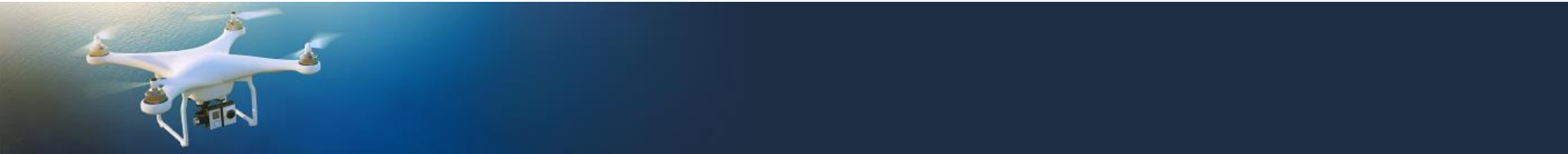
Micro – UAS Rulemaking ARC Recommendations and New Developments

The UAS Webinar Series

April 16, 2016



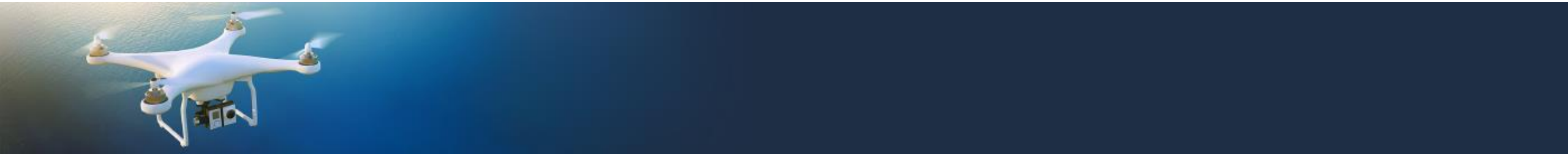
Presenters

Mark Dombroff

Mark McKinnon

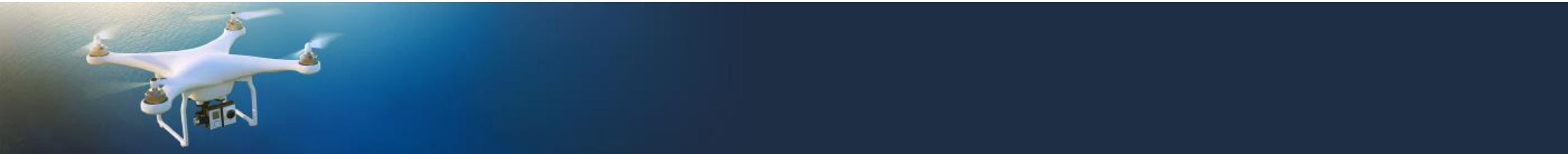
Jim Williams,

JHW Unmanned Solutions LLC



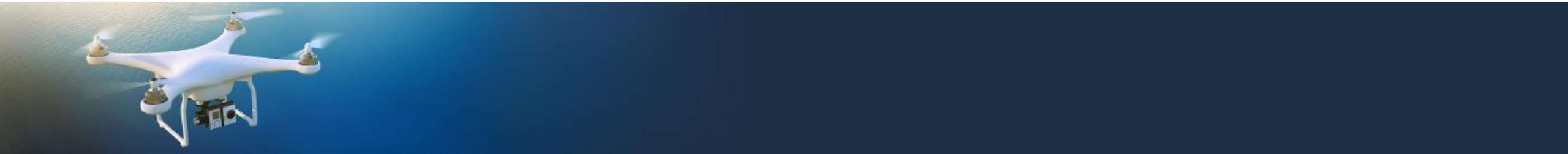
New Developments-400’ Blanket COA

- The COA is issued to “Any Operator with a valid Section 333 Grant of Exemption.”
- Current Exemption holders are able to use it without any further action or seeking an amendment.
- Main effect is to lift the maximum altitude from 200’ AGL to 400’ AGL.
- Getting an ATO COA can take several weeks under some circumstances
- FAA estimates the change will cut down on the number of requests for ATO COAs by 30-40%.
- No change to the minimum distances to airports and heliports.



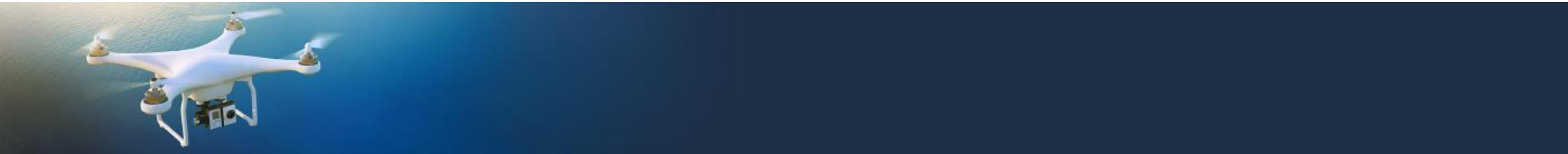
New Developments-400’ Blanket COA (cont’d)

- Major changes to the Accident/Incident/Mishap Reporting Requirement
  - Incident/Accident/Mishap Reporting
  - After an incident or accident that meets the criteria below, and within 24 hours of that incident, accident or event described below, the proponent must provide initial notification of the following to the FAA via email at mailto: 9-AJV-115-UASOrganization@faa.gov and via the UAS COA On-Line forms (Incident/Accident).



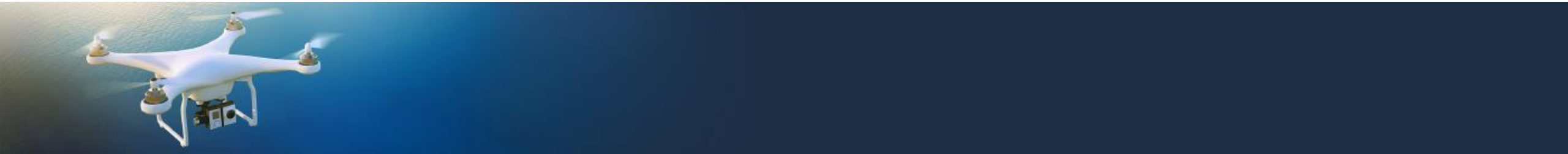
New Developments-400’ Blanket COA (cont’d)

- All accidents/mishaps involving UAS operations where any of the following occurs:
  - Fatal injury, where the operation of a UAS results in a death occurring within 30 days of the accident/mishap
  - Serious injury, where the operation of a UAS results in: (1) hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.
  - Total unmanned aircraft loss
  - Substantial damage to the unmanned aircraft system where there is damage to the airframe, power plant, or onboard systems that must be repaired prior to further flight
  - Damage to property, other than the unmanned aircraft.



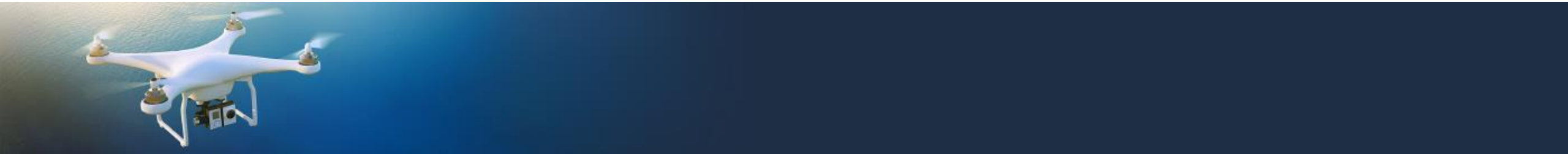
New Developments-400’ Blanket COA (cont’d)

- Major changes to the Accident/Incident/Mishap Reporting Requirement
  - A malfunction or failure of the unmanned aircraft’s on-board flight control system (including navigation)
  - A malfunction or failure of ground control station flight control hardware or software (other than loss of control link)
  - A power plant failure or malfunction
  - An in-flight fire
  - An aircraft collision involving another aircraft.
  - Any in-flight failure of the unmanned aircraft’s electrical system requiring use of alternate or emergency power to complete the flight
  - A deviation from any provision contained in the COA
  - A deviation from an ATC clearance and/or Letter(s) of Agreement/Procedures
  - A lost control link event resulting in
  - Fly-away, or
  - Execution of a pre-planned/unplanned lost link procedure.



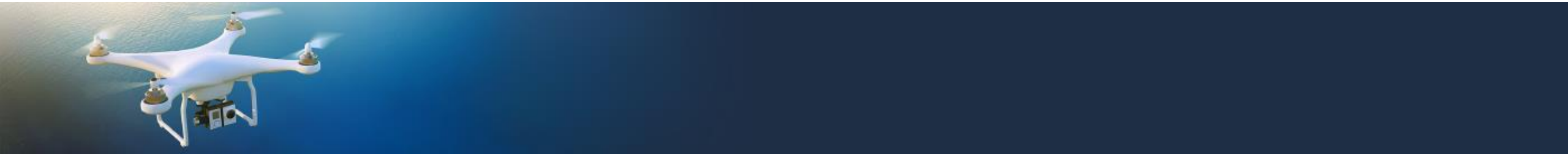
New Developments – FAA Reauthorization Act House of Representatives

- Recodification of the 2012 Reauthorization Act
- Creation of new UAS Air Carrier Certificate for transportation of property, i.e. package delivery.
- Create a "micro-UAS" classification for all vehicles weighing under 4.4 pounds, flying under 40 knots. Micro-UAS operators would not have to pass any aeronautical tests or "meet any age or experience requirement," nor could the FAA require that micro-UAS comply with any airworthiness certification standards.
- A provision requiring the FAA to "suspend, for an insurance provider, Federal restrictions and requirements that would otherwise apply to operations of unmanned aircraft systems in disaster impacted areas," which are defined as any place declared a disaster area under state or federal law.



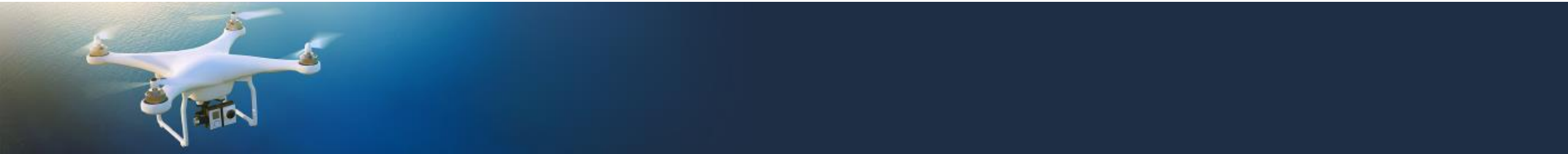
New Developments – FAA Reauthorization Act - Senate

- Mandatory standards for design and manufacturing of UAS.
- New "aeronautical knowledge and safety test" for operators of UAS over .55 pounds.
- Weaken the Special Rule for Model Aircraft to explicitly give FAA authority to regulate model aircraft through rules of general application and providing airport owners the ability to veto model aircraft operations within certain distances.
- Permits FAA to charge additional fees to cover the costs of regulating and administering all of the new requirements for commercial UAS operators.
- Requiring all aircraft sold in the US to come with a "safety statement" covering US laws and regulations, recommendations for safe operations, and restrictions on commercial and hobby flights.



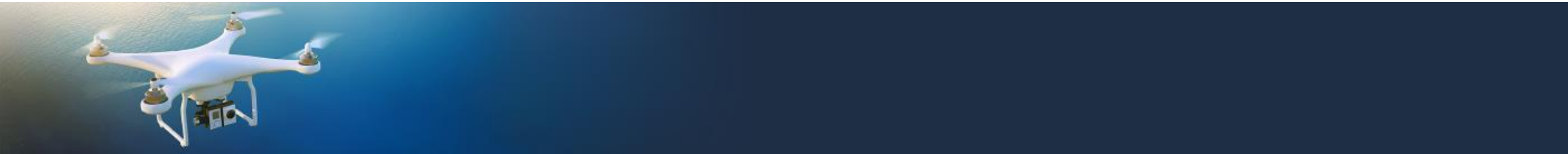
FAA Micro UAS Arc - Charter

- The Micro UAS Aviation Rulemaking Committee (ARC) was chartered on February 24, 2016 with four goals:
- Develop recommendations for a performance-based standard for the classification of micro UAS.
- Identify means-of-compliance for manufacturers to show that unmanned aircraft meet the performance-based safety requirement.
- Recommend operational requirements for micro UAS appropriate to the recommended performance-based safety requirement.
- Develop and submit to the FAA a recommendation report by April 1, 2016.



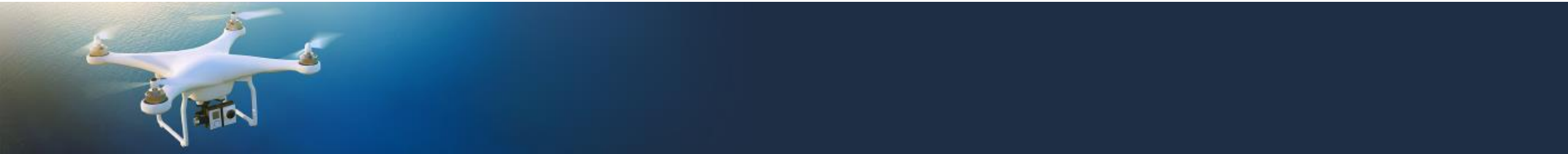
FAA Micro UAS Arc - Members

- 3DR
- AMA
- ALPA
- AOPA
- ASSURE
- AAAE
- AUVSI
- ASTM Int’l
- AT&T
- CTA
- DJI
- EAA
- GAMA
- GoogleX
- GoPro
- HAI
- Intel
- ICON Aircraft
- NAAA
- NAR
- NASAO
- NMC
- PAPA Int’l
- Small UAV Coalition
- AIAA
- Toy Industry Assoc.



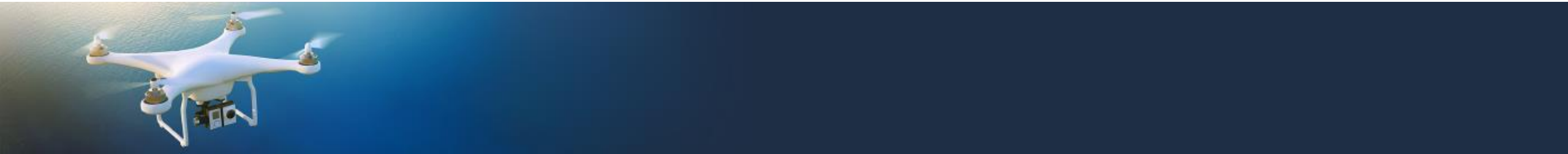
FAA Micro UAS Arc - Recommendations

- ARC recommended adoption of a performance based approach and rejected defaulting to a weight based cut-off as is seen in other countries such as Canada and Australia
- Recommended creation of four categories of small UAS with increasing levels of hazard and increased restrictions



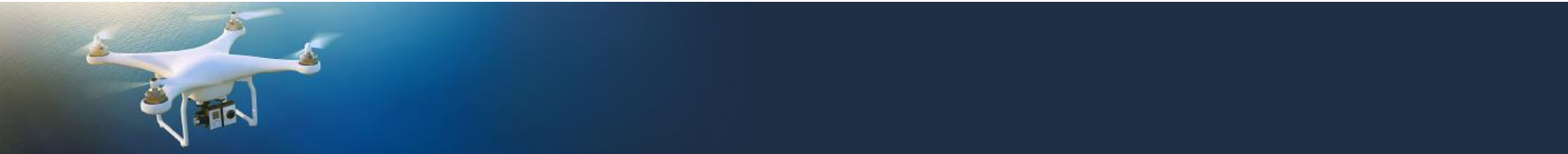
FAA Micro UAS Arc – Recommendations
Type 1

- Gross take-off Weight 250 grams (8.8 ounces) or less
- Fully capable of flying in congested areas and crowds of people
- No restrictions on how the UAS is flown near people beyond what is set in proposed Part 107
- Rejected injury analysis based on comparable impacts with sporting events, i.e. baseballs because UAS tend to deflect or tumble and not transfer only about a third of their energy
- Manufacturers must label their UAS indicating its actual weight or that it is below 250 grams.



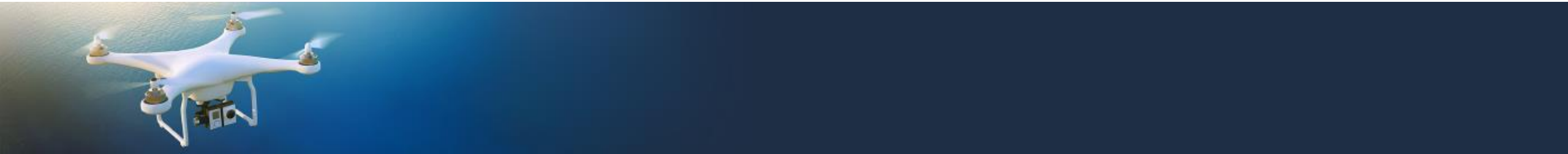
FAA Micro UAS Arc – Recommendations Type 2

- Weight over 250 grams but the UAS has less than a 1% chance of causing a serious injury
- Determination is based on a impact energy transfer.
- FAA assumes most UAS weighing less than 4-5 pounds would qualify depending on design and how it is operated.
- Recommends the FAA assist in the creation of an industry consensus testing standard taking into account design and the effect of rotating parts.
- Manufacturers should supply a manual that describes the flight parameters necessary to meet this requirement for flight over people.
- Recommends the development of product labeling standards



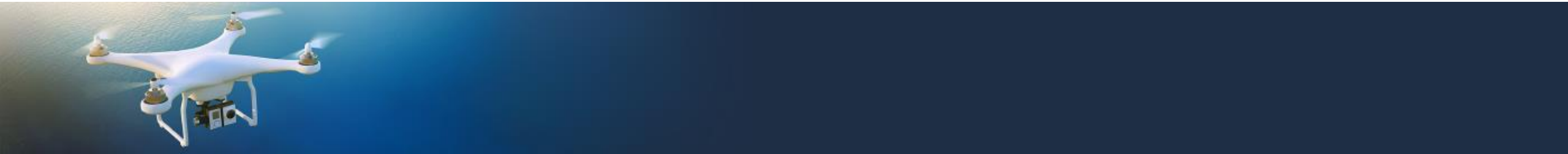
FAA Micro UAS Arc – Recommendations Type 3

- No flight over crowds or densely populated areas
- “Limited operations over people” permitted
- Flight limited to closed or restricted sites where access is limited and permission obtained (similar to closed set filming undercurrent exemptions)
- Manufacturer must certify that probable failure modes have 30% chance or less of producing a serious injury based on an analysis of impact energy.
- Advocates FAA creation of a consensus industry standard for testing and labeling



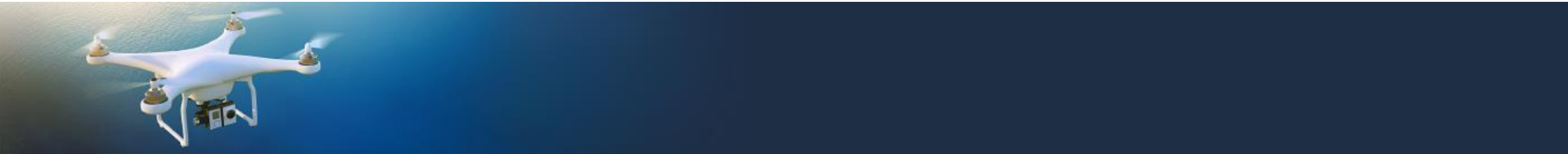
FAA Micro UAS Arc – Recommendations Type 4

- Sustained flight over crowds permitted
- Greater operational restrictions are imposed
- Operator would have to have a “risk mitigation plan” that requires coordination with event planners, law enforcement, state or local government, as appropriate
- Manufacturer must show that the worst-case impact scenario has a 30% chance or less of producing a serious injury.
- Recommends a higher level of piloting qualifications than Part 107
- Consider setting requirements for materials and components to meet this category



FAA Micro UAS Arc - Recommendations

- The required manufactures declarations would be a self-certification that it meets the standards.
- ARC rejected either having the FAA issue a “certification of conformity” or third-party certification.
- Flight restrictions for Type 2: no closer than 20 feet from a persons head and 10 feet lateral separation.
- Flight restrictions for Type 3: Same as Type 2, plus any overflight of people must be “transient or incidental” to the operation and cannot be sustained.
- Flight restrictions for Type 4: Not defined and would depend on the industry consensus standard for approval and compliance with the risk mitigation plan similar to 14 CFR 137.51.



FAA Micro UAS Arc – Recommendations (cont'd)

- The recommendations in the ARC Report are not unanimous
- Breakdown occurred over recommendations regarding the type of testing to be done
- ALPA and others wanted the testing to be administered in person and passage of TSA background check even for operation of Type 1 UAS
- The consensus recommendation is that operators of Type 1 UAS only be required to take an online test and eliminate the background check.