

DRONES for Sailboat Race Management

Presented by:

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Overview

- Definitions/Limitations/Regulations
- Benefits for Sailboat Race Management
- Lessons learned from 2017 season
- Requirements

About me....

- Licensed Part 107 Remote Pilot in Command aka Drone Pilot
- Annapolis Yacht Club RC Drone Pilot
- Flew my Drone for RC 2017 Season
 - SAP 505Worlds
 - Ida Lewis Women Junior Double Handed
 - Opti Races
 - AYC Wednesday Night Races
 - J World
 - Severn River Sailing Association
- CEO & Founder, Skylark Drone Research



What is a Drone?

- Unmanned Aerial Vehicle (UAV) or Unmanned Aerial Systems (UAS)
 - sUAS = small UAS <55 lbs ... all consumer drone.
- Nicknamed Drones because of the sound they make
- Consumer drones were introduced in 2014
- Today more than 2 million drones are operating in the U.S.
 - Compare to 250,000 manned aircraft in 100+ years of flight



DJI Phantom 4 \$2500



DJI Mavic \$1500



Limitations

- Battery life – max 25 min, but with wind or cold temps much less
- Wind – Max 22mph
- Temp –
 - Max 107 degrees
 - Lowest 32 degrees



Regulations

- Federal Aviation Administration regulates drones
- Different regs for Hobby & versus Commercial
- Yacht Clubs need to have licensed Drone Pilot for race management



Commercial Drone License

- Known as Part 107 Remote Pilot in Command
- Requirements:
 - Pass knowledge test
 - At least 16 years old
 - TSA clearance
 - Not operate at night, operate directly over people, beyond line of sight, no higher than 400 ft above structure
 - <55lbs, including payload



Drones Provide RC New Perspectives

- View from above
- Entire Starting and Finish Lines
- Rounding Marks from overhead



Video will be inserted here

One-Design Races Are Best

- Drone can position to capture starts, roundings and finishes
 - Drone need to be brought in to change battery between starts
- One-design races with multiple races are best for drones
- Continuous starts (Wed Night Races) Don't work well due to battery life



Live Stream to Race Committee

- Drone can live stream the race using Apple TV
- Race Committee can watch starts, roundings, and finishes in real-time
- Post-race analysis requires processing of the video
 - Video is on an SD Card in Drone
 - Files are very large 2gig+ for 15 minutes



Launching Is an Issue

- Signal boats
 - Sailboats and some trawlers are very difficult
 - Rigging hard to navigate drone
 - Open signal boats are the best
- Can hand launch and retrieve



Drone Ops & RC

- Competitors should be informed drone will be operating
- Drone ops need to be discussed with RC
- Ideally need a drone pilot AND an assistant to watch drone, direct pilot, and hand launch/retrieve drone
- Drone pilot needs to announce when drone is being launched to prevent startling race committee



Drones and Race Management

- Two drone pilots are optimal to capture starts, roundings, and finishes
 - Keep drones in air by alternating to bring in to change batteries
 - 2nd drone pilot can provide visual observations and launch/capture
 - 2nd drone pilot does not need to be a licensed drone pilot. Can fly under the authority of the Pilot in Command
- Policies and procedures need to be developed
 - Will images be included in protests?
 - Who is in charge of drone?
- Club insurance needs to be notified and may need a separate rider for flying a drone



Contact Info

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