



January 2021 Newsletter

Knoxville TN AMA #594
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Phil Spelt
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Safety Officer
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Not having regular KCRC meetings makes communication difficult. Please excuse this slightly long article, but it is the best way to bring you up to date without having a meeting.

1. YOUTH FLIGHT TRAINING PROGRAM

In spite of all the negative COVID news, the vaccine is likely to improve things over the next 5 to 6 months. I believe there is a 50% chance we will be able to do a full training camp this summer, and worst case, probably at least one or two sessions in August.

KCRC members have already voted yes on this “unanimously” because it is noble, will help the community, and is a worthy charitable cause. However, I think members also considered that it will give KCRC great visibility (like we hoped for with the car track and drone course), will earn good money, and should make us an outstanding “Knox County citizen.” If successful, we would be at far less risk of losing our land to other competing uses.

The message from the EC is unanimous, simple and unequivocal: FULL SPEED AHEAD. Time is of the essence to get everything ready for the summer program. Barton Smith, Ed Dumas, and Phil Spelt make a great team to carry it out.

2. FIELD APPEARANCE

It will take a lot of PR and advertising to attract the necessary trainees for the multiple camp sessions we hope to conduct. Once we start heavy advertising in the schools and elsewhere in Knox County, we will be on constant display with a multitude of fathers and mothers visiting our field and evaluating us before enrolling their kids. As things develop on the scale expected, we will also be on display with school officials, Knox County officials, and the press. In addition to a great camp program, the EC wants our field to be more attractive to encourage enrollment. The members I have spoken to also agree.

So what are some of things we can do to improve our looks? A few possibilities are to repaint the pavilion and flight benches to get rid of the look of cracked and aged dilapidated wood, trim the bushes at the front entrance and add a new impressive sign (with a large model plane), power wash the dirty sidewalk along the flight line, move and utilize the grandstand where it would do some good for spectators, upgrade and standardize the chairs and other furniture, etc.

The EC also wants to think bigger, like having a real airplane on our site. The Johnson City RC

club has a real T-33 displayed at their entrance. It is impressive. We are searching.

The EC is evaluating which projects give us the most appearance benefit for our time and money. The EC intends to move forward in making these improvements ASAP, of course staying within the approved spending authorities provided in the bylaws (and coming back to the membership for an email vote if appropriate).

3. RECRUITING

If we are to be successful in the eyes of Knox County and to prevail against future competing uses for our land, having 100 plus members is just as necessary as the youth flight training camp. The EC believes both need to be in place to have the effect and impact we need.

The obvious advantages of new members are more dues and more volunteers. The only negative of many new members is that increased buddy box training on week-ends could have a negative effect on flying. Remember; anytime a student is trying to land there is a serious safety risk of things going astray. Everyone needs to be pay attention, and nobody else can be flying. The club has already approved expanded recruiting, training, four planes, and four instructors. However, the recruiting approval was contingent on my promise of not letting recruiting interfere “too much” with weekend flying; if it did, I said we would revisit it

The EC has now come up with a simple, effective, and fair solution that will keep members happy by formally limiting how much student instruction is permitted during busy flying periods. On Saturdays, Sundays, and holidays, from 9am to 1pm, instructors with students are being limited to a max of 3 flights, each flight no more than 5 to 6 minutes and with no more than 5 landings (or 5 approach/landing tries). Also, no more than 3 students will be allowed at the busy field at any one time; it is on a first come basis. All instructors will be required to comply; it should provide more than sufficient instruction opportunity.

Given the EC’s student training limitations for busy periods, student flying should never be a problem. So the EC message on recruiting is FULL SPEED AHEAD.

4. SAFETY

In general safety has been excellent throughout most of the year. However, in the last few months there have been an unusual number of problems, some potentially dangerous. Unfortunately there are too many to cover in this short article. These problems cannot be ignored. The EC has specific ideas to address each of them.

In addition, proceeding with the youth flight training program makes safety even more important because the perception of safety must also be “outstanding” in the eyes of the many visitors coming out to evaluate us. Some will even be flying with us on a trial basis. The same perceptions are just as important for the school officials, county officials, and the press. Lastly, we will be formally committing to Knox County Parks that we have an effective and outstanding safety program, and that the kids and visitors on our site will be safe. One day of inappropriate safety incidents or even just bad impressions could be devastating.

The EC’s approach is to try to address safety issues in the softest way possible, primarily through education and reminders (call it “situational awareness”). It would be great to make it almost impossible for someone to go wrong, for example, by having a few large reminder signs of certain practices, by using a big rope to keep visitors and kids out of certain dangerous areas, and by having a massive education and reminder campaign capable of getting everyone’s attention.

One quick example: some KCRC members who do not fly very often ignore the rules and can be dangerous. Some apparently do not remember the rules and courtesies, and others may not have even bothered to become familiar with them. The rules and courtesies are already posted at the field and on the web site. Yet they do not always get read.

So the EC will be putting up a BIG sign on the fence at the center of the field as a reminder that cannot be missed. The wording might simply say “DO NOT FLY UNLESS YOU READ, UNDERSTAND, AND OBEY THE RULES.”

The EC will communicate its safety ideas and solutions to you by email in the next few weeks. The EC position is clear and unanimous: there cannot be any safety compromises, we must have a first rate safety program. I am asking all of you to try to help the EC, pay attention to safety, and to make the soft approach to safety a big success.

5. CONCLUSIONS

There are several well run clubs in the area like Chattanooga, Johnson City, and the Coffee Airfoilers (near Tullahoma) that are very involved in their community, do charity events, and regularly train young kids. Each has a long paved runway. Each has a very effective safety program that is enforced, although each does it differently. Each has over 100 members. Each is well known and well respected in their areas. Each has an active PR function, and runs with efficiency like a business. Their members are happy and take pride in their many accomplishments.

All the foregoing activities will start to make KCRC a similar club and a valued part of our community. Everyone on the EC believes this is the right path for KCRC’s future, and to be blunt, to insure that KCRC actually does in fact have a future. This is also the kind of club that may very well succeed in getting local officials to provide us a new runway.

If you have questions or suggestions, please either call or email me. If using email, please share your thoughts with the entire EC as well. Our activities are moving quickly. As the old saying goes, “speak now or forever hold your peace.”

Frank

PS Please remember to follow social distancing at the field and other CDC recommendations as well. The crisis is beginning to directly impact our membership. We have had two wives of members test positive for COVID 19, and those members went into quarantine. We have had one member test positive. We have also decided until further notice that KCRC will not accept new students for buddy box training that are not already in the club.

Here’s an Interesting Safety Thought

An airplane propeller is designed to move a load forward. It does that by moving air from its front to its back. The first consequence of this effect is that having you level with and in front of an unrestrained airplane is that it may attack you doing some considerable damage. Early in my history with RC models, I learned this lesson the hard way. If you consider that the propeller doesn’t care whether it’s moving air or some other viscous material like flesh, if you come in contact with the front of a spinning propeller it will try to pull your flesh through it. The second consequence is much like the first.

How do you make yourself safe? First, make sure your airplane is restrained or make sure that it can’t throttle up if you’re in front of it. Second, if you need to handle a model when the propeller is spinning, make sure you’re behind it. The propeller will push you away if you come in contact with the back of it.

My final tip is to set your electric models up with a throttle cut and use it to make it safe to carry. Always carry a model with the business end of the propeller away from any part of your body. Just carry your model from behind, preferably with the throttle cut just in case.

Fair winds and blue skies,

Allan

Just to add to Allan’s comments, if you do use a throttle cut switch, set it up to announce the switch position. Before connecting the battery I flip the switch to verify that the switch is actually in the cut position. Do not take it for granted.

The New FAA Remote ID Rule - January 6, 2021 by Ed Dumas

Looking back, it was just a year ago that we were writing to the FAA regarding their notice of PROPOSED rulemaking about Remote ID, and now we have the final rule in hand. Remember, this is due to become the law of the land this year!

Along with the final rule, there were lots of comments by the FAA about the comments they received from us, the public, during the rulemaking process. There is also insight into the mindset of the FAA when it comes to making rules and how they integrated our comments into the process. It is interesting reading, but long. The main document with all the commentary is 470 pages! Fortunately, the Executive Summary is only 3 pages and contains a concise summary of the relevant sections of the new rules.

In a nutshell, the comments and concerns that AMA and its members provided were instrumental to shift the final rule much more in favor of preserving traditional model aviation as we know it. There are now provisions to allow R/C model aircraft to continue to fly, indefinitely, in the National Airspace System through an FAA Remote ID Area, or FRIA. The biggest positive gain for us is the FRIA is no longer time-limited, as was suggested in the NPRM. FRIA authorizations will be valid for 48 months and can be renewed indefinitely after that. Clubs will be eligible to apply for a FRIA through the AMA and having one will allow aircraft to be flown in that area without having to have Remote ID equipment onboard, just like we do now. On the flip-side, the FAA can terminate a FRIA at any time for safety or security reasons.

Another means of Remote ID compliance that may be useful for us is the Remote ID broadcast module. This will be a stand-alone module that can be retrofitted to nearly any aircraft so that the aircraft can be flown legally outside of a FRIA. The purpose of the module is to broadcast the aircraft's current position, altitude, velocity, its take-off time and location, and the device's serial number to any other aircraft flying in the

immediate area. I suspect some manufacturers will start producing these in the coming years for various airplanes. One key difference that was a response to the public's comments is that these broadcast modules will NOT require an Internet connection, nor will they require a "service provider" that might have charged fees for the service. But on the flip-side, each module will require its own separate registration.

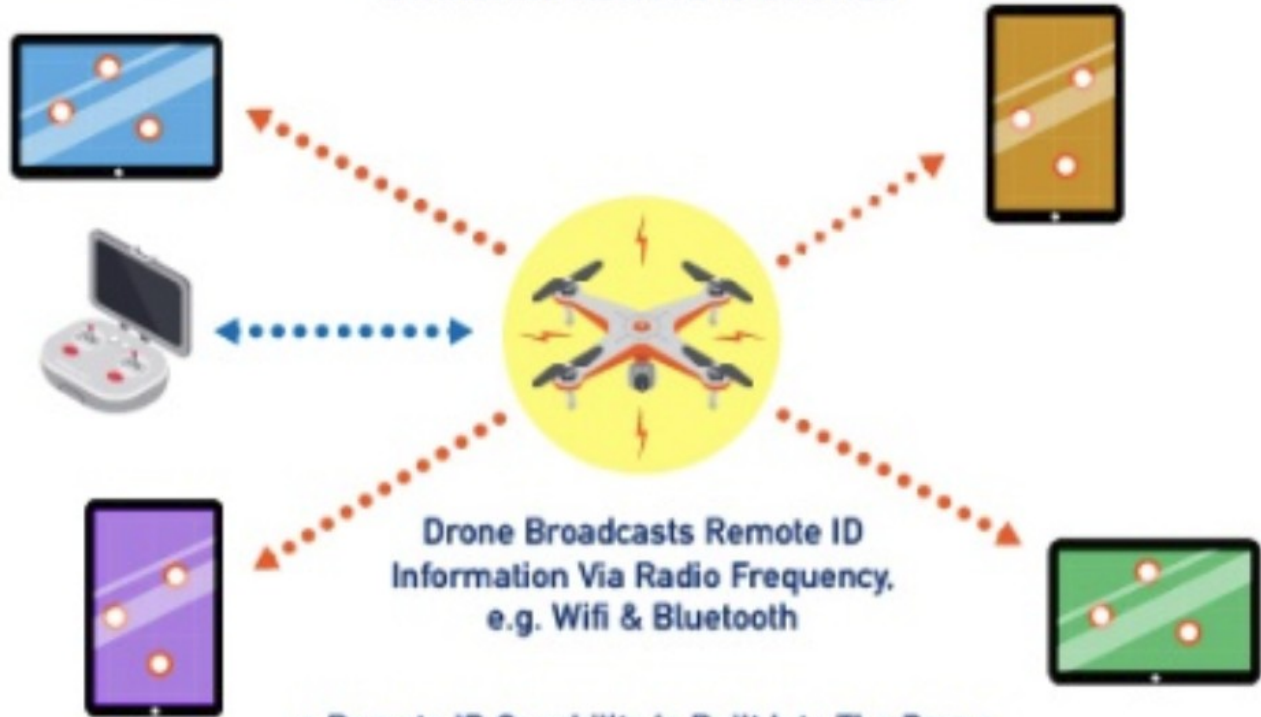
When flying in a FRIA or with the broadcast Remote ID module, the aircraft must remain within visual line-of-sight of the operator. It appears that FPV flying will still be allowed, with an appropriate spotter. Lastly, the registration requirements are going to remain the same as they are now for folks that will fly in a FRIA, where the pilot registers once and adds their registration number to each aircraft.

What about the timing of all this? This rule will take effect 60 days after it is published in the Federal Register, which is expected to happen sometime in January, 2021. FRIA applications can begin on August 26, 2022, and all pilots must begin complying with the new rule on September 1, 2023.

Overall, this looks like a good win for AMA clubs around the country, given the dire predictions based on the proposed rules that were circulating just a year ago. Given that these laws WILL go into effect, and that there is nothing we can do about them, things could have been a lot worse. So far, the AMA has yet to release its official comments on the new rule, but they should very shortly. Stay tuned...

DRONE REMOTE IDENTIFICATION

STANDARD REMOTE ID DRONES



- Remote ID Capability Is Built Into The Drone
- From Takeoff To Shutdown, Drone Broadcasts:
 - Drone ID
 - Drone Location and Altitude
 - Drone Velocity
 - Control Station Location and Elevation
 - Time Mark
 - Emergency Status

DRONE REMOTE IDENTIFICATION



- Remote ID Capability Through Module Attached To Drone
- Limited To Visual Line Of Sight Operations
- From Takeoff To Shutdown, Drone Broadcasts:
 - Drone ID
 - Drone Location and Altitude
 - Drone Velocity
 - Takeoff Location and Elevation
 - Time Mark

FAA-RECOGNIZED IDENTIFICATION AREA [FRIA]

DRONES WITHOUT REMOTE ID



- Drones Without Remote ID Can Operate Without Broadcasting
- Drones Without Remote ID Must Operate Within Visual Line Of Sight and Within the FRIA
- Anyone Can Fly There, but FRIAs Can Only be Requested by Community-Based Organizations and Educational Institutions

Resources:

https://www.faa.gov/uas/getting_started/remote_id/

<https://www.wiley.law/alert-FAA-Adopts-Final-Rules-for-UAS-Remote-ID-Flights-over-People-and-at-Night>

https://www.faa.gov/news/media/attachments/RemoteID_Final_Rule.pdf

https://www.faa.gov/news/media/attachments/RemoteID_Executive_Summary.pdf

<https://amablog.modelaircraft.org/amagov/category/remote-id/>

Membership Renewals

Dues are \$84 for regular members, \$96 for families, and \$42 for drone members.

I will have renewal envelopes for returning 2020 members. Inside is the 2021 transmitter sticker, a welcome letter, a printout of your information in the club's database, and a return address sticker in case you need to mail revisions back to me. I would prefer checks but if you would like to use a credit card then mail me an application with your name and credit card information completed. Checks will greatly simplify updating the 2021 roster.

Mail checks or credit card information to:

KCRC c/o
Michael Catlin
6812 Adrian Rd.
Knoxville, TN 37918

If I do not have an envelope for you it means you were not in the 2020 database and I will need for you fill out an application. Applications are available in the club website.

<https://www.kcrctn.com/>

January Video Picks (for those tired of watching Christmas movies)

Why Was The Fw-190A So Fast
(<https://www.youtube.com/watch?v=9wb5YzVbTNo>)

Maiden Flight Of The Best 1/4 Scale Focke Wulf FW-190 A5 On Planet
(<https://www.youtube.com/watch?v=kAhF-1X4omU>)

Bf 109 - The Price You Pay for Firepower
(<https://www.youtube.com/watch?v=gXsXZonvhKE>)

Terrifying Moments as Both Engines Fail on Final Approach to Hong Kong Dangerous Descent
(<https://www.youtube.com/watch?v=y6iQBneLDXw>)

How Stealth Works by Michael Catlin

In the few years leading up to WWII Air Chief Marshal Hugh Caswall Tremenheere Dowding began preparations for what he saw as the coming war with the Third Reich. Marshal Dowding established the Chain Home radar system, which unlike the more common spinning dish radars was bi-static in nature. Each radar has about 100 degrees of coverage with the electrical configuration giving 5 degree wide from 1 degree off the ground to the vertical. The transmitter used tubes to generate the transmitted signal. The tubes were able to operate at one of four selected frequencies between 20 and 55 MHz, and switched from one to another in 15 seconds. The German analysis of the system left behind at Dunkirk led the Germans to believe it was a rather crude system of limited effectiveness, and this led the Germans to have a dim view of British radar systems.

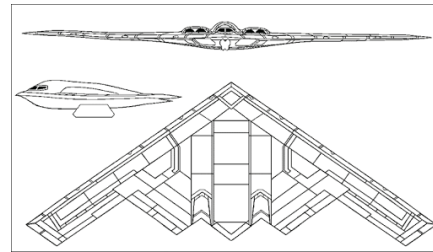
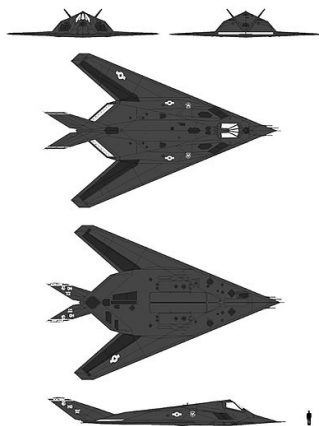
Dowding also established the Anti-Air/Civilian Defense Aircraft Spotters whose mission was to spot enemy aircraft formations and report their location and track to RAF Fighter Command. Fighter Command then directed squadrons of Hurricanes and Spitfires toward the incoming enemy. The fighter pilots then used conventional gun sights to aim their aircraft guns. From Chain Home, to the spotters, to Fighter Command, to the fighters Dowding's real genius was the development of Britain's command and control network.

What does this have to do with stealth? Marshal Dowding recognized the principles of Locate, Track and Target. The Chain Home radar did the Locate, the Spotters did the tracking, and the pilots did the Target. If this chain is broken then only luck will allow an aircraft to be shot down. The purpose of stealth is to break this chain.

Early in its development Australia claimed to possess a radar capable of detecting the B-2. A claim that was and still is fundamentally true for low frequency radars. However, locating an aircraft in 8000 cubic miles of airspace is extremely difficult. Especially when the aircraft uses its own tactics to avoid being found.

Modern search radars fall into certain frequency bands and the aircraft shaping and coatings are specifically designed not to return energy at these frequencies. More accurate tracking radars which can determine speed, altitude, and direction (as well as identifying aircraft type) operate in a different frequency band to limit the size of the antenna dish or phased array. And finally, to target the aircraft the missile needs it's own radar and this radar operates at a much higher frequency since the diameter of the missile limits its radar dish. To counter radar, a stealth aircraft will utilize different materials to nullify these different frequencies. Other countermeasures include aircraft color to suppress contrast to the surrounding sky, limiting electronic emissions, contrail suppression or avoidance, and minimizing heat signature. Tactics also play a part such as flying at night and directing the flight path to minimize the possibility of detecting the aircraft radar spikes.

What are radar spikes? All changes in the aircraft surface generate spikes which show up as radar returns. Although, materials can absorb much of the radar's energy, what remains radiates as a radar spike. The faceted F-117 redirected and absorbed much of the radar energy but the multitude of edges where the facets meet caused spikes in all directions. The F-117 has been described in radar terms as a puff ball or porcupine. The other method is to limit the number of spikes and direct all returning energy into these radar spikes. The B-2 is one such



aircraft. As seen from above (and below) all edges line up. The left hand wingtip is parallel to the right hand leading edge for example. This treatment is carried through the application of all coatings, access panels, and openings. This gives the aircraft 4 radar spikes (2 forward and aft at right angles to all edges). By maneuvering the aircraft these spikes can be swept across radar sites to minimize the time for them to appear which shows up as noise or they can be timed to sweep across when the radar is pointing elsewhere.

What about electronic countermeasures? Years ago, during a Red Flag exercise, B-1 bombers had the mission to bomb a defended target. The defenders were flying F-5's with limited radar capability so the B-1's activated their electronic countermeasures and came in "hot" which is another term for jamming everything in the sky. The F-5 pilots had outfitted their cockpits with "FuzzBuster" radar detectors and with a few bits of foil made them more directional. These simple devices thwarted many millions of dollars worth of electronic equipment as the F-5's simply followed the beam to find the bombers.

Membership

If you need more than one sticker simply ask. Since we are now getting Drone members, be on the lookout for Drone stickers which have a drone image on a blue background. After February there is a \$5 penalty (\$89). I am accepting mail in renewals. Send checks to (no cash please)

KCRC c/o Michael Catlin
6812 Adrian Rd
Knoxville, TN 37918

The gate combination will be emailed to current members only and only current members will

receive email notices and newsletters. Newsletters will still be posted on the clubs website <http://www.kcrctn.com>. However, this may change in the future and only newsletters from previous years will be available to non-members. Remember, only those with current AMA membership will be allowed to fly at the field and do not tell anyone the gate combination without checking for membership. If there is a question about membership there is a membership roster in the lock box with the applications. Non-members do not receive email notifications about club events or newsletters.



**Don't forget to visit KCRC Knox
County Radio Control on Facebook!**

246 members strong.

Daily 10 day weather predictions

Daily aviation photos

Event advertisement from other area clubs

Items for sale. Articles, information and aviation related videos.

[https://www.facebook.com/groups/
817242841697766/](https://www.facebook.com/groups/817242841697766/)

Pictures below



