with me.

To paraphrase Forest Gump, here is what I think about that.

I'll start my rant by noting my opinion, that in a brief review of several ARF models, this topic is never adequately addressed in their instructions. I frequently see ARF's and other electric planes showing up at the field with no motor inhibits. Also, note that the club handbook correctly stipulates that any inhibit other than a physical interruption of power to the motor is not considered "safe"...that is, "cannot be trusted". A physical interruption of power means an electrical key or plug that when in your hand or pocket, breaks the power circuit to the ESC and therefore precludes any possibility, save a car driving over your airplane, of power getting to the motor. There are couple of versions of these available, based on the Dean's and PowerPole connectors. The down side of these is that on a "40" size, or smaller electric, the plug receptacle intrudes into the fuselage and can interfere with battery and ESC placement. The small arming plug can disappear or be left at home as well. In addition, the wire gauge of the receptacle wiring must match the current levels that the battery will see. When using these types of inhibits I prefer to also use a secondary receiver power supply or a parallel connection from the battery to the inhibit and the receiver, so that you can do checkout in a safe condition before arming the ESC and motor.

The other candidates I am aware of are what I would call logic level inhibits, and there are several approaches to these.

- 1) ESC logic switch inhibits. Several of the ESC's I've seen support an exterior switch or plug that the ESC will use to inhibit motor function. The signal switched here is a 5 volt signal from the ESC, whose presence or

absence causes the ESC to keep the ESC from acting on a throttle command. The Castle Creation "Edge" ESCs support a plug that must be removed to arm the ESC. Note that this is the opposite of the power interruption plugs that are inserted to arm the motor that I discussed above. The down side of these is an added failure source (the switch) and in the case of a traditional switch (vs. a plug) the on/off position can be easily overlooked since the switches are typically small.

- 2) ESC arming throttle sequences. Some of the early Great Planes ESCs required a full-down/full-up/full-down throttle sequence in order to arm the ESC. Currently, I see some ESCs that require only full down to arm; others apparently nothing at all. The issue here is that they use the basic throttle motion that we are trying to inhibit to arm the ESC, so mistakes are invited. Of course, where there are no ESC provisions for throttle stick based arming, motor power is guaranteed regardless of throttle position when the battery is connected. This was the case when I was on the receiving end, years ago, of a run-away plane that was not restrained when the battery was connected on the flight-line. Once armed, the only way back to a safe state is to disconnect the battery and while doing this your plane is locked and loaded. Any accidental throttle stick motion will turn on the rotating blood-letting device on the front of the plane.
- 3) Transmitter based logic. These approaches use a transmitter throttle cut or switch mix to inhibit the transmitter from issuing a throttle command. These of course require the transmitter to be turned on to be effective, so the first implication is that you must be sure to know what your receiver's loss of signal throttle response will be. Turning the transmitter off or turning the receiver on first can result in motor operation if your receiver fail safe provides other than zero throttle position. When a transmitter switch is used

to inhibit the throttle command, you can easily forget which position inhibits motor operation or need to assign the inhibit to different switches for different models if your model has other than the four basic control functions.

I have used all of the methods discussed above and recommend the following. First, use a plug-type inhibit as your first choice. These provide a visual indication of the inhibit status. Avoid the throttle stick arming sequences unless they are sufficiently complex to provide an inhibit, despite accidental throttle stick motion. If you have several models and must, or like, to use a transmitter inhibit, do all you can to insure that the same switch and switch position is used to arm/dis-arm the ESC/motor function. When using ANY logic level inhibit short of motor power interruption, ALWAYS verify the function of the inhibit on the safety stand or in a restrained condition after inserting the battery before moving the model to the flight line. DO NOT walk away from the model to do range checks if it is not on a safety stand. What if you fall, or get distracted and leave the model in an armed condition? Finally, if you don't use any type of inhibit ALWAYS make sure the model is restrained when you plug the battery in and treat it as if the motor was running just like a fuel plane. Consider using a rubber band to hold the throttle stick in the "low" position until you are ready to fly. Remember if your plane inadvertently starts and gets away from you, the flyer it runs down might just be your safety officer.....you've been warned.

Just a final note on safety before the year gets going. If you see/hear something from a buddy's plane or operation, be kind enough to mention it, you might save a plane or prevent injury. And, if you are on the receiving end of a comment, don't take it personally.....you might save a plane or prevent an injury. A favorite quote from Charles Kettering fits here:

"Whenever you look at a piece of work and you think the fellow was crazy, then you want to pay some attention to that. One of you is likely to be, and you had better find out which one it is. It makes an awful lot of difference."

Fly, and Fly Safe,

Gordon Collyer

EDITOR'S NOTES – Upcoming Events

Jeff Killen

1. Club Meeting, virtual, 7:00 PM, 2/22/2022

SECRETARY'S REPORT

Jeff Killen

The January club meeting was given completely to a presentation by Bill Hayden. Eighteen club member attended the zoom meeting. Here are a few highlights on what he presented.

Bill started with a picture of his old boss, Ken Hyde. Mr. Hyde has over 25K hours of flying to his credit. This was followed by a sentimental picture of his dad, who is still with us at 102 years of age. His dad taught him to fly R/C.

Middle age years for Bill consisted of a career as a F-15 mechanic for the Air Force until his career ended in the 1990s. In 1997, Bill earned his private pilot's license; his wife also appears to be a flying enthusiast. Although he did not mention it, some of us remember his participation in recreating a Wright Flyer for the 2003 one-hundredth anniversary of flight demonstration held at Kill Devil Hills, NC. Some of the training to get a pilot ready for this event consisted of having a car tow a Wright glider with a rope, and having the pilot fly for 30-45 seconds. While Bill was there for these adventures (I believe, as the car tower), he did not train as the pilot. Scott Crossfield performed these duties. The plane weighed 110 lbs empty and had 1" spars.

Other early Wright designs were the B model from 1910; the Wrights created 20 different designs. In 1909, the first military flyer was built. In 1908, the first airplane death occurred in a flight with Orville and a Mr. Selfridge who died in a crash. In 1910, the Vin Diz became the first cross country flyer.

Now Bill works for the Air and Space Museum. He showed us a picture of a NASA wind tunnel that used 36 foot fans; Orville Wright helped build it. Bill helps with small repairs to plans that were moved from the downtown museum. The building there, built in 1976, began to crumble due to water damage; all the planes had to be moved to the Dulles location.

A side project for Bill is his help building a kit Nieuport 28 with our club member Mike Dale and Tom Woodburn. When the kit arrived, Bill said opening the box was thrilling. The work on this project has been going on for several years, with fabric expected to be applied this year.

One interesting plane from WW2 that he showed us was the Russian Ilyushin Il-2 Shturmovik. This built like a tank plane with steel plating up front was a tough plane with a V12 engine. The Russians built 36,000 of them. The museum is building a restored one of these planes.

Bill answered some questions for the group to end the talk. The Silver Hill facility is now used for storage, having ended restoration projects 10 years ago. A B26 is waiting to be restored; it is the only remaining plane of this type with invasion stripes.

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Jeff Killen's next restoration