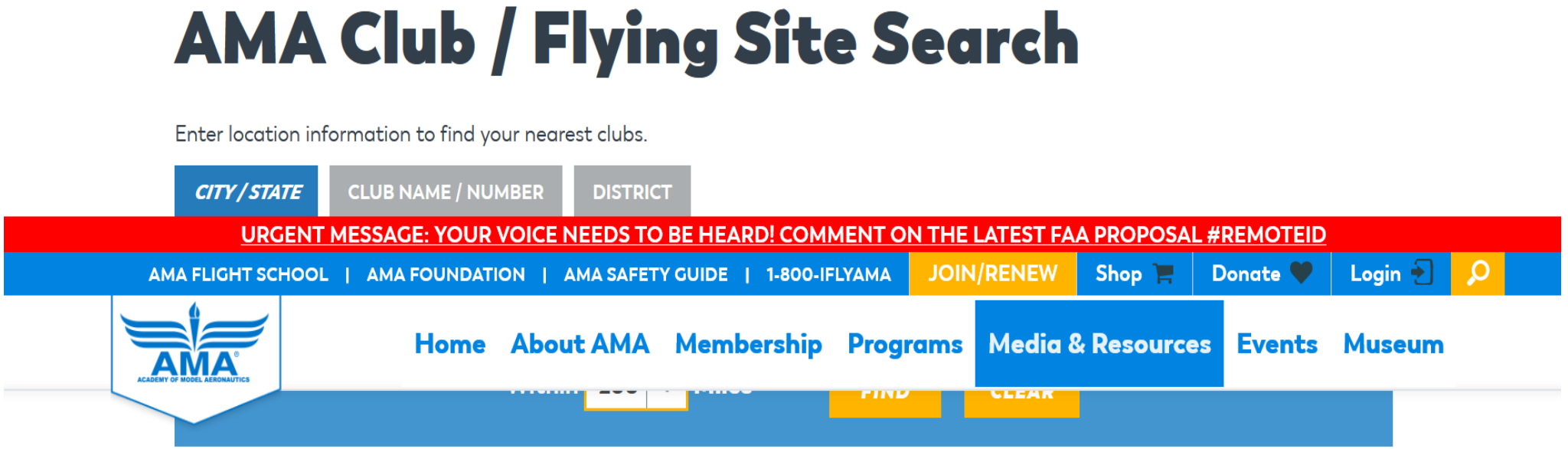
Drones

Academy of Model Aeronautics

Nationwide organization to promote and organize safe model aircraft enjoyment.
Has safe flying rules
Provides insurance coverage to members
Lobbies for the interests of hobbyists



CVA Web Page

Colonial Virginia Aeromodelers (CVA)

AMA Charter #1474

The CVA field is located near Williamsburg, Va. on route 5 in Charles City County. There are approximately 80 members in our club. We are an R/C Airplane, Helicopter, and Quadcopter club.

Newsletter | CVA Links | Join Our Club | Contact Us | Application/ Forms | Pilot Accomplish | Tips & Techniques | Reviews

Local Area Events | CVA Events | Map to Field (PDF) | For Sale / Wanted | Pilot Training | Safety | Meeting Info | Pictures/ Videos

Visitors: We welcome anyone interested in radio control model aviation to browse our Web site to learn more about the hobby and our club. If you are interested in joining our club or have any questions, please feel free to contact us or stop by our flying field. Visitors are always welcome!

WEATHER

NWS Forecast

Intellicast Wind

Facebook

***Latest News:**

Monthly Meeting: CVA has a monthly meeting on the 2nd Thursday of the month at 7:00 pm. Dates for 2020 meetings are January 9th, February 13, March 12, April 9, May 14, and June 11.

***Upcoming CVA Events:**

FAA – Getting Started Page

- **Drone Safety Tips**
- Register your drone
- Fly your drone at or below 400 feet
- Keep your drone within your line of sight
- Be aware of FAA Airspace Restrictions
- Respect privacy
- Never fly near other aircraft, especially near airports
- Never fly over groups of people, public events, or stadiums full of people
- Never fly near emergencies such as fires or hurricane recovery efforts
- Never fly under the influence of drugs or alcohol

UAS UNMANNED AIRCRAFT SYSTEMS

Federal Aviation Administration

Exception for Limited Recreational Operations:

1. Fly strictly for recreational purposes
2. Operate in accordance with Community-Based Organization's set of safety guidelines
3. Fly within Visual Line of Sight
4. Do not interfere and give way to any manned aircraft
5. Obtain airspace authorizations in Class B, C, D, or E (Surface)
6. Operate at 400ft or below in Class G airspace
7. Pass an aeronautical knowledge and safety test
8. Register and properly mark aircraft

currently in development

an advisory circular — and you can download that advisory circular in the

1:34 / 31:12

FAA Rules

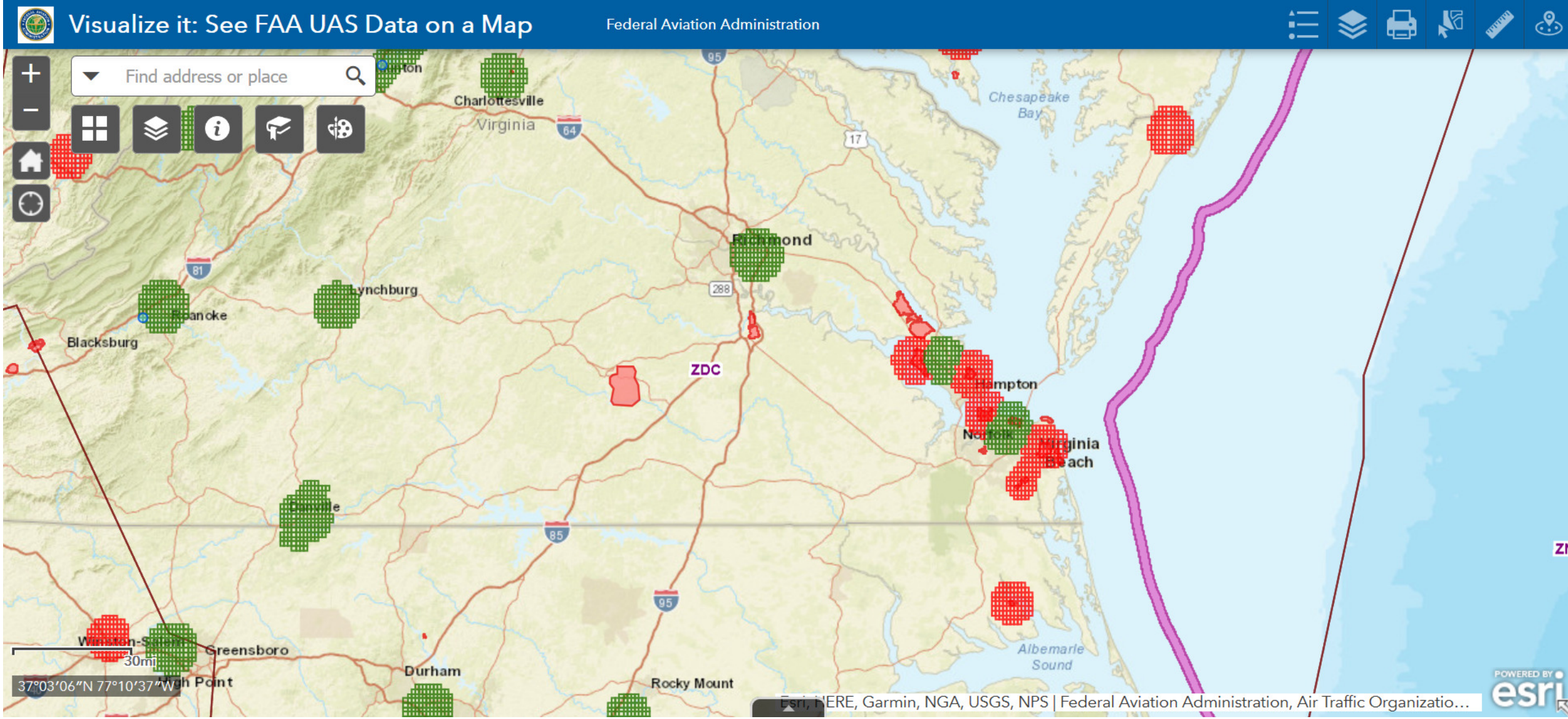
- FAA controls **ALL** airspace in the US
- Drone operators are considered pilots (or operators) and are subject to FAA rules
- Part 107 governs - **Small Unmanned Aircraft Regulations**
- Operators must register with the FAA ($5 for 3 years) and receive an FA number which must be displayed on the outside of every aircraft
  Stopped by legal challenge – more to come
- Applies to aircraft heavier than 0.55 lbs and lighter than 55 lbs
- Local laws may constrain what is allowed to be done from the ground they control (i.e., no launching or retrieving drones as in National Parks)
- Different laws apply to any non-recreational use of drones

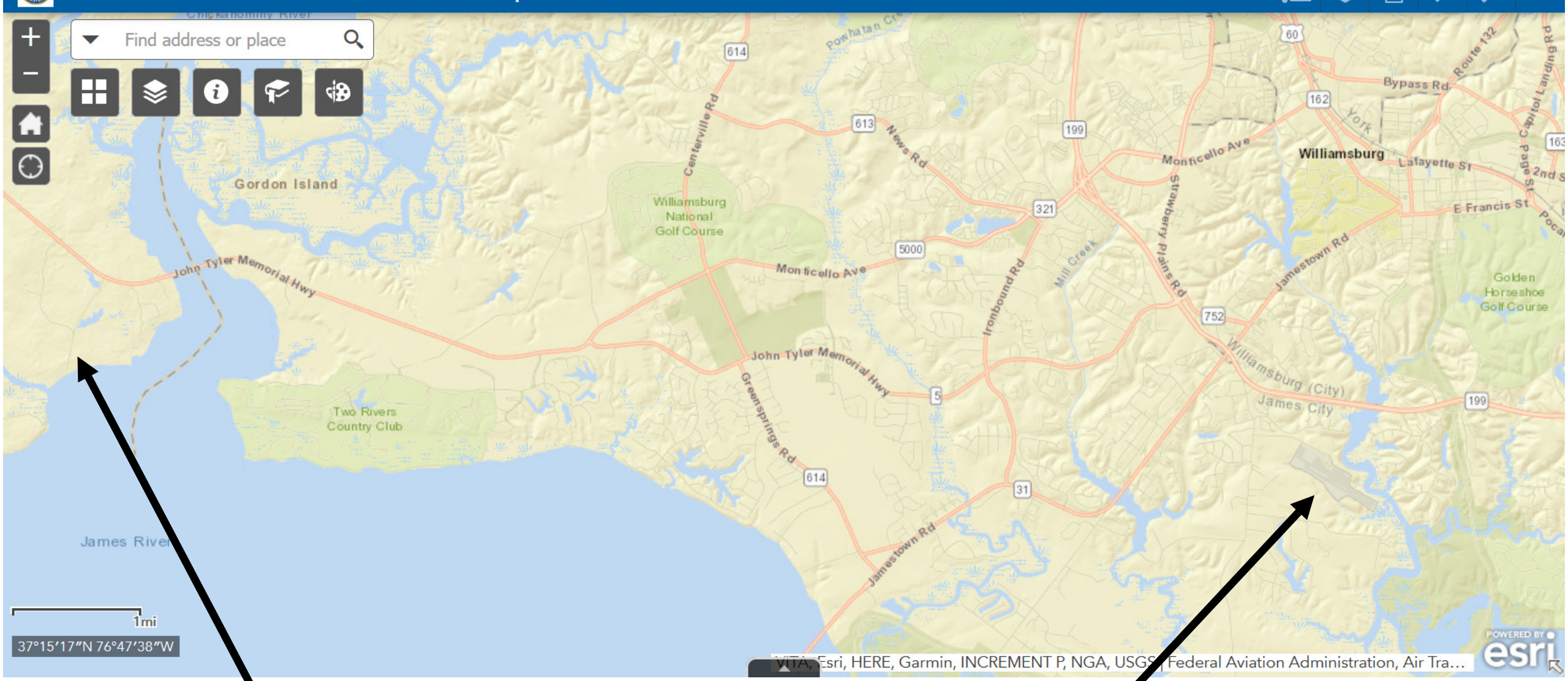
Legal Challenge

- As of late May 2017, a Washington DC court struck down the FAA regulation requiring pilots to register their aircraft if it is between .55 pounds and 55 pounds. This negates the need for new pilots to join the 820,000 operators who have registered with the FAA since the regulation was put in place in December 2015, and also bypasses the $5 fee for it.

Still to come…

- Community Based Organization (CBO) recognition
- Aeronautical Knowledge and Safety Test
  - Being developed in consultation with stakeholders
  - Recreational flyers are required to pass test
  - Expect to have the content electronically available
  - Must provide proof of passage upon request from FAA personnel or law enforcement


Visualize it: See FAA UAS Data on a Map
Federal Aviation Administration
Find address or place
Charlottesville
Virginia
Chesapeake Bay
Richmond
Lynchburg
Roanoke
Blacksburg
ZDC
Hampton
Norfolk
Virginia Beach
Albemarle Sound
Greensboro
High Point
Durham
Rocky Mount
30mi
37°03'06"N 77°10'37"W
Esri, HERE, Garmin, NGA, USGS, NPS | Federal Aviation Administration, Air Traffic Organizatio…
POWERED BY esri

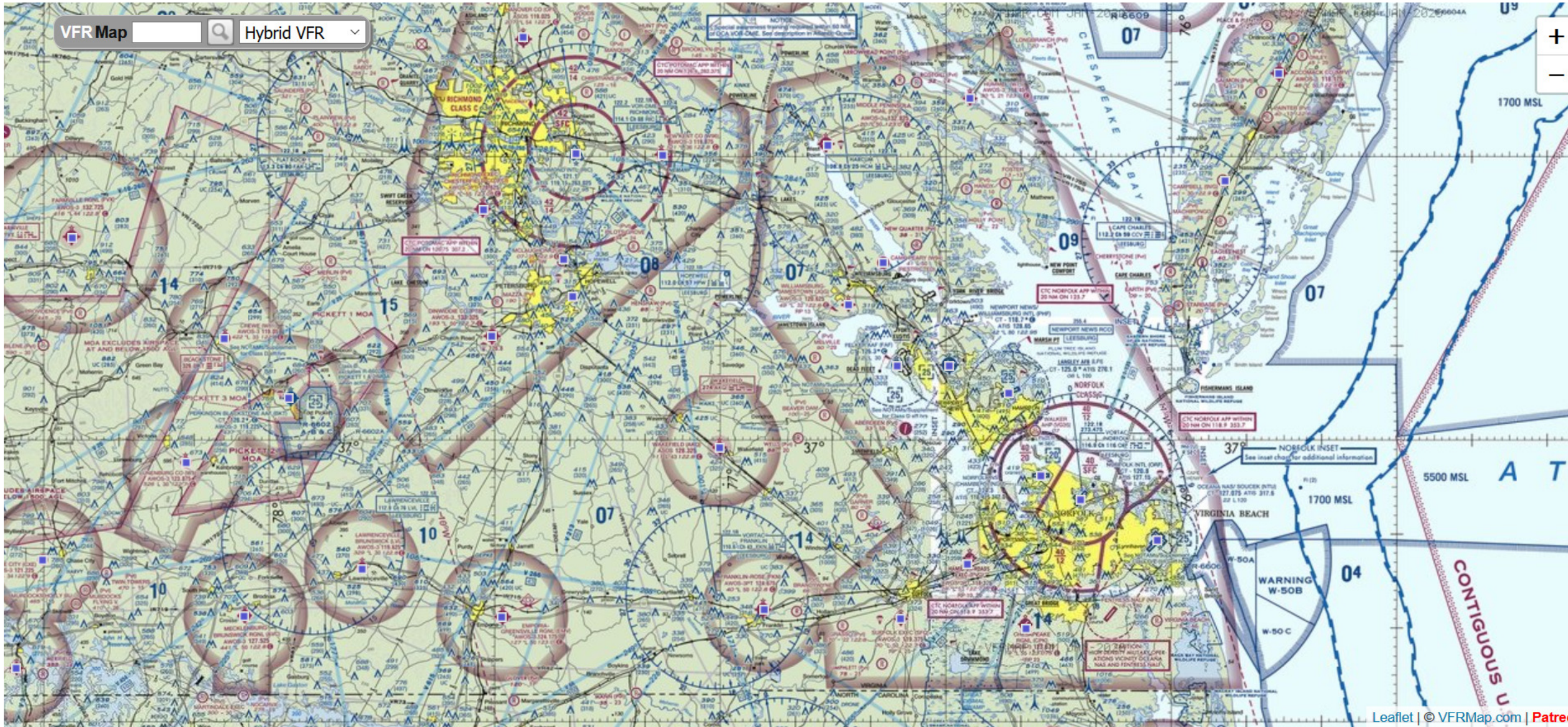


CVA field

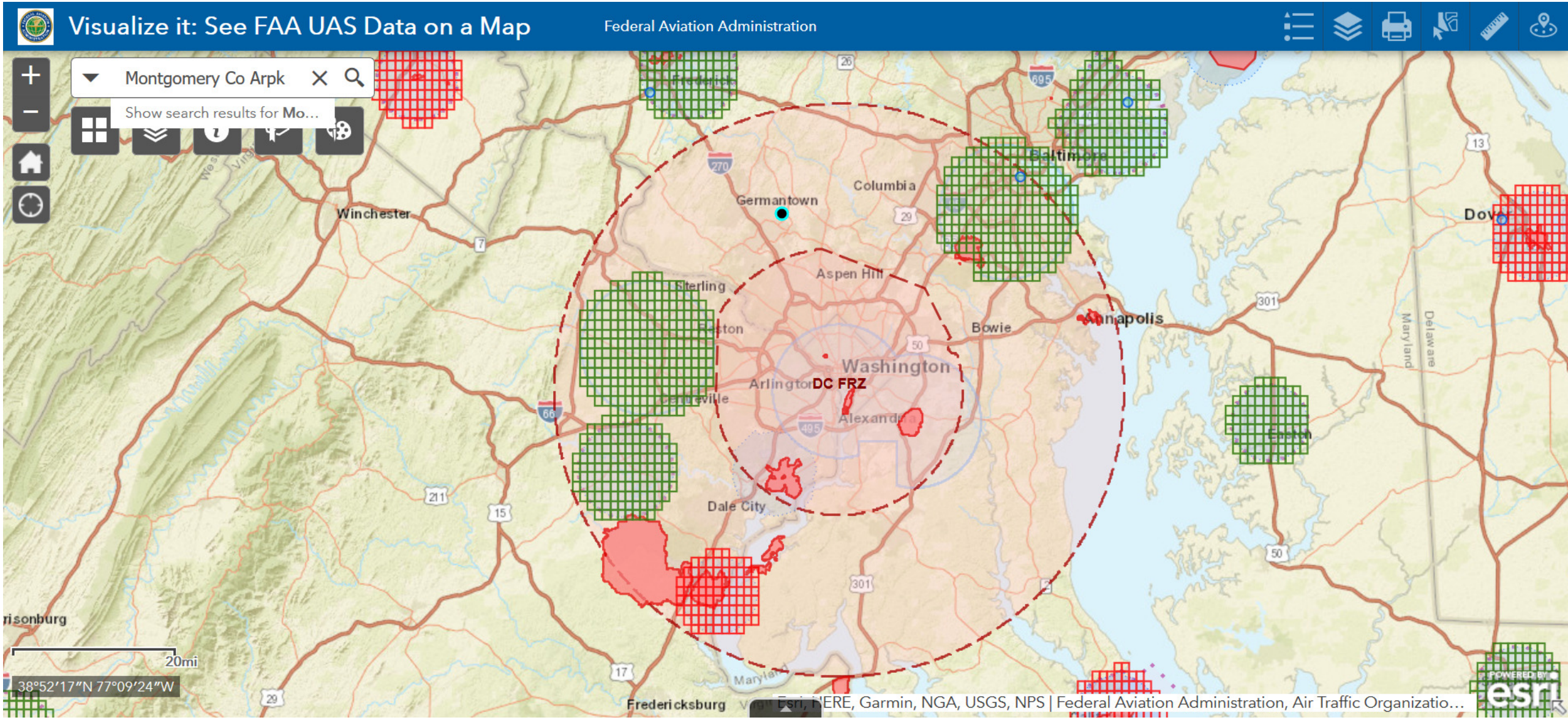
Williamsburg Airport


Visualize it: See FAA UAS Data on a Map
Federal Aviation Administration
Find address or place
Marclay Rd
Williamsburg-Jamestown Airport
Redbud Ln
Woods Dr
Douglas Ln
Waltrip Ln
Brixton Rd
Lake Powell Rd
Cove Rd
Acacia Ct
Wake Robin Rd
600ft
37°14'25"N 76°43'08"W
VITA, Esri, HERE, Garmin, INCREMENT P, NGA, USGS | Federal Aviation Administration, Air Tra…
esri

Sectional Aeronautical Chart



Washington, DC



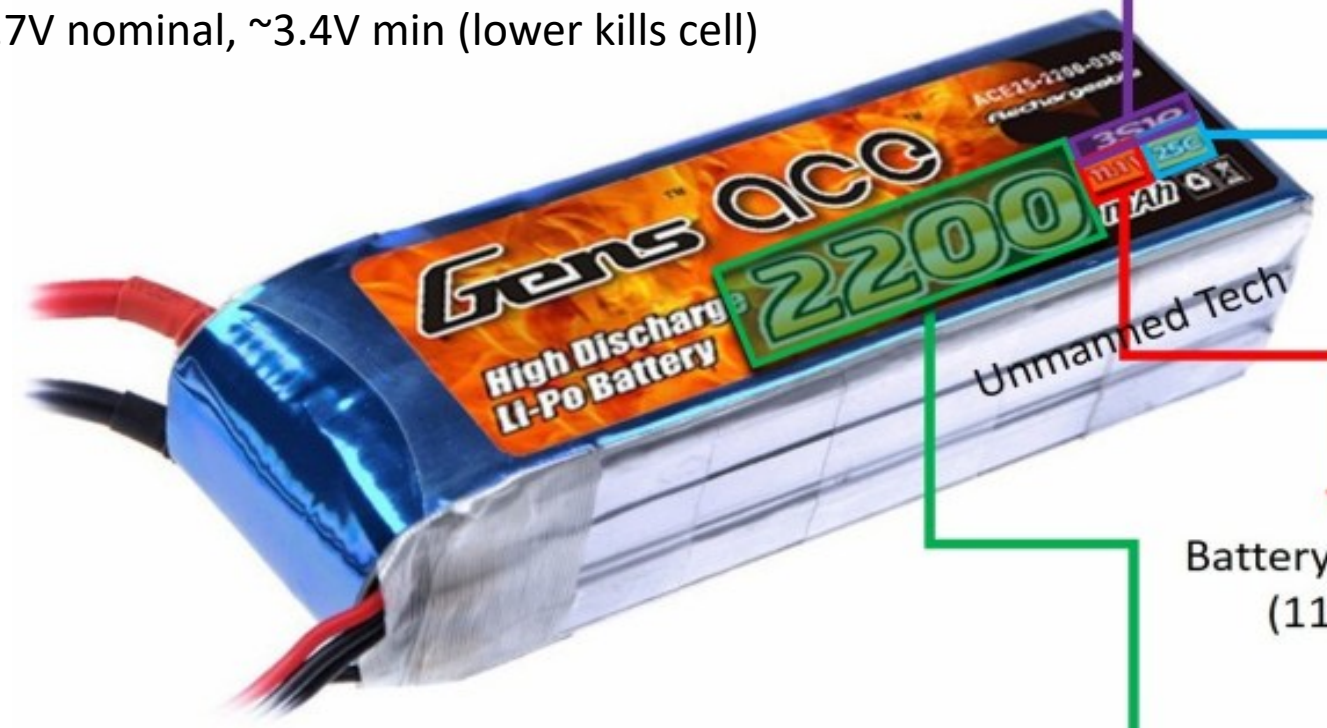
Technology

- Small powerful brushless electric motors
  - Outrunners, Inrunners - $5 - $10 and up
  - Permanent magnets on the outside or inside
- Lithium Polymer batteries – LiPo - $5 and way up
  - Fast charge and discharge, high capacity
  - Must be charged correctly - $50 - $100 for a decent charger
- Electronic Speed Controllers – ESCs
  - Converts DC into motor drive currents
  - BEC (battery elimination circuit) provides 5V for radio and servos
  - Linear or switched BECs – linear burns off excess voltage, switched chops and smooths. Can't have multi switched BECs connected together
- Controllers

LiPo

1 cell = 4.2V max, 3.7V nominal, ~3.4V min (lower kills cell)

Power leads



Balancing leads

Cell Configuration
(3S1P)

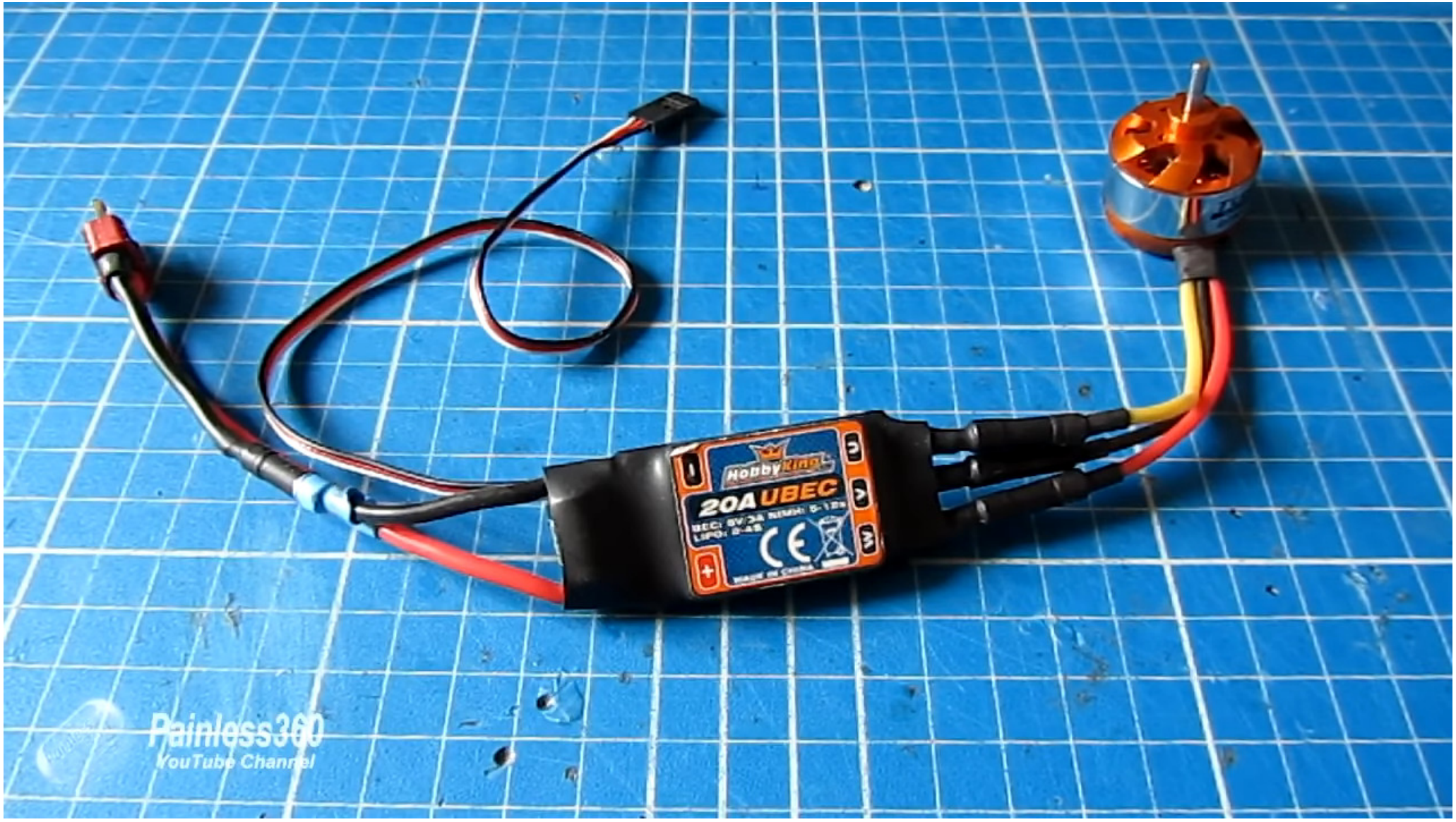
3 cells in series, 1 in parallel

Battery Voltage
(11.1V)

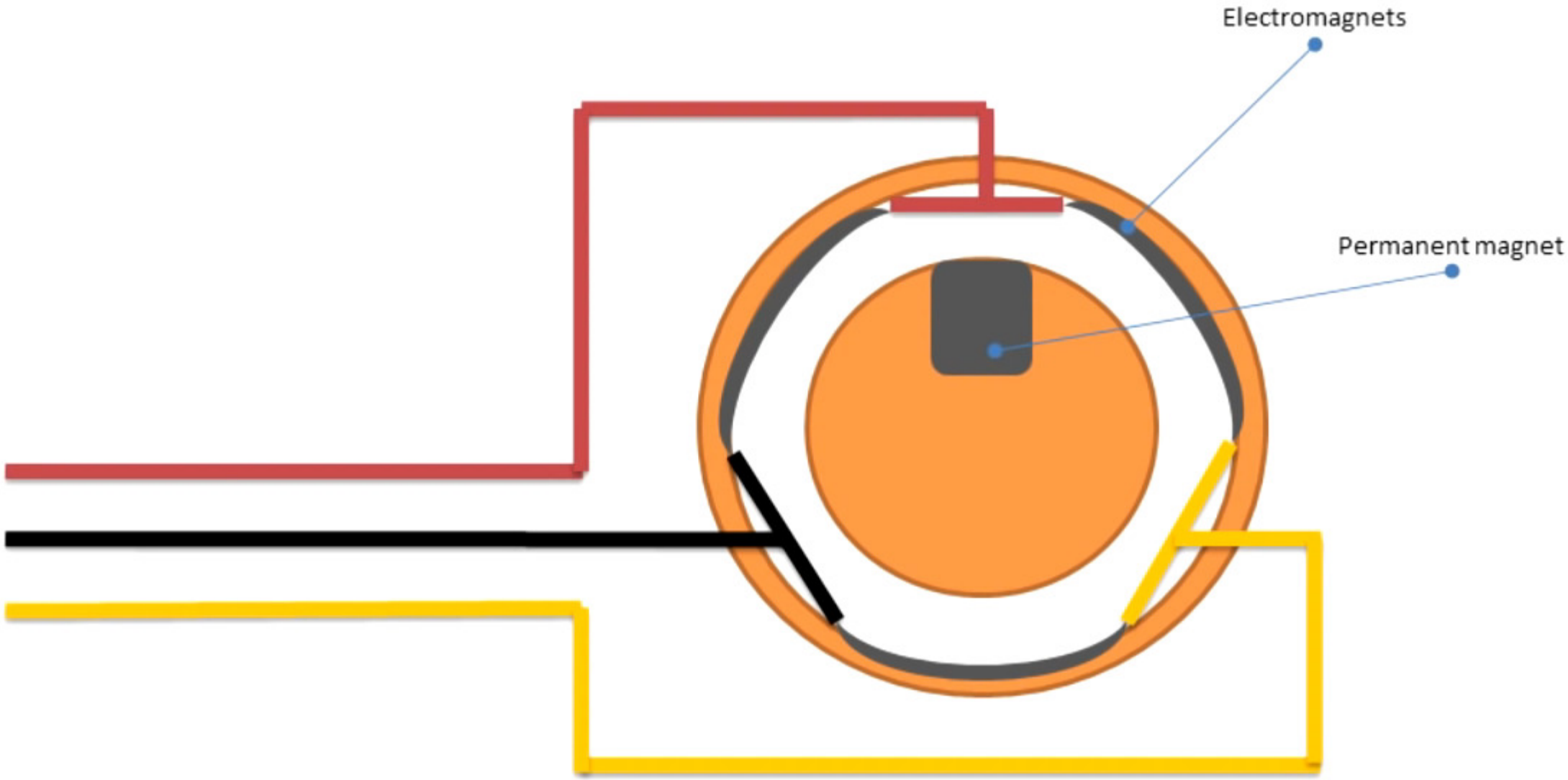
Battery
Capacity
(2200mAh)
2.2 amps for 1 hour

Discharge Rate
(25C)
Can discharge at 25
x 2.2A = 55 amps

ESC

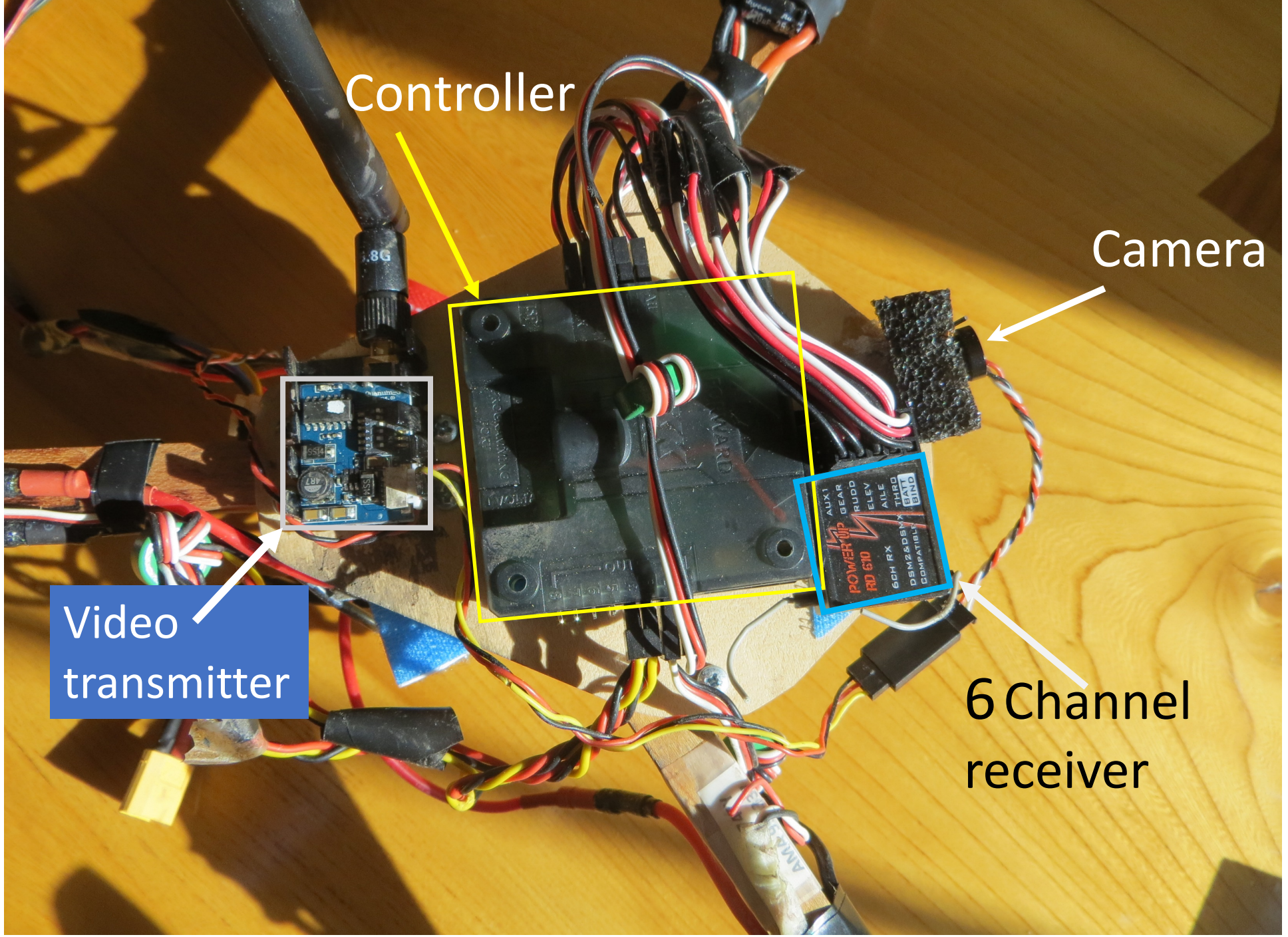


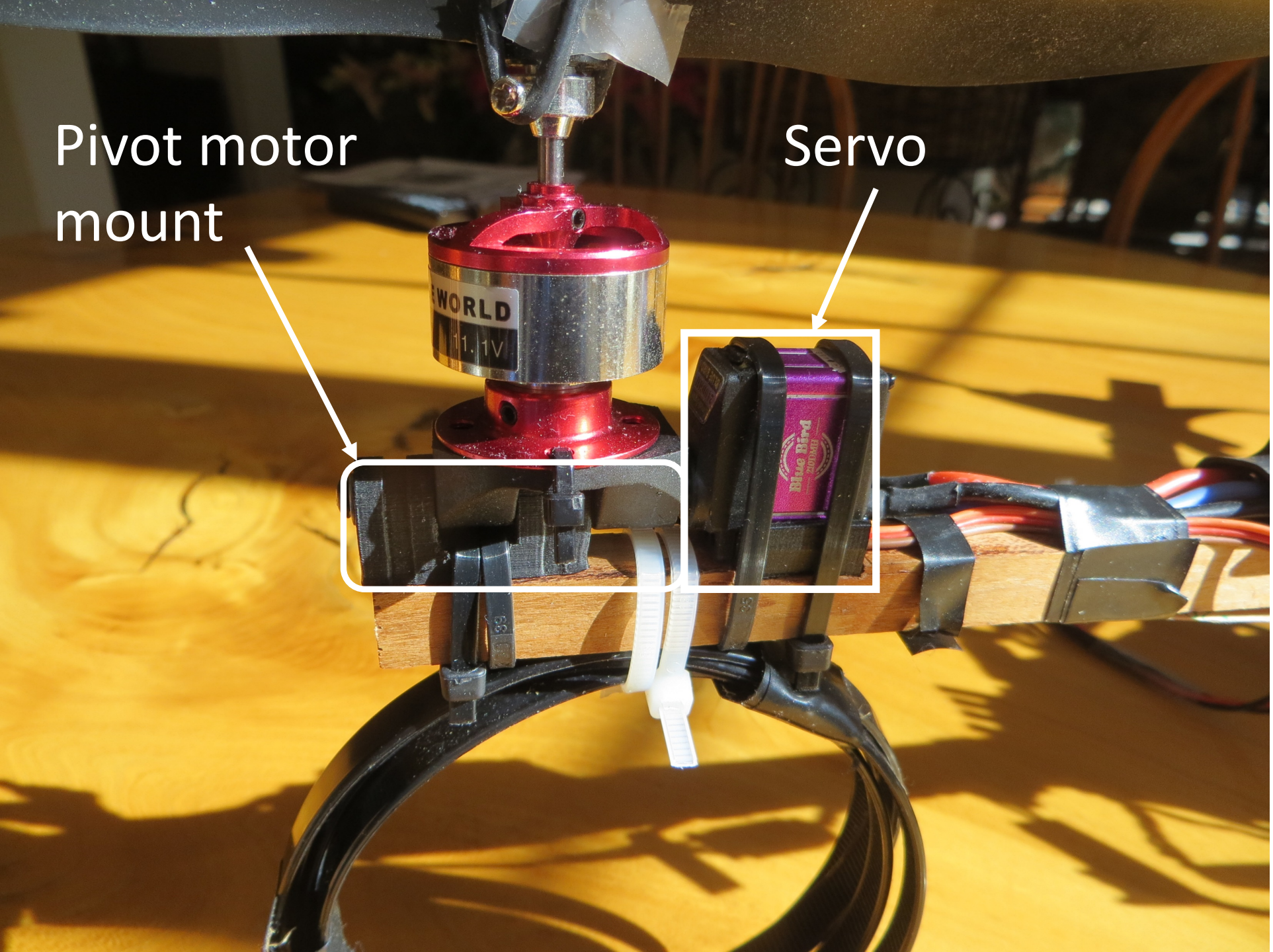
How an ESC/Brushless motor works..



Radios and Controllers

- Radios – 2.4 GHz spread spectrum standard
- One channel each for
  - Speed (altitude)
  - Roll
  - Pitch
  - Yaw
- Optional channels for cameras, stability on/off, lights, etc.
- Some have telemetry (battery voltage, altitude)
- Multirotor controllers include 3-axis gyros and accelerometers
- On-board controller sorts it all out for the motors
  - Can control tricoper, quads (X or +), Hexacopters, Octocopter


Controller
Camera
Video transmitter
6 Channel receiver


Pivot motor mount
Servo
WORLD
11.1V
Big Bird

Prop Saver Mount

Sleeve screws to shaft
Prop mounts with O-ring


EXIT

Drone video at CVA field
National Model Aviation Day 2015

- Stabilized drone with GPS
- Stabilized camera on independent gimbal