



HSS is the oldest AMA chartered R/C Soaring Club in the USA. Founded in 1964.
 February 2021 HSS IS NOW OVER 57 YEARS OLD! Volume 58

HSS PLANE RAP NEWSLETTER

The next General Meeting will be a Zoom virtual meeting on Tuesday 2 February, 2021 at 7 PM. Watch for E-mail with instructions. Also see P.3 of this newsletter.

Field remains closed by City of Costa Mesa until further notice.

Plane Rap Index

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Coming Events and Soaring Competitions.

February-March 2021

- Monthly General Meeting by Zoom to be 7 PM Tuesday 2 Feb 2021. See details P.3.
- All in-person meetings are cancelled until further notice.
- The field is closed until further notice.
- All events for the next 60 days are cancelled.
- Events planned for after April 1, 2021, are postponed.



Meeting Minutes for HSS Virtual General Meeting Held 5 Jan 2021

The January 2021 General Meeting was held using Zoom technology on Tuesday 5 Jan. This was set up by Jordan Lapin, our 11th grade high school whiz kid. Thanks for your capability, Jordan.

Attendance included:

Mike Costello, President	Henry Smith III, Vice President
Joni Whitsitt, Treasurer	Fred Hesse, Secretary, Editor
Kevin Koch, Safety Coordinator	Sid Hood, Grounds Keeper
Mike Gaczowski, Publisher	Rob Askegaard, Club Photographer
Jordan Lapin, Technology leader	John Rittenhouse, Social Media Manager
John Anderson, CAP Coordinator	Ron Jongeling, Member
Chris Adamczyk, member	Randy Wilbur, Member
Marge Hesse, Guest	Shirley Leyva, Guest with Rob Askegaard
Sylvia Anderson, Guest	

1. Mike Costello opened the meeting at 7:15 PM. Mike is writing a new proposal which he will take first to the Fairview Park Steering Committee, and then to the Parks and Recreation Commission and/or the City Council.
2. John Rittenhouse stated that he does not believe that our AMA designation and our Letter of Agreement (LOA) with the FAA won't secure Fairview Park as a flying site.
3. Fred Hesse proposed that all members start looking around for an alternate flying field. As a possibility, he proposed the Harriett Wieder Regional Park located at 19251 Seapoint Ave. in Huntington Beach. This is an undeveloped tract of land that overlooks the Bolsa Chica oil fields, and is Orange County Parks Department property. For a number of years, HSS has established itself as a participant of the Friends of Orange County Parks, and Beaches, which is a sort of steering committee to the Orange County Parks Department.
4. John Rittenhouse recommended Kite Hill as a location that we might share with clubs that already use the site. It has potential for slope soaring, but the landing area is challenging. It is small and bordered with 2 foot posts
5. Mike Costello will collect suggested flying sites for evaluation.
6. Show and Tell. Yes, this works well even using Zoom technology.
 - 6.1 Henry Smith said he had an RV-4S model that he has flown at Black Starr.
 - 6.2 Henry Smith showed a rubber motor winder that he produced using 3-D printing technology. It has a 10 to 1 gear ratio and is suitable for winding light motors for indoor duration models. Editor's Note: By coincidence, Model Aviation has an article with photos and source information on a 3-D printer. A reasonably priced 3D printer is available from Creality 3D for about \$200. Model is Creality Ender 3D. Check it out at www.creality3d.shop.
 - 6.3 Jordan Lapin showed his model of a Flying Flea. He reports that it is the worst model he has ever flown.
 - 6.4 John Anderson showed his Power Pod. John reports that he is publishing a newsletter on his activities with the Civil Air Patrol (CAP).
7. The meeting was concluded at 8:30 PM.

Respectfully submitted. Fred Hesse HSS Secretary.



Next Virtual Meeting, Tuesday February 2, 2021.

The February 2021 HSS General Meeting will be held on Tuesday 2 February 2021 at 7 PM. This will be a Zoom meeting similar to what was done in January. Jordan Lapin has set it up. The following gives access.

Link: <https://us02web.zoom.us/j/89283230783?pwd=QytLMFdTNi9NK0xmenArVE9MTi84QT09>
 Meeting ID: 892 8323 0783
 Passcode: airplane

Jordan has established a "dial in" option called "One Tap Mobile". This is for people who don't have a device that can open up in a browser. If you click on the link then it will give you a phone number to call that way you can hear what is going on in the meeting and speak to us through your phone

One Tap Mobile

Link: [+16699009128,89283230783#,,,*68075859#](tel:+16699009128,89283230783#,,,*68075859) US (San Jose)
 Phone: [+1 669 900 9128](tel:+16699009128) US (San Jose)
 Meeting ID: 892 8323 0783
 Passcode: 68075859

An E-mail blast will be sent out to all members as a reminder, with the Access Link, Meeting ID, and Password.

Youtube and HSS Web Site Posting of Virtual Meetings

John Rittenhouse is compiling the files of our virtual meetings. Jordan Lapin has been posting the files on Youtube, and John has them linked to our HSS web site at www.harborsoaringsociety.org . Thanks all.

Club Name Badges

We are pleased to announce that our new Treasurer, Joni Whitsitt, has made arrangements for new HSS name badges. Contact Joni at 714-396-2523 or whitsittjo@gmail.com to purchase yours. Price remains at \$15. Joni comments that she believes name badges are important for any club.

Imaginology April 2021

HSS has again been invited to participate in the Orange County Imaginology exposition. The following invitation was sent to Joni Whitsitt from Christine Gunst, event manager.

This years Imaginology will be a virtual event in April (dates TBD). We are currently in the planning stages and working hard to make it the best it can be. We would like to showcase our past Featured Exhibitors online during the event. Ways to do this could include:

Your logo, brief description and link to your website.

Videos you have produced.

Games you have online.

Educational materials you have online

Activities

I am open to ideas and suggestions.

Please contact me as soon as possible to express your interest and share your ideas - we need to move forward quickly! Christine Gunst, OC Fair and Event Center

Joni responds:

This proposal sounds interesting, but are we prepared for it? John Anderson may be able to help with virtual educational information with the Civil Air Patrol.

Does anyone know if the AMA has any virtual games online or perhaps Jordan can make some suggestions as well. Can our website handle incoming traffic for the games. Maybe there are virtual air games we can buy?

Can each one of you make some suggestions on how we handle this virtual request? Can we do this????

I am sure our participation will produce good will with the city or at least earn our gold star status with the AMA.



Remote ID for Modelers.

Don Wittenberg has provided recent information about the FAA Remote Identification (RID) rules. These have been formalized and released as a final set of requirements. First some assumptions and descriptions are needed. Thanks, Don for your research, and for sharing your results. - Ed.

- In order for recreational model flying to be permitted by the FAA, AMA flying clubs must agree to either fly at a FAA Recognized Identification Area (FRIA) or carry a remote identification transponder (broadcast module) on the aircraft. It appears that AMA charter clubs will need to apply for FRIA designation. It is assumed that HSS will make application for our own FRIA flying site, or team with another flying club.
- A FRIA is a defined geographic area where both the unmanned aircraft and the person operating it must be located within the boundaries. Obtaining FRIA designation must start after August 26, 2022, and be renewed every 48 months.

This set of rules extends over 499 pages, so only a brief summary is included below.

Remote ID for FAA-Recognized Identification Areas (FRIAs)

- Drones or unmanned aircraft systems (UAS) are fundamentally changing aviation, and the FAA is committed to working to fully integrate drones into the National Airspace System (NAS). Safety and security are top priorities for the FAA and remote identification (remote ID) of drones is crucial to our integration efforts.

What is Remote ID?

Remote ID is the ability of a drone in flight to provide identification and location information that can be received by other parties.

Why Do We Need Remote ID?

Remote ID helps the FAA, law enforcement, and other federal agencies find the control station when a drone appears to be flying in an unsafe manner or where it is not allowed to fly. Remote ID also lays the foundation of the safety and security groundwork needed for more complex drone operations.

Final Rule on Remote ID

The final rule on remote ID will require most drones operating in US airspace to have remote ID capability. Remote ID will provide information about drones in flight, such as the identity, location, and altitude of the drone and its control station or take-off location. Authorized individuals from public safety organizations may request identity of the drone's owner from the FAA.

The FAA's Notice of Proposed Rulemaking (NPRM) on Remote Identification of Unmanned Aircraft Systems was published on December 31, 2019. The FAA received over 53,000 comments on the NPRM during the 60-day comment period following publication. The FAA reviewed all of the comments and considered them when writing the final rule. The [final rule](#) (PDF) has been submitted to the Federal Register for publication.

Most of the final rule becomes effective 60 days after it is published in the Federal Register. The subpart covering the process for FAA-Recognized Identification Area (FRIA) applications from community-based organizations and educational institutions becomes effective 60 days and 18 months after publication of the rule in the Federal Register. There are three ways drone pilots will be able to meet the identification requirements of the remote ID rule:

1. [Operate a Standard Remote ID Drone](#) (PDF) that broadcasts identification and location information about the drone and its control station. A Standard Remote ID Drone is one that is produced with built-in remote ID broadcast capability in accordance with the remote ID rule's requirements.



Remote ID for Modelers (Continued).

2. [Operate a drone with a remote ID broadcast module](#) (PDF). A broadcast module is a device that broadcasts identification and location information about the drone and its take-off location in accordance with the remote ID rule's requirements. The broadcast module can be added to a drone to retrofit it with remote ID capability. Persons operating a drone with a remote ID broadcast module must be able to see their drone at all times during flight.
3. [Operate a drone not equipped with remote ID at a FRIA](#). FRIAs are the only locations unmanned aircraft (drones and radio-controlled model airplanes) may operate without broadcasting remote ID message elements without other authorization from the FAA.

3 Ways Drone Pilots Can Meet Remote ID Rule

Drone Remote Identification

Standard Remote ID Drones

Drone Broadcasts Remote ID Info. Via Radio Frequency. e.g. Wifi & Bluetooth

- **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

Drones With Remote ID Broadcast Module

Drone Broadcasts Remote ID Info. Via Radio Frequency. e.g. Wifi & Bluetooth

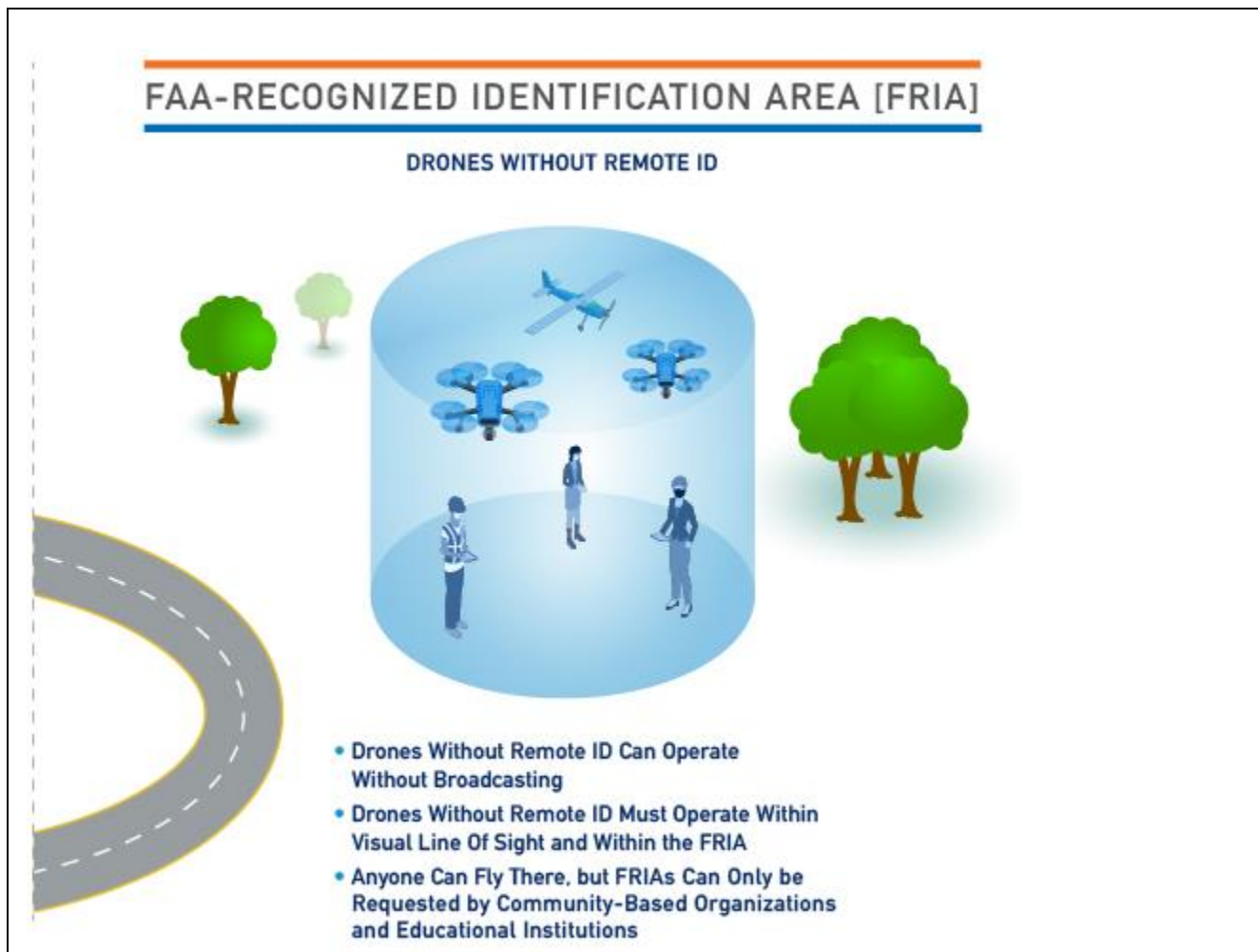
- Remote ID capability through module attached to drone
- Limited to visual line of sight operations
- From takeoff to shutdown, drone broadcasts:
 - Drone ID
 - Drone location and altitude
 - Drone velocity
 - Takeoff location and elevation
 - Time mark

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 boundaries..
- Anyone can fly there, but FRIAs can only be requested by community-based organizations and educational institutions



Remote ID for Modelers (Continued).**What is a FRIA?**

The FAA has determined there is a need for a space for unmanned aircraft (drones and radio-controlled model airplanes) without remote ID to continue to operate. These spaces, known as FRIAs, are locations where an unmanned aircraft may operate without remote ID. FAA-recognized community-based organizations (AMA) and educational institutions (see below) are eligible to apply to the FAA for FRIA status.

A FRIA is a defined geographic area and both the unmanned aircraft and the person operating it must be located within the FRIA's boundaries throughout the operation. In addition, the person operating the unmanned aircraft must be able to see it at all times throughout the operation.

For information about the application review criteria, an advisory circular on FRIAs will be made available prior to the effective date of the FRIA provisions.

If FRIA status is granted, it is valid for 48 calendar months after the date of approval. To renew the FRIA, the holder must submit a request for renewal no later than 120 days before the expiration date. Any change of a FRIA's geographic boundaries must be sent to the FAA for review.

Applicants may re-apply for an area that has expired or been voluntarily terminated. The FAA envisions that the re-application process will be the same as the process for new applications, as the renewal would be evaluated against the same criteria as new applications.

The FAA will maintain a list of FAA-recognized identification areas at <https://www.faa.gov>.



Remote ID for Modelers (Continued).

Changes from the NPRM for Requesting a FRIA

The FAA revised the final rule to expand the scope of eligibility to apply for and operate a FRIA. In the NPRM, eligibility was limited to FAA-recognized community-based organizations. In the final rule, the FAA recognized the need for educational institutions to be able to conduct unmanned aircraft activities and has expanded the list of those eligible to request establishment of a FRIA to include educational institutions, including primary and secondary schools, trade schools, colleges, and universities. This approach will better accommodate science, technology, engineering, and math programs and encourage participation in aviation for educational purposes.

A second change concerns the application period. In the NPRM, there was a one-time, 12-month period beginning on the rule's effective date and once that 12-month period had expired, the FAA would no longer accept applications for FRIA designation. Under the final rule, the application period opens 20 months after the rule is published in the Federal Register and there is no deadline for filing applications. The application process is being developed and will be published before the application period opens (approximately September 2022). In addition, under the NPRM, if the holder of a FRIA terminated the site prior to the expiration date, that site would no longer be eligible to be an FRIA in the future. The final rule removes this restriction and allows voluntarily terminated FRIAs to be submitted for re-establishment.

The proposed rule also included the restriction that once a FRIA had expired, it could not be re-established. The final rule removes that restriction.

Effective Dates

Most of the final rule on remote ID becomes effective 60 days after publication of the rule in the Federal Register. The subpart covering the process for FRIA applications from community-based organizations and educational institutions becomes effective 60 days and 18 months after publication of the rule in the Federal Register.

Other dates of note:

- 18 months after the rule's effective date:
 - Drone manufacturers must comply with applicable final rule requirements.
- 30 months after the rule's effective date:
 - All drone pilots must meet the operating requirements of part 89. For most operators this will mean flying a Standard Remote ID Drone, equipping with a broadcast module, or flying at a FRIA.

3, 2, 1—Done! Remote ID Rule is Final

This article was prepared by Steve Neu of Silent Electric Flyers of San Diego (SEFSD). It contains additional detail and reference to specific paragraphs of the new law. First published in club newsletter titled "Peak Charge" by Steve Belknap, Editor.

A 499 page document from the FAA has been released (leaked) regarding the "Remote ID" rules—of note is the fact that some of the more onerous requirements for RC flying have been dropped or modified under pressure from the AMA and the 53,000 people that gave their input when the "notice for proposed rule making" was made a year ago. There is a link to both the original article as well as the text with the areas of interest to us in red. I think members of the club might like to be kept informed as to what is going on.

Steve Neu

BY DAWN M.K. ZOLDI (COLONEL, USAF, RET) AND JAMES POSS (MAJOR GENERAL, USAF, RET)



3, 2, 1—Done! Remote ID Rule is Final (Continued)

Four days before the new year, after 53,000 public comments on the draft rule and almost one year after the Notice of Proposed Rulemaking (NPRM) launch, the waiting is over. The Federal Aviation Administration has released its final Remote Identification (RID) Rule. *Inside Unmanned Systems* received an advance copy of the 499-page document, and here's our summary of the new rule. Expect a full review of the rule and its implications in our February-March edition.

What it Is

The rule creates a new Part 89 in Title 14 of the Code of Federal Regulations, *Remote Identification of Unmanned Aircraft*. It essentially requires a "digital license plate" for unmanned aircraft (UA) to be operated in the U.S., one that both people on the ground and other airspace users can receive. (See "Types of RID" below for details.). This rule is specifically for UA (the unmanned air vehicle itself) and not unmanned aircraft systems (UAS – which includes the control station and data link). This recognizes that manufacturers might make UA's that are controlled by another manufacturer's control stations. More importantly, it ensures that the UA will be broadcasting RID and not the control station. Very important if the UA goes lost link.

Timelines

The Rule is effective 60 days from the expected publication date in the Federal Register in January 2021. Operators have thirty months and manufacturers have 18 months after this date to comply (i.e., 60 days plus 30 months).

RID Is Needed For

UAs weighing 55 pounds or less that must be registered under part 47 or part 48, with few exceptions. Of note, the FAA scrapped the requirement that all UA obtain a unique registration number. Recreational users remain an exception and can still be issued a single registration number for multiple UAs.

RID Is Not Needed For:

Homebuilt unmanned aircraft: Under pressure from hobbyists, the FAA didn't specify how much of a UA had to be homebuilt and instead defined a homebuilt UA as a UA that an individual built solely for education or recreation. Homebuilt UA can only fly in an FAA-recognized identification area (FRIA). More details on FRIA's later.

UA of the United States government armed forces. This is a registration-based rule and military aircraft are not required to be registered under part 47 or part 48.

UA that weigh 0.55 pounds or less on takeoff. Again, these UA don't require registration, so no RID either

Research UA: UA designed for the purpose of aeronautical research or test UA designed to show compliance with regulations. This requires an Administrator-authorized deviation under § 89.120.

UA with an exception or deviation. In addition to aero research, under a different provision, the FAA Administrator can authorize other deviations from the rule under 14 CFR § 89.10.

UA flying under part 91 that are transmitting ADS-B Out (§ 89.101(b)). Part 107 operators still cannot use ADS-B Out or transponders but UAS operating under part 91 can use ADS-B Out under an exception. UA using ADS-B don't need RID as long as they are flying part 91 approved operations. Nothing in the rule precludes equipping a Part 91 UA with both ADS-B Out and RID; it just precludes part 107 operators from using ADS-B to avoid saturating ADS-B frequencies.

Indoor UA Operations. The RID requirements only apply when the UA exits the interior of a building or structure and is operated outside, so indoor ops are not subject to RID.

Types of RID

The big news is this rule contains broadcast-only requirements. Network-based/internet transmission requirements and the use of third-party UAS Service Suppliers (USS) were eliminated "at this time." UAs will broadcast the RID message elements listed below directly from the UA via radio frequency broadcast. The public can use personal wireless devices within range to receive RID. Correlating the serial number or session



3, 2, 1—Done! Remote ID Rule is Final (Continued)

IDs with the registration database is limited to the FAA only, but can be made available to authorized law enforcement and national security personnel upon request. We will have more on this in next month's article.

Standard RID UA (§ 89.110). These will probably be UAs manufactured after this rule with RID "hard wired" in. Standard RID UAV cannot take off if they fail a RID self-test or do not broadcast these message elements:

(1) A unique identifier to establish the identity of the unmanned aircraft. Operators can choose either the serial number of the unmanned aircraft or a session ID (for operator privacy).

(2) UA latitude, longitude, geometric altitude and velocity. Geometric altitude and velocity are new. Geometric replaced barometric largely as a hat tip to GPS. Velocity was added to align with other RID standards, such as ASTM F3411-19 and international implementations, and to better pinpoint the vehicle.

(3) Control station latitude, longitude and geometric altitude. This is a major stipulation from law enforcement.

(4) A time mark

(5) An emergency status indication. So the UA can squawk lost link if need be.

The Rule contains an operational checklist of sorts. RID equipment must be functional before flight and remain so—and not disabled—from takeoff to shutdown (versus just landing). RID ops can occur when the UA has a serial number that is listed on an FAA-accepted declaration of compliance and the Certificate of Aircraft Registration of the UA used in the operation includes the serial number of the UA, as per applicable requirements of parts 47 and 48. Or, the serial number of the UA must be provided to the FAA in a notice of ID pursuant to § 89.130 prior to the operation. This last bit is new.

RID Broadcast Module (§ 89.115(a)). Operators can use a broadcast module if their UA isn't hardwired for RID. The broadcast module concept is a RID retrofit option that allows UA's built without remote identification (e.g., existing unmanned aircraft fleet, home-built unmanned aircraft) to be operated outside of FAA-recognized identification areas. This will keep older UA flying until UA's with RID "baked in" are available. These modules can be a separate device attached to an UA or a feature built into it, and will broadcast identification, location and take-off information.

The RID broadcast module message elements are identical-standard RID UA except: no control station location (replaced by takeoff location), emergency status is not required and there is no session ID option. The FAA recognized that "bolt on" RID will not interface with the UA's operating system like "baked in" RID will; hence it would be tough for broadcast module RID to know the GCS location or emergency status.

The RID broadcast module checklist is the same as for standard RID, except the UA must remain in sight of the remote pilot. This signals that only "baked in" RID ops will be able to fly BVLOS.

Flight in FRIAs (§ 89.115(b)). This was adopted from the NRPM and, perhaps in the FAA's eyes, a concession to hobbyists because it allows UAs to fly without RID in approved areas. Community-based organizations recognized by the Administrator (i.e. the Academy of Model Aeronautics) and educational institutions can start applying for FRIA's 18 months after the rule is effective and applications may be submitted at any time after that. Adding educational institutions to the organizations who can propose FRIA's is a welcome addition from the NPRM.

Compliance

The Rule impacts not just operators, but also designers and manufacturers. It contains both design and production requirements. The FAA is using performance-based requirements. Manufacturers must show that their standard RID UA or broadcast module meets the performance requirements of an FAA-accepted means of compliance. Industry consensus standards will be one means, but they have not been accepted by the FAA yet.



3, 2, 1—Done! Remote ID Rule is Final (Continued)**Major changes from the Notice of Public Rulemaking (NPRM) Version**

The massive change from the NPRM is deletion of the networked remote ID portion of the requirement. The FAA and commercial drone industry had a lot riding on networked RID. RID UAS Service Supplies (USS) were going to aggregate networked RID and provide it as a bedrock service to enable UAS traffic management (UTM). Tracking networked RID UAs was supposed to be easy; government users would only have to query RID USSs to find out where any UA was flying.

Then the public comments came. We will cover this in more depth in January's articles, but suffice it to say that valid concerns about cyber security (If all UAs are connected to networked RID, can't they all be hacked?), privacy (Who gets to see all that data? Could they sell it to foreigners?) and availability (Rural users might not have connectivity. First responders in a disaster area definitely would not.) Many, many commenters were opposed to potentially paying fees to connect to a RID USS. However, the nail in the coffin was probably the European Union Aviation Safety Agency saying they envisioned a broadcast-only solution.

All this aside, the FAA was careful to say that they were only eliminating network-based remote identification requirements *at this time* and they were committed to incremental rule making for unmanned aircraft systems. Hence, the door is still open to networked RID. Just not now.

The Big Remaining Question:

Unfortunately, how does all this work?

The rule was conspicuously quiet on what spectrum RID would use and didn't even commit to a single frequency solution. Veterans of the ADS-B frequency wars of the 20th century will remember that spectrum was the big question for ADS-B, yet it doesn't rate a mention in these 21st century rules. The FAA is undoubtedly counting on industry consensus standards to fill this gap but our sense is the standards groups such as ASTM, have a lot of work to do if they must carry the burden of finding available spectrum that will work for UA RID world-wide. Keep in mind, ASTM spent the last two years developing a detailed RID standard based on the NPRM which put a lot of weight on networked RID.

Spectrum matters. Law enforcement, the military, and homeland security need to know if they're buying antennas to cover one frequency or a dozen. Granted, RID is supposedly just for ID and not separation, but what if manned aircraft operators want to use RID to avoid collisions? How will they know that a RID broadcast won't get lost in a sea of competing signals? We would have felt a lot more comfortable with this rule if the FAA had addressed this important issue.

Almost 500 pages and, as a practical matter, how this will actually work continues to elude us. Well, at least we have 30 months to sort all of this out.

*The views and opinions in this article are those of the author and do not reflect those of the DOD, do not constitute endorsement of any organization mentioned herein and are not intended to influence the action of federal agencies or their employees.

Authors:

Dawn M.K. Zoldi (Colonel, USAF, Ret) is a licensed attorney and a 25-year Air Force veteran. She is an internationally recognized expert on unmanned aircraft system law and policy, a recipient of the Woman to Watch in UAS (Leadership) Award 2019, and the CEO of P3 Tech Consulting LLC.

Major General James Poss (USAF, Ret) is a leading expert on UAS having targeted the first armed UAS strikes, designed the U.S. Air Force's remote spit operations system for UAS control and helped design the Distributed Common Ground Station for UAS intelligence analysis. General Poss was the Executive Director of the Alliance for System Safety of the UAS through Research Excellence (ASSURE) of the Federal Aviation Administration's (FAA) Unmanned Aerial Systems (UAS) Center for Excellence Team.



Electric Car Batteries with Five-Minute Charging Times Developed

Batteries capable of fully charging in five minutes have been produced in a factory for the first time, marking a significant step towards electric cars becoming as fast to charge as filling up petrol or diesel vehicles.

Electric vehicles are a vital part of action to tackle the climate crisis but running out of charge during a journey is a worry for drivers. The new lithium-ion batteries were developed by the Israeli company [StoreDot](#) and manufactured by Eve Energy in China on standard production lines.

StoreDot has already demonstrated its “extreme fast-charging” battery in phones, drones and scooters and the 1,000 batteries it has now produced are to showcase its technology to carmakers and other companies. Daimler, BP, Samsung and TDK have all invested in StoreDot, which has raised \$130m to date and was named a [Bloomberg New Energy Finance Pioneer](#) in 2020.

The batteries can be fully charged in five minutes but this would require much higher-powered chargers than used today. Using available charging infrastructure, StoreDot is aiming to deliver 100 miles of charge to a car battery in five minutes in 2025.

“The number one barrier to the adoption of electric vehicles is no longer cost, it is range anxiety,” said Doron Myersdorf, CEO of StoreDot. “You’re either afraid that you’re going to get stuck on the highway or you’re going to need to sit in a charging station for two hours. But if the experience of the driver is exactly like fuelling [a petrol car], this whole anxiety goes away.”

“A five-minute charging lithium-ion battery was considered to be impossible,” he said. “But we are not releasing a lab prototype, we are releasing engineering samples from a mass production line. This demonstrates it is feasible and it’s commercially ready.”

Existing Li-ion batteries use graphite as one electrode, into which the lithium ions are pushed to store charge. But when these are rapidly charged, the ions get congested and can turn into metal and short circuit the battery.

The StoreDot battery replaces graphite with semiconductor nanoparticles into which ions can pass more quickly and easily. These nanoparticles are currently based on germanium, which is water soluble and easier to handle in manufacturing. But StoreDot’s plan is to use silicon, which is much cheaper, and it expects these prototypes later this year. Myersdorf said the cost would be the same as existing Li-ion batteries.

“The bottleneck to extra-fast charging is no longer the battery,” he said. Now the charging stations and grids that supply them need to be upgraded, he said, which is why they are working with BP. “BP has 18,200 forecourts and they understand that, 10 years from now, all these stations will be obsolete, if they don’t repurpose them for charging – batteries are the new oil.”

Dozens of companies around the world are developing fast-charging batteries, with [Tesla](#), [Enevate](#) and [Sila Nanotechnologies](#) all working on silicon electrodes. Others are looking at different compounds, such as Echion which uses niobium oxide nanoparticles.

Tesla boss [Elon Musk tweeted](#) on Monday: “Battery cell production is the fundamental rate-limiter slowing down a sustainable energy future. Very important problem.”

“I think such fast-charging batteries will be available to the mass market in three years,” said Prof Chao-Yang Wang, at the Battery and [Energy](#) Storage Technology Center at Pennsylvania State University in the US.

“They will not be more expensive; in fact, they allow automakers to downsize the onboard battery while still eliminating range anxiety, thereby dramatically cutting down the vehicle battery cost.”

[Research by Wang’s group](#) is being developed by the company [EC Power](#), which he founded. It carefully increases the temperature of the battery to 60C, which enables the lithium ions to move faster, but avoids the damage to the battery usually caused by heat. He said this allowed a full charge in 10 minutes.



Electric Car Batteries with Five-Minute Charging Times Developed (Continued)

Wang said [new research published in Nature Energy](#) on Monday showed this battery could be both affordable and eliminate range anxiety. "Finally we are achieving parity with gasoline vehicles in both cost and convenience. We have the technology for \$25,000 electric cars that race like luxury sport cars, have 10-minute rechargeability and are safer than any currently on the market."

Wang noted that fast charging must also be repeatable at least 500 times without degrading the battery to give it a reasonable life and that the EC power battery can do so 2,500 times. Myersdorf said the StoreDot battery could be recharged 1,000 cycles while retaining 80% of original capacity.

Anna Tomaszewska, at Imperial College London, UK, who [reviewed the fast-charging batteries](#) in 2019, was more cautious about the speed of their rollout. "I think technologies [like StoreDot's] could start entering the market in the next five years or so. However, since they will be more difficult and expensive to manufacture, we're likely to initially only see them in niche markets that are highly performance-driven and not as price-sensitive as electric vehicles," she said.

This article was taken from the Silent Electric Flyers of San Diego newsletter titled "Peak Charge", courtesy of Steve Belknap, Editor.

Flying Site Meeting With OC Parks Department

Henry Smith III met with Theresa Sears who manages the steering committee that meets with the Orange County Parks Department. Henry made inquiry about the possibility of HSS obtaining a new flying site within the Orange County parks property. As a result, Henry received the following message from Pam Passow, Deputy Director of OC Parks. This is encouraging.

Hello Mr. Smith,

Theresa Sears was kind enough to forward your inquiry for our consideration. As you know, OC Parks has two model airfields, one at the back of Irvine Lake near Black Star Canyon and the Kite Hill (Battery/Electric) at the back of Laguna Niguel Regional Park. In consideration of your request, I have asked Parks Division Manager, John Gannaway (copied here), who oversees the majority of OC Parks open space to evaluate potential opportunities.

What would be better suited for this conversation is to set up a conference call specific to your group's request for us to discuss. If you could provide some dates and times of your availability, I'll have John set up a conference call for us to discuss.

Thank you, Pam Passow, Deputy Director, OC Parks

Some Light Airplane Humor

Morris and his wife Esther went to the state fair every year, and every year Morris would say, "Esther, I'd like to take a ride in that helicopter."

Esther always replied, "That helicopter ride is fifty dollars, and fifty dollars is fifty dollars."

One year Esther and Morris went to the fair and Morris said, "Esther, I'm 85 years old. If I don't ride that helicopter, I might never get another chance."

Esther replied, "Morris, that helicopter ride is fifty dollars, and fifty dollars is fifty dollars."

The pilot overheard the couple and said, "Folks I'll make you a deal. I'll take the both of you for a ride. If you can stay quiet for the entire ride and not say a word, I won't charge you! But if you say one word, it's fifty dollars."

Morris and Esther agreed and up they went. The pilot did all kinds of fancy maneuvers, but not a word was heard. He did his daredevil tricks over and over again, but still not a word.

When they landed, the pilot turned to Morris and said, "By golly, I did everything I could to get you to yell out, but you didn't. I'm Impressed!"

Morris replied, "Well, to tell you the truth, I almost said something when Esther fell out, but fifty dollars is fifty dollars."



Comments on Model Aviation Magazine Jan 2021 Issue

The latest issue of Model Aviation has some very interesting articles worthy of review. The following comments are extracted from the more significant articles.

- Safety and Knowledge Test. AMA is advocating that the test be available online and in a written format at fixed locations such as an AMA flying site. It is required that all AMA members take the test. The test will have about 25 multiple choice questions about basic safety guidelines and recreational flying knowledge. If a member misses a question, he or she will be able to go back and reselect an answer until the response is correct. (Wow. Just keep guessing until you get it right.) The process is outlined in Advisory Circular AC 91-57C.

A discussion concerning Remote Identification and the problems involved identifies shortcomings in FAA requirements such as making a phone call to request permission to fly from anywhere except fixed flying site locations.

- A new (epoxy type?) adhesive has been introduced by a British firm, Deluxe Materials. The adhesive called Rocket AD-88, uses Ultra Violet light to activate the hardening process. This takes 1 to 3 seconds, and the material is odorless and can be painted. Further details and sources can be found at www.deluxematerials.com.
- The FAA Unmanned Aircraft Systems Traffic Management (UTM) office predicts that there will be upward of 1.3 million commercial drones in operation by 2023, and nearly 1.7 million recreational model aircraft.
- The Physics of an F3J Launch. This is an excellent article showing the five elements of a high performance launch using a winch. Remarkably, at one point in the launch, the glider is going 125 MPH, and later achieves an altitude of over 800 feet.
- RC Pylon Racing. These planes have a maximum of 52" span and get up to 200 MPH in the straight part of the course. Your editor believes that the engines turn between 18,000 and 24,000 RPM, but this needs to be verified.

As mentioned in the meeting minutes, Henry Smith III built a 3D-printed winder suitable for indoor model rubber motors. By coincidence, Model Aviation has an article with photos and source information. A reasonably priced 3D printer is available from Creality 3D for about \$200. Model is Creality Ender 3D. Check it out at www.creality3d.shop

HSS Membership – Renew now if you haven't.

Our 2021 HSS membership enrollment season is running full speed. Note that the new membership rate of \$25 per year is now in effect. PayPal will no longer be accepted as the cost and inconvenience did not justify the service. The latest membership application, dated 2021, is included in the last pages of this newsletter. This can be mailed to our post office box shown on the last page, or given to a club officer. Alternately, HSS and AMA membership applications can be obtained from any club officer, or available on our club web site at www.harborsoaringsociety.org. Applicants must be members of the AMA prior to joining HSS. AMA Membership applications can also be obtained at the AMA web site www.modelaircraft.org, download document No. 902 from the publications page. Or you can apply on line. If you renew your AMA membership online, be sure to print the receipt that they provide as proof that you joined. And, don't forget your City of Costa Mesa Flying Permit. Details are shown on the following page of this newsletter.

Costa Mesa Residents Sought To Serve On City Committees/Commissions

The following link connects to the City of Costa Mesa and a news clipping which requests assistance from residents on about a dozen committees/commissions that direct the activities of the city government. Of particular interest are openings in the Fairview Park Steering Committee, and the Parks, Arts and Community Services Commission. Here is an opportunity to place HSS club members into these organizations so that our interests are better represented. For position descriptions: <https://www.cityofcostamesanews.com/costa-mesa-residents-sought-to-serve-on-city-committees-commissions/>



Calendar of Events

Thanks to John Rittenhouse for the preparation of the following Calendar of Events. Note this has been updated since last published in March 2020. Some of the activities have not been cancelled yet, but are subject to cancellation at a moment's notice.

Repeating activities include:

- Monthly General Meetings - 7 to 9 PM on the first Tuesday of each month. **Cancelled.**
- Monthly Steering Committee Meetings – To be planned as needed. Additional meetings to be planned as required. **Cancelled.**
- Flying field maintenance on an as-needed basis.
- Quarterly meetings with the Orange County Parks Department. Coordinated by Theresa Sears.

Singular events:

- September 2021 FAA agreement with HSS expires.

Annual Events:

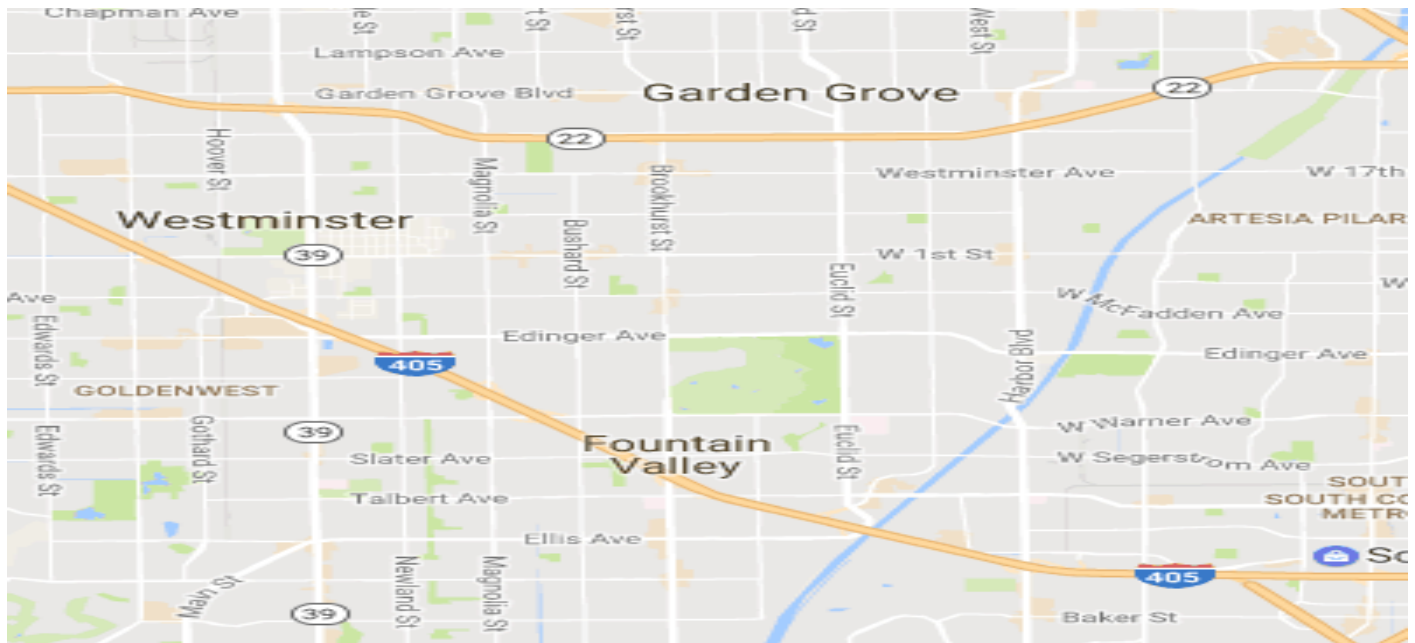
- February Wix, website management and domain name re-registration payment due.
- March Network Solutions, website domain name re-registration payment due.
- March AMA charter and "Gold Leader Club" renewal.
- March Club must purchase "Certificate of Liability Insurance" from AMA.
- April Imaginology - This is a public service event held at the Orange County Fairgrounds. HSS provides booths containing static displays of model aircraft, build and fly paper gliders, and model flight simulators. **Planned as a virtual event.**
- **June Southern California Soaring Clubs (SC-2) glider competition. HSS hosts local glider clubs, for one of the monthly events held throughout Southern California.* Canceled.**
- July Concerts at the Park - Three evenings on Tuesday nights in July at Fairview Park. Music is sponsored by the City of Costa Mesa. HSS supports this public service event with a pop-up sunshade, and static display of model aircraft. **Cancelled.**
- **July Bent Wing Glider Competition. This event is open to all club members and guests.* Canceled.**
- **August National Model Aviation Day. Open house, demonstrations, free flying lessons, and acquiring donations for charity.***
- August Dollar Foam Design/Build/Fly competition. Tentative schedule is Original designs are electric powered RC models made from a single sheet of paper backed 1/4" foam. Performance criteria to be determined. **Cancelled.**
- September Electric Fun Fly Competition. Tentative schedule is Multiple events are planned for club members and guests. **Cancelled.**
- October Pumpkin Festival/Scarecrow Competition. This is a public service activity for HSS. It is planned by the city, to be held at the Orange County Model Engineers railroad facility in Fairview Park. **Cancelled.**
- October Nominations made for new club officers.
- November New club officer election. Done by E-mail and USPS.
- December Christmas party and new club officer installation. **Cancelled.**

* Note: Historical events are not currently scheduled, and are included for reference purposes only!



Next Meeting POSTPONEMENT

HSS meetings will be postponed until the existing government directives are recalled. At that time we will return to our normal schedule where we meet on the first Tuesday of each month at a restaurant to be determined.. Bring your favorite plane for show-and-tell. Bring your wife, family, and friends. There will be a raffle. The location map will be shown below when a new meeting place is determined.



Free Plane Rap Copies

Rob Askegaard has free near new color copies of HSS Plane Rap newsletters from 2005 through 2017 that he would like to give away. Contact Rob at the monthly meetings or 714-968-1973. rmaskgrd@gmail.com.

Invitation To Members For Contributions To The Plane Rap Newsletter

Your editor would love to hear from club members. If there is anything you would like to share with the rest of us I would like you to send it to me. I will add it to the next newsletter. My favorite things to publish are items sent in by members!! These can be anything like reviews of your plane or equipment, links to good videos, links to articles, and things you have built or created. Bad spelling and/or grammar gladly accepted. Anything from a picture with a caption to a full blown build/review article is good. Letters-to-the-Editor are always welcome as well. Tell us what you think. Please help make the newsletter and website more interesting with your submissions. Embarrassing pictures/videos are the best. I look forward to hearing from you.

Fred Hesse - Plane Rap Editor - fhesse@socal.rr.com.

Photos of Your Planes

We are very fortunate to have Rob Askegaard as our club photographer. Rob has a high degree of talent, and supplements that with an excellent camera. His well composed and very realistic photos taken at ground level and his remarkable stop action in-flight pictures are superb. Rob's contributions are what make our newsletter really spectacular. We try to feature everyone and their planes, so if you haven't seen yourself in our newsletter, look for Rob just about any morning and pose for him. Anyone who wishes a high quality print or jpg file of their favorite plane should contact Rob, or your editor. Phone and E-mail information is shown on the last page of this newsletter.



Final Proposal

Our President, Mike Costello, has been working on a final proposal to be presented to the City of Costa Mesa and the Fairview Park Steering Committee around the middle of February. He has finished it and had it reviewed by Greg Stone. If you have an urgent desire to read the document, contact Mike as shown on the last page of this newsletter. Alternately, it will probably be posted on our web site.

HSS Sponsors

The following companies are proud sponsors of Harbor Soaring Society. They give us special offers, and make contributions to our monthly raffles. In return, please support them, and mention that you saw them advertised in the HSS Plane Rap newsletter.

AirPixel Technologies/FrSky Distributor

I just wanted to reach out on behalf of FrSky, as we are working directly with the manufacturer to do some community outreach to aviation clubs that are close to us here in Southern California, as provided by the AMA Club list. If anyone who happens to be a part of your club or organization is looking to purchase any number of **FrSky radios, receivers, gimbals, or other FrSky products**, we would love to assist in fulfilling these needs. During this outreach, we will be **lowering our prices to assist local clubs** in obtaining the necessary gear to get members flying as soon as possible. If you or anyone in your club is looking for products of this variety to assist in your RC aspirations, please do not hesitate to contact us via email or at our office phone number, which I will attach below, where we can answer questions regarding sales and warranty questions, and assist with any and all FrSky product related technical difficulties that you or your club members might run into.

Thanks so much for keeping the hobby alive and I look forward to hearing from you! -Brock

Brock Nelson <Brock@airpixeltek.com> sales <sales@airpixeltek.com>

AirPixel Technologies: North American FrSky Distribution and Service Center
[9690 Telstar Ave.](http://9690TelstarAve.com) [Suite 226](http://Suite226.com) [El Monte, CA 91731](http://ElMonte.com) Phone: 626-656-3121

ROB'S R/C HOBBIES

Sales / Parts / Repair

Radio Control Airplanes, Helicopters, and Cars.

15071 Goldenwest St. Huntington Beach

S.W. Corner of Goldenwest & Bolsa Ave

(714) 372-3777

All HSS Club members with proof of club membership, will get a 10% discount on most parts and accessories. Discount does not apply to plane kits, helicopter kits, radios, and other already marked down products. Please ask staff if you have any further questions.

Robsrchobbies.com

robsrchobbies@earthlink.net





MEMBERSHIP APPLICATION 2021

Revised 30 December 2020

Harbor Soaring Society

AMA Chartered Club #128 - AMA's Oldest Chartered Soaring Club

P.O. Box 1673 Costa Mesa, CA 92628

I understand that by applying for membership in the Harbor Soaring Society I must be a current member of the AMA (Proof of status required, may be photocopy of membership card or AMA receipt of fees paid)

Name _____ AMA # _____

FAA Registration Number _____ Date of Registration _____

Address _____

City _____ State _____ Zip _____

Home Phone _____ Work Phone _____

Date of Birth _____ Email _____

- New Applicants (Without Name Tag) (all ages): \$25.00
- Adult Member (Renewal Without Name Tag) (19 years and older as of July 1st): \$25.00
- Junior Member (Without Name Tag) (19 years and under as of July 1st): \$10.00
- Family Member (Without Name Tag) (At Same Address): \$5.00
- Optional or Extra HSS Name Tag: \$15.00

I hereby give my permission to publish my [Name], [Address], [Phone], [Email Address] in the _____ monthly Newsletter. **Strike out those not to be published.** Note that the Newsletter is published _____ on the club Website (<http://www.harborsoaringsociety.org>)

I request a printed copy of the monthly Newsletter by U.S. Mail. Printing and Mailing: \$20.00/year

My primary interests in radio control flying are? Check all that apply. Show future interests with the letter F.

- | | | |
|-------------------------------------|---------------------------------|------------------------------|
| Thermal Duration Gliders _____ | Slope Soaring Gliders _____ | RES Gliders _____ |
| Large Scale Gliders _____ | Hand Launched Gliders _____ | Electric Motor Gliders _____ |
| Park Flyer Electric _____ | Acrobatic Electric Planes _____ | Scale Electric Planes _____ |
| Electric Drones / Multi-rotor _____ | Indoor Electric Planes _____ | Electric Helicopters _____ |

In accordance with the Federal Equal Opportunity Act, this organization prohibits discrimination against anyone on the basis of race, color, religion, national origin, sex, marital status, age, individuals with disabilities or veterans. New applicants making application between November 1st and December 31st will pay the annual rate indicated above and such dues will make the new member paid in full for the following year. Applications for adult members submitted between July 1st and October 31st will pay a reduced rate of \$15.00 (name tags extra). A signature is required from all Harbor Soaring Society applicants, agreeing to comply with the current AMA Safety Code, the current HSS and Costa Mesa City General Field Rules, and FAA rules and regulations applicable to the flying of RC model Aircraft.

The undersigned attests that: I will operate my model using only radio frequencies for the control of fixed wing or multi-rotor aircraft, and/or data transmission, on equipment certified and approved for such use by the AMA, FAA or FCC as applicable. I understand that my failure to comply with the above restrictions will result in nullification of liability coverage for damages caused or claimed. I understand that my monthly newsletter will be delivered by E-mail unless the U.S. Mail request (shown above) has been selected.

SIGNATURE: _____ DATE: _____

Total Dues Owed and Attached: \$ _____

SIGNATURE OF CLUB OFFICER RECEIVING APPLICATION: _____



HARBOR SOARING SOCIETY OFFICERS FOR 2021

President	Mike Costello	714-962-7994	mikefre@gmail.com
Vice President	Henry Smith III	714-322-6537	henry.smith.3@earthlink.net
Treasurer, Membership	Joni Whitsitt	714-396-2523	whitsittjo@gmail.com
Secretary	Fred Hesse	714-963-5838	fhesse@socal.rr.com
Contest Coordinator	Bruce Schaefer	714-814-6412	metaterra@msn.com
Safety Coordinator	Kevin Koch	714-651-1246	kev380@yahoo.com
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Social Media Manager	John Rittenhouse	714-222-8660	johnritt@yahoo.com
Lead Flight Instructor	Henry Smith III	714-322-6537	henry.smith.3@earthlink.net
Flight Instructor	Jerome Mezzasalma	714-887-7913	sdgusa1@msn.com

Web site at www.harborsoaringsociety.org, our YouTube site at <http://www.youtube.com/user/hssletsfly>,
 Facebook at www.facebook.com/harborsoaringsociety and E-mail at harborsoaringsociety@gmail.com

IN PERSON CLUB MEETINGS ARE CANCELLED INDEFINITLY.
WHEN RE-INSTATED, THEY WILL BE AT A TO BE DEFINED RESTAURANT.
VIRTUAL MEETINGS AARE BEING ATTEMPTED. SEE PAGE 3 FOR DETAILS.
BRING YOUR FAVORITE PLANE FOR SHOW AND TELL.
BRING YOUR FAMILY, WIFE, AND FRIENDS FOR DINNER.
SEE DETAILS AND INSTRUCTIONS TO LOCATION ON PAGE TBD.
SEE THE COLOR NEWSLETTER SENT BY E-MAIL AND AVAILABLE ON OUR WEB SITE.

