09/19/14 Task Force Meeting: Presentations and Public Testimony

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ALASKA STATE LEGISLATURE

REPRESENTATIVE
SHELLEY HUGHES

Economic Development
Trade and Tourism Committee
Chairman
Energy Committee
State Affairs Committee
Military & Veterans' Affairs Committee
University Finance Subcommittee
Fish & Game Finance Subcommittee

Session:
State Capitol, Room 409
Juneau, Alaska 99801-1182

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Wasilla, AK 99654
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housemajority.org

HOUSE OF REPRESENTATIVES
District 8 – Greater Palmer

To: Legislative Task Force on Unmanned Aircraft Systems

From: Representative Shelley Hughes, Co-Chair

Shelley Hughes

Date: September 3, 2014

Re: Committee Schedule for September 18-19, 2014

The Legislative Task Force on Unmanned Aircraft Systems will meet at the Anchorage Downtown Hilton hotel (room number will be posted at the hotel) as part of the University of Alaska UAS Interest Group Meeting for purposes of accepting public testimony.

Thursday, September 18, 2014

3:00pm – 5:00pm
Accepting public testimony
(this portion of the task force meeting will NOT be teleconferenced or available for akl.tv)

The Legislative Task Force on Unmanned Aircraft Systems will meet at the temporary Anchorage Legislative Information Office, 733 West 4th Ave., 1st Floor Conference Room.

Friday, September 19, 2014

9:00am – 12:00pm
Discussion of unmanned aircraft systems matrix and education campaign
Accepting public testimony as time allows
+ Teleconferenced and akl.tv

Ginger Blaisdell

From: Ginger Blaisdell
Sent: Wednesday, September 03, 2014 3:08 PM
To: Bob May (bob@gallerylodge.com); Com Folger; Com Kemp; Connie McKenzie; David Scott; General Katkus; Ginger Blaisdell; Howell, Kelly A (DPS); Joe Jacobson; John Binder - Dep Com DOT; John Parker; Lt. Steve Adams; Margaret Sharpe; McHugh Pierre; Micaela Fowler; Mike O'Hare; Rep. Shelley Hughes; Ro Bailey; Sen. Donny Olson; Steve Colligan - Model Aeronautics; Steve Strait (steve@straitmedia.us); Steve Wackowski; Susan Bell
Subject: task force meeting announcement
Attachments: chief clerk announcement.docx

Please let me know if you will or will not be attending any portion of the UAS Interest Group meeting on Sept 16-18 (in addition to the public testimony on the afternoon of Thursday Sept 18). I am working with the University to reserve spaces for task force members.

I will send an information packet on Monday September 8 when I finish gathering information.
Let me know if you want anything specific on the agenda:

- UAS matrix
- Education campaign
- Update from Joe Josephson and invited guest(s)

Thank you
Ginger Blaisdell

Chief of Staff
Office of Representative Shelley Hughes
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Juneau, Alaska 99801

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If you would like to subscribe to Representative Hughes' newsletter, please click here.

Legislative Task Force on Unmanned Aircraft Systems
September 19, 2014 Meeting at 733 West 4th Ave
Temporary Anchorage Legislative Information Office

9:00am – 12:00pm

Task Force Members:

- Representative Shelley Hughes, Co-Chair
- Senator Donny Olson, Co-Chair
- Joe Jacobson, Commissioner Designee, Department of Commerce, Community Economic Devel.
- Mike O'Hare, Commissioner Designee, Department of Military and Veterans' Affairs
- Lieutenant Steve Adams, Commissioner Designee, Department of Public Safety
- John Binder, Commissioner Designee, Department of Transportation, Public Facilities
- Ro Bailey, University of Alaska Fairbanks
- Steve Strait, Aviation Advisory Board, Governor's Office and DOT/PF
- Steve Colligan, Representative Member for the Academy of Model Aeronautics
- John Parker, Integrated Robotics Imaging Systems
- Steve Wackowski, Tulugaq II
- Bob May, Gallery Lodge, Kasilof

- Ginger Blaisdell, Staff to Rep. Hughes
- David Scott, Staff to Senator Donny Olson

Guest Attendee(s):
Kerry Long, FAA Chief

AGENDA

9:00am Welcome and Introductions ....Representative Shelley Hughes

- Comments on UAA Interest Group Meetings
- Review of Meeting Summary from August 1, 2014
- Invited Guest(s): Kerry Long, FAA Chief
- Today's discussion topic: Education Campaign
- DRAFT Letter to Commissioners
- Public Testimony (as time allows)
- Adjournment

Task Force Responsibilities per HCR15 and Review of Resolution

The duties of the task force shall include

1. reviewing regulations and guidance from the Federal Aviation Administration regarding unmanned aircraft systems;
2. providing written recommendations, together with suggested legislation, for a comprehensive state policy for unmanned aircraft that protects privacy and allows the use of unmanned aircraft systems for public and private applications;
3. evaluating complaints and concerns expressed to the task force;
4. identifying potential privacy and public safety concerns associated with unmanned aircraft systems and determining whether legislation is necessary to address them;
5. considering recommendations for public education related to unmanned aircraft systems;
6. studying the Federal Aviation Administration's "Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System Roadmap," issued November 7, 2013 (1st ed. 2013) and its application to the development of unmanned aircraft systems in the state;
7. conducting a public hearing concerning privacy and the capture of data by unmanned aircraft systems at the University of Alaska's test site;
8. further studying the nonpublic use of unmanned aircraft systems to encourage development of the private sector unmanned aircraft system industry; and
9. further studying and making recommendations with respect to ensuring unmanned aircraft users comply with applicable laws.

Provided Documents ....Ginger Blaisdell

- News Article UAS Vision 9-10-2014: Amazon.com Unveils 'Drone Store' and documents
- AMA matrix documents provided by Steve Colligan
- Type and Purpose matrix draft by Ginger Blaisdell
- Pilot skills matrix drafted by Jay Skaggs
- DRAFT Letter to Commissioners

Future Agenda Items .... as listed in August

- Responses to FAA rules in Oct/Nov
- PPUTRC public meeting on privacy policy at the September meeting will meet the FAA requirements of the test site for this year
- Data retention
- Invitation to AMA officials on education
- Define framework – training and education
- Dept Public Safety guidance document on enforcement of UAS
- Integration not segregation of airspace: invite DOI, FAA, Military, BP/Exxon, etc
- System for gathering citizen complaints

Follow Up – To Do .... as listed in August

- Military mission in Alaska – process and plans
- Letter to Commissioners of state agencies on UAS re: point of contact for their department
- Italy data protection laws
- Who to contact? Complaint / enforcement system / responses
- FAA enforcement
- Doug Marshall UND privacy
- UTMS – unmanned traffic management system
- FAQs could be discussed at a teleconference meeting of the task force

Adjourn ....Representative Shelley Hughes

Legislative Task Force on Unmanned Aircraft Systems
August 1, 2014 Meeting at 733 West 4th Ave
Temporary Anchorage Legislative Information Office

9:00am – 4:00pm

Task Force Members:

- Representative Shelley Hughes, Co-Chair
- Senator Donny Olson, Co-Chair (not in attendance)
- Joe Jacobson, Commissioner Designee, Department of Commerce, Community Economic Devel.
- Mike O'Hare, Commissioner Designee, Department of Military and Veterans' Affairs
- Lieutenant Steve Adams, Commissioner Designee, Department of Public Safety
- John Binder, Commissioner Designee, Department of Transportation, Public Facilities
- Ro Bailey, University of Alaska Fairbanks
- Steve Strait, Aviation Advisory Board, Governor's Office and DOT/PF
- Steve Colligan, Representative Member for the Academy of Model Aeronautics
- John Parker, Integrated Robotics Imaging Systems
- Steve Wackowski, Tulugaq II (called in)
- Bob May, Gallery Lodge, Kasilof

- Ginger Blaisdell, Staff to Rep. Hughes
- Syndey Seay, Staff to Senator Donny Olson (called in)

Invited Attendee:

- Kathleen Strasbaugh, Legislative Legal (called in for questions)

Meeting attendees:

- Gary Williams, Aero Forensics
- Jeff Yates, Dat/Em Systems International
- Brandon Anderson, Alaska Aerial Technology
- Jay Skaggs, FAA
- Pete Adams, ENI Petroleum
- Mike Pannone, Aero Forensics
- Carole Anderson, UAA Student Aviation Administration

MEETING SUMMARY

9:00am Welcome and Introductions ....Representative Shelley Hughes

- Round table discussion of expectations from each task force member; specific outcomes include:
  1. Ensure that safety is the utmost priority, and also that there be a cooperative effort between all facets of not only the industry, but the public and federal and state government to foster the growth of the industry in the right way.
  2. Consider an internship program introduced into the university system.
  3. Recognizes a wide range of uses for UAS, but must be very mindful of public safety and public trust. Must not infringe on the privacy of the public.
  4. Oct,Nov the initial draft will be out from FAA and the Task Force may want to consider weighing in during the public comment section.
- Each member discussed his/her background and personal experience with unmanned aircraft systems, and some general comments about what the task force can do for Alaska.

Task Force Responsibilities per HCR15 and Review of Resolution

The duties of the task force shall include

1. reviewing regulations and guidance from the Federal Aviation Administration regarding unmanned aircraft systems;
2. studying the Federal Aviation Administration's "Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System Roadmap," issued November 7, 2013 (1st ed. 2013) and its application to the development of unmanned aircraft systems in the state;
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4. evaluating complaints and concerns expressed to the task force;
5. identifying potential privacy and public safety concerns associated with unmanned aircraft systems and determining whether legislation is necessary to address them;
6. further studying the nonpublic use of unmanned aircraft systems to encourage development of the private sector unmanned aircraft system industry;
7. considering recommendations for public education related to unmanned aircraft systems;
8. further studying and making recommendations with respect to ensuring unmanned aircraft users comply with applicable laws; and
9. providing written recommendations, together with suggested legislation, for a comprehensive state policy for unmanned aircraft that protects privacy and allows the use of unmanned aircraft systems for public and private applications.

Review of HB255 .... Lt. Steve Adams

- Lt Adams read through HB255 and discussed the applicability of the law.
- Current update on Department of Public Safety using UAS
  - DPS does not currently have a program for UAS, have been working towards establishing one for the past two years. The missions when UAS would be used would likely include:
    1. FIRST: search and rescue, within defined incident perimeter
    2. SECOND: Lost children or vulnerable people
    3. THIRD: Mapping or examination of traffic incidents that may not be accessible
    4. FOURTH: Mapping of hostile crime scenes.
    5. FIFTH: Officer safety during tactical operation
    6. SIXTH: Natural disasters and hazardous materials operations, in areas
  - Will not turn these into "speed monitors" - These are public safety monitors, not law enforcement monitors.
  - DPS is hoping to acquire a UAS in the very near future. Due to short-staffing and lack of funding, DPS is probably another year out from purchasing a UAS.

Earlier this month the Fairbanks area conducted multiple mock scenarios where traditional methods and UAS were used.
TRAFFIC: for 3D mapping of a traffic accident and how the data was implemented to draw lines between points of impact etc. Current equipment took one hour for imaging the scene and 3 hours to process the data before evidence could be moved. Mapping by using the Scout UAS took about ten minutes on scene and an hour and half to process the data.

- UAS will dramatically reduce traffic blockage time during incident management. Mapping of the entirety of an incident scene is a slow process due to the spread of evidence items after collision. Expectations are that UAS will allow for more immediate clearing of a crash scene and could reduce process time by up to three hours.
- It was also added that officer safety, overall traffic monitoring of flow into an incident area can also be greatly improved by UAS implementation.

Active Shooter in a Multi-story Building: UAS flew over the building with a body-temp monitoring tech to monitor for heat signatures within the building. The UAS relayed info to commander as to the location of the gunman. SWAT team was able to assess the situation better and complete action more safely by understanding the movement of the gunman.

FIRE: UAS was able to identify the hottest spot of the fire within an insulated training building, and the UAS was able to identify the "hot spots" and communicate that to the officers.

If we have a UAS for Department of Public Safety, is the Certificate of Authorization (COA) needed for every incident? Or is it a one-time COA?

- Lt Adams: First, we need a training COA to be able to demonstrate safe operation, then a jurisdictional COA, then on a case-by-case basis we would need to evaluate whether it is feasible and safe to use UAS.
- There are states/counties currently operating UAS under jurisdictional COAs.

FAA Reg 8900.268 addresses the inappropriate use of UAS, gives some idea to the field offices as to what they can do. Currently, there are no state statutes that are specific to UAS.

Review of Status of PPUTRC .... Ro Bailey

- Update from Ro Bailey on test site and range activity

On December 30, 2013, Alaska was announced as a Test site location by the FAA. To become operational, Alaska had to complete flight planning guide, improve privacy, and apply for COA.

The finalization process culminated in Michael Huerta, FAA Administrator, coming to Alaska in early May and signing the COA. At the same time, PPUTRC launched the Aryan Scout flight in Fairbanks conducting a mission over the large-animal science facility.

  - Goals of research was to study how the drone affects the animals, does it disturb them, etc...
  - Test site will be taking "baby steps" alongside FAA to make sure that everything they do is both advancing the state of knowledge, while meeting all of the required regulations.

PPUTRC Expectations:

  - Anticipating COAs for multiple aircraft under one COA, takes about 90 days to get a COA approved, barring any major setbacks.
  - Air-worthiness: there are no "standards" to declare airworthiness. The FAA will establish a special airworthiness program for the test sites. Will be performance standards for airworthiness, rather than design standards. Tests will be performed on UAS in the test site to determine airworthiness based on performance.
  - It's about building confidence with the FAA, building a trust, as that increases the test site may gain the ability to produce its own COAs.

What is the interest level for use within the test site, now that AK is officially a site?

"Almost overwhelming interest, way more industry users are interested now", including local and state aviation entities. Many entities are recruiting commercial pilots to become UAS pilots.

Without federal funding, how are you supporting the test site?

ACUASI has the initial funding provided by the legislature ($5 million FY2012), "still living on that, but it's going – fast". The test site business model provides for directly charging for use of the test site for private users, industry testing, as well as government missions and grants.

- **Possibility of UAF becoming an FAA Center of Excellence**

  FAA Center of Excellence, Univ of Mississippi and Alaska are partnering in the application process, and if they are chosen, the state would receive funding from the center for research. Process of selection is in beginning stages.

Ro was asked to describe the process of how UAS were used in the Kenai wildfire.

Too many steps to discuss all but in summary, we got a phone call from a member of the national guard, saying they may want to use UAS on Funny River fire. The Scan Eagle was needed for the mission. After receiving the verbal go-ahead, Ro called the FAA and requested an emergency COA on Monday, Memorial Day. Team was dispatched immediately to Kenai. COA was approved in less than 24 hours.

DMVA: *"This was a great exercise in the process of HOW to get a mission like this approved, an exercise in process and futility."*

The flight took part at night, to scan thermal hotspots of the fire and map the hot spots, pass the information onto the firefighting team leads for access from mobile phones. The information allowed the crews to knock down a number of hot spots.

The real cost-saving potential is more eventual than anything, when we have the resources (models of UAS) that we need for a range of scenarios (fires, search and rescue, etc...) Once we have the proper tools for the proper scenario, that's when the real cost savings will be seen. Matching the right UAS with the right scenario is KEY.

Will there be a debriefing process after the use of UAVs in real situations?

DMVA: Yes, we do have debriefs to address needs to make improvements and better the process.

Report on AUVSI Conference in Florida May 2014 ....Joe Jacobson

- Copy of flyer that was developed for the AUVSI conference is provided
- Update from the DCCED efforts in promoting UAS industry in Alaska:

AUVSI event in Florida May 2014: Over 8000 attendees, majority being aviation vehicles, some ground and under-water. The Department had a booth to share info about why AK is leading the nation in advancing UAS industry. Industry follow up: generated about 40 industry contacts. PPUTRC is confident that the connections made at this event have possibility of future contracts.

Panel discussion at AUVSI took place with AK reps. Follow-up interviews resulted as well as the possibility of a PBS-funded tv documentary series on Alaska UAS.

The group of AK reps at the event met with a global simulation training company to discuss opportunity to establish a UAS training facility in AK. That company has been in Alaska this week to tour possible locations and learn what AK has to offer.

Report on Military and Alaska Aerospace Corporation Consideration of UAS .... Mike O'Hare

- What are the military plans for UAS in Alaska?

  AK National Guard, AK Aerospace, Homeland Security all fall under DMVA. Department Of Deffense plans to incorporate the Gray-Eagle UAS (predecessor to the predator drone) to the into Alaska for long-range training; NOT a military mission. The FAA regulates the process and COAs are still required for all missions.

  Weaponization of UAS on the domestic front has never been discussed for the National Air Space. There is a clear line between commercial use and battle-use.

  AK National Guard is not interested in actually owning the platforms, but are interested in training pilots for UAS.

  Emergency Management, Homeland Security perspective: No ownership of platforms, but will contract out services to UAS industry for emergency response and management.

  Same COA process for Gray Eagles, but does that include flights over military airspace?

  DMVA: No, for flights over military airspace during training, no COA, but for any missions that take place outside of that space it will require COAs (for emergency response missions etc...). The military will "have to look at the capabilities, the time associated with the process, and the cost. If it's less expensive to have satellite imagery available, we'll use that but it is always good to have options."

- What are the AAC plans for UAS in Alaska?

  AK Aerospace Corp will be working with the university to implement training sites and programs. Kodiak may become a training range. AK Aerospace Corp will not be purchasing any platforms, but is interested in operating the facilities.

Report on Department of Transportation ....John Binder

- Exploring uses of UAS by DOT, opportunities available. State is very excited about the possibility of using UAS to develop the GIS system for the state for mapping and geography.

- Concern with the integration process. A lot of traffic in our skies, "big sky becomes not so big". Recovery of aircraft is another point of concern.
- Biggest factor is proper communication between users and UAS pilots, and the airports and state.

Introduction of Items in Notebook ....Ginger Blaisdell

Tab 1

- Final Report to the Legislature, June 30, 2014
- HCR15
- HB255

Tab 2 – **Up to date with industry**

- Newsworthy comments – pulse of the industry – What's happening with UAS policy worldwide

All documents were provided to stimulate dialogue and consider others' good ideas.

Documents included a summary of ten of the most notable UAS currently in the news and a blog with good info graphics for consumers. The FAA published a fact sheet January 6, 2014 that succinctly described Civil UAS, Public UAS and Model Aircraft. Australian Certified UAV Operators Inc comments on Australia's legislative recommendations – many are similar to Alaska's concerns. UK Civil Aviation Authority is establishing a case-by-case review for approving UAS. Philippines issued UAS regulations that are very restrictive. News article on South Africa using the term "RPAS" rather than UAS to bring the "pilot" back into the acronym to identify that a human is involved. Fully autonomous aircraft are not being considered at this point. And finally an announcement that the FAA is on track to meet its Sept 2015 deadline of integrating UAS into the National Air Space.

UNIV: Fully autonomous UAVs are currently banned by the FAA. Related the conversation back to the technology being implemented in automobiles (ABS braking, parallel parking, etc...) and how it takes some work for the public to become comfortable with this type of technology.

Tab 3 – **Hobby Fliers**

All documents were provided to stimulate dialogue and consider others' good ideas.

- Guidelines for Hobby Fliers – prepared by the Academy of Model Aeronautics entitled "What Can I Do With My Model Aircraft?"
- FAA Interpretation of the Special Rule for Model Aircraft
- P.L. 112-95 Sec 336. Special Rule for Model Aircraft

AMA: The Academy of Model Aeronautics has also prepared a matrix of UAS platforms, their intended uses and requirements.

Hobbyists' perspective: through this entire process, you learn the methods of procedure. AMA's mission is to promote safety, regulations and responsibility for our youth. Regardless of whether they go into the UAS field, the process will teach give them valuable experience and prepare them for professional life." STEM education, training, and igniting the interest in our youth should be a priority.

AMA is preparing to roll out a hobby self-certification system. To obtain special classification for aircraft over 55 lbs you need to prove that you have the ability to safely fly an aircraft over 55 lbs. AMA will provide training programs for certification. AMA offers special waivers and training programs for many different types of UAS.

Tab 4 – **Commercial Fliers**

All documents were provided to stimulate dialogue

- FAA expediting commercial use for film production, precision agriculture, power line and pipeline inspection, and oil and gas flare stack inspection
- Perception that FAA Does not/Cannot Enforce
- Hollywood cinematography exemption
- UAS used by private investigators
- Industry already solving issues before UAS are approved for commercial use: flight tracking software, no-fly-zone software around airports, auto-parachute for system failure, and more. **Industry**: Patent on sensory avoidance technology, a radar system that weighs about 12.6 ounces, and when it is finished and ready for production it will weigh closer to 6 ounces.

Tab 5 – **Privacy and Safety Concerns**

All documents were provided to stimulate dialogue

- Revisit Legislative Legal Services memo on existing privacy laws
- New memo from Legislative Legal Services regarding private investigators using UAS
- Obama issues executive order for National Telecommunications and Information Administration to develop guidelines for UAS privacy.
- Definition of "reasonable expectation of privacy"
- Australia's power point on Commercial RPAS and Privacy

Tab 6 – **Public Education, Evaluating Complaints, General Operations, Certification, Insurance/Liability, Consequences**

AMA: Within discussions about large operators and industry advancement is the opportunity for STEM education for our youth. UAS provide a great opportunity to get our kids engaged in engineering, science and technology. Engaging the general public is crucial for the process of integration. We need to define the broad spectrum of usage and educate the public on UAS, the rules. "It's happening, and we need to get out in front of it."

UNIV: discussed the intern program they have at UAF currently, four interns now and discussion of future private sponsorship for "co-op" program.

Public: As a commercial pilot, the fact was discussed that large aircraft are currently almost fully autonomous. Human pilot takes off, programs the route into mapping system and the plane can fly and land itself with very minimal human interaction. Emphasis that in order to gain the public trust and comfort level with UAS in commercial airspace, they need to rely on the positive stories (the search and rescue success, fire-fighting, etc.) The task force cannot move too quickly and risk a negative outcome.

Flip chart pages on walls summarized these discussion points

- Industry Needs:

  1. Require manufacturers to include safety flyer in all hobby/commercial aircraft sold
  2. Signage when flying for commercial purposes (such as real estate or agriculture) - "unmanned aircraft in flight"
  3. Idea of a "fishing license" would not be needed for commercial use because of other certifications and licensure. The license would include a sticker for the aircraft so it could be tracked back to the responsible owner – maybe for hobby

  AMA: From the hobbyist's perspective, we are required to have identification stickers on aircraft. The real question is how to define and separate the levels of the airspace to determine the regulated differences between commercial and hobbyist UAVs. Does the general hobbyist know this or just active AMA members?

  UNIV: The FAA is working on licensing requirements right now. There is a requirement to register aircraft now, just like any other manned aircraft. This allows the UAS to be traced back to the owner. In the commercial/industry sector, insurance companies require UASs to be stickered for ID.

- Future Meeting Agenda:

  1. Responses to FAA rules in Oct/Nov
  2. PPUTRC public meeting on privacy policy at the September meeting will meet the FAA requirements of the test site for this year
  3. Data retention
  4. Invitation to AMA officials on education

5. Define framework – training and education
6. Dept Public Safety guidance document on enforcement of UAS
7. Integration not segregation of airspace: invite DOI, FAA, Military, BP/Exxon, etc

- Public Education and Outreach:

1. Public Trust
2. AMA certification program
3. UAA – UAS course taught by Harry Kieling Wed nights beginning Aug 27
4. Plus or minus 55 lbs: civil ~ public ~ hobby
5. Sizes and purpose
6. Develop matrix for the common person ~ Define what a UAS is, what a model aircraft is. What their purposes are. Where, when how can they fly?
7. Competition and award for best government use

- Public Information and Education Campaign: Possibly start the process at a very young age via education and school system.

1. User polls?
2. Hobby transition to professional
3. Intent and use matrix ~ including categories and distinct lines of separation as to the types of operations and the regulations associated with each category
4. Web presence
5. Pamphlet
6. Successful uses
7. Challenges
8. Privacy
9. STEM / voc tech
10. Public relations: who's doing what? Government, industry, hobby
11. Op Ed in publications
12. Social media
13. DCCED marketing assistance

- Follow Up – To Do

1. Military mission in Alaska – process and plans
2. Letter to Commissioners of state agencies on UAS re: point of contact for their department
3. Italy data protection laws
4. Who to contact? Complaint / enforcement system / responses
5. FAA enforcement
6. Doug Marshall UND privacy
7. UTMS – unmanned traffic management system
8. FAQs could be discussed at a teleconference meeting of the task force

Tab 7 – **Written public testimony**

- No written testimony provided
- Public attendees provided comments as requested throughout the day

3:30pm **Closing Remarks and Adjourn**

FINAL THOUGHTS:

Ro: Interest Group meeting coming up in September. What we're doing, Test site info, FAA, usergroups Sep 16-18.

Steve Strait: important to focus on integration of the airspace, not segregation. Need to reach beyond just the entities that we represent here on this TF. Inclusion of the military in the discussion. Education, we should do our best to mitigate accidents via education of the public to hopefully minimize incidents.

John Parker: Public education is vital. With an informed public, we are more likely to be successful in integrating UASs.

Bob: Education of controllers, maintainers, operators and the public. Continuous evaluation of the industry and policing it.

Steve Colligan: I agree with education, but we have to define it. Public Relations, the industry and oil companies and those who are using this tech are responsible for telling the stories of the good that is being done with UASs.

John Binder: Supported Colligan's idea of a framework/matrix.

Mike O'Hare: Education. What we've done, are doing and should do with UAVs and allow for feedback to address major concerns. Mike can arrange a military contact or provide updates on how the military is using the technology.

Joe Jacobson: Prioritization of what the TF can reasonably accomplish by taking an approach that things can be taken on one at a time and accomplished. Not becoming overwhelmed by too much information. Need to be good and strategic about what our messaging is going to be. A public awareness campaign, budget action to promote the work of this TF and information to the public.

2014 | Alaska UAS Interest Group Annual Meeting

Sept. 15-18, 2014 | Anchorage Hilton Hotel

A forum for civil, commercial and government technologists, engineers, users and stakeholders.

- ➡ Learn about the Pan Pacific UAS Test Range Complex
- ➡ Examine the potential impacts of UAS activity in the Arctic
- ➡ Explore UAS applications to education, research, natural resource management and emergency response
- ➡ Hear about how NOAA will use UAS to monitor rivers

Learn more about the conference: www.uasalaska.org
Register online at: registration.gi.alaska.edu/conference/uas2014

For more information or registration assistance contact
Diana Campbell, Event Coordinator
Geophysical Institute, UAF
907-474-5229 | dlcampbell@alaska.edu

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New Alaska FAA chief focused on safety

ELWOOD BREHMER, ALASKA JOURNAL OF COMMERCE

LONG

As the new head of the Federal Aviation Administration in Alaska, Kerry Long is focused on one word: safety.

The fact that other topics sometimes overshadow the agency's core mission of promoting safe flying is a testament to how effective the FAA is and should not be forgotten, he said.

"I'm pleased that we can focus on issues of efficiency, on issues of getting somewhere late, where we don't have to worry about if we're going to get there," he said. "I think that gets lost in translation. Aviation is still by far the safest mode of transportation."

Long took over as the FAA Alaska Region Administrator July 28. Since then, he has immersed himself in the unique needs of the state's aviators and how the federal agency with oversight of those needs can best meet them.

First and foremost is making sure new and existing users of the skies can operate side by side, as well as advancing how they are monitored.

"My priorities here are NextGen and the UAS test site," Long said.

The UAS, or Unmanned Aerial System, test site sponsored by the University of Alaska Fairbanks Long referred to is one of six nationwide chosen by the FAA to help the agency meet its congressional mandate to develop regulations to integrate unmanned aircraft into the national airspace by the Sept. 30, 2015.

The Pan-Pacific UAS Test Range Complex, headquartered in Fairbanks, includes not only the vast tracts of airspace above Alaska, but also areas of Hawaii and Oregon that afford industry the option to test technology in the Arctic, tropics, or somewhere in between.

Long said the uniqueness of the Alaska test site, combined with the support, financially and otherwise, it has received from the state, has helped push it to the front of the group.

The Legislature appropriated $5 million to UAF's Geophysical Institute in fiscal year 2012 to advance UAS testing. With continued state support, he wants to do whatever the FAA's regional office can to help keep Alaska at the forefront of UAS testing, Long said.

"We can, I think, significantly support UAF and the test site, to be specific, in how we think they ought to be staffed to be able to effectively run this dispersed program they have in Hawaii and Oregon and here," he said.

It will be a challenge for the FAA to do much more because the federal regulation mandate did not come with money.

"Our goal at the FAA is to support these test sites the best we can, but unfortunately we have a mandate but no funding, which is a tough combination," Long noted.

FAA test site evaluators that visited Fairbanks in August were impressed with the safe and efficient operations going on there, Long said from his Anchorage office Aug 29.

While the UAS test site evaluation group was in Fairbanks, the test site staff was able to show first-hand the capability of small unmanned aircraft in a practical setting, he said.

"There was a traffic accident and we happened to have the evaluation team that has been going from test site to test site making sure that everybody is following best practices and that sort of thing," Long described. "One of the folks was the gentlemen responsible for approving any emergency requests for a (certificate of authorization) and he was able to approve the use of a UAS to demonstrate to the team how it would be used with a traffic accident and how much more efficient it is to use a UAS to do the photography work."

Prior to taking the regional administrator position, Long served as the FAA's chief counsel under President George W. Bush from 2007-09. More recently, he was a lead ethics official with the National Transportation Safety Board. Before his public service began, Long was a large aircraft transaction attorney, working primarily for Boeing and Rolls Royce, he said.

He emphasized that communication is key in his new position.

Long met with Rep. Don Young, Sen. Lisa Murkowski, state Transportation Department Deputy Commissioner of Aviation John Binder and private industry representatives to gain perspective about what the state needs from the FAA in his first weeks in Alaska.

Long said he assured the congressional delegation members that, "I will be as candid as we can be as an agency with what's going on."

His experience in other parts of the federal government will help him bridge the gap that all-too-often exists between Alaska and Washington, D.C., he said.

"Not only do you need an effective advocate for the FAA in Alaska, you need an effective advocate for Alaska at the FAA in Washington," Long remarked. "I've been to Washington; I've spent my time there and I've cut my teeth there on many of the issues we face up here.

"I've learned what fights can be won."

He plans on hosting as many Outside federal officials as will travel to Alaska so they can better understand what the state's aviation industry needs, he said.

A visit from FAA Deputy Administrator Michael Whitaker, who is leading implementation of the agency's NextGen air traffic monitoring program, was scheduled for early this month.

NextGen, the "next generation" of aircraft tracking, is a satellite-based system that is designed to update aircraft location quicker than radar, allowing for more efficient flight paths and safer operations at crowded airports.

Within five to 10 years, the FAA hopes NextGen will be installed across the country.

"The bottom line is we are all counting on NextGen into the future to be the answer to the inefficiencies of dealing with ground-based navigation," Long said.

"It's one of the most massive programs undertaken by the government, certainly ever by the FAA.

Beyond engaging with other federal officials, Long said he is happy to talk about the agency's mission in Alaska, whether that's a group of school children or state leaders. It's a vital part of the job he enjoys, and best of all, it hardly costs anything, he said.

"I'm free. I'll go anywhere and I'll talk to anyone about aviation safety and the role of the agency and there's lots of people around here that will do that with me," Long said. "As far as I'm concerned no group is to small as long as they're interested and can help us promote aviation safety."

Elwood Brehmer can be reached at elwood.brehmer@alaskajournal.com.

Amazon.com Unveils 'Drone Store'

Amazon isn't just interested in making its own drones to deliver items — now the company has opened up an online storefront for people interested in buying UAVs, too.Amazon has unveiled the "Drone Store," which features a handful of robotic vehicles and related accessories available to purchase. There's also "Buying Guide" page and a "Fly Responsibly" section that includes links to the Association for Unmanned Vehicle Systems International and the Academy of Model Aero-nautics.

Amazon announced its foray into drone delivery, named Prime Air, late last year. The company has recently petitioned the U.S. Federal Aviation Administration to allow it to test its package-de-livering robots at an airfield near Seattle, and said it's testing its 8th and 9th generation of air-craft.

Source: Geek Store

g+1

Posted in Business News, Non-Military & Commercial UAS on September 10, 2014 by The Editor.
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sUAS Flight Safety Guide

Guidance for safe, responsible flying

ACADEMY OF MODEL AERONAUTICS

Table of Contents

Foreward

If this is your first purchase of a recreational small Unmanned Aircraft System (drone) or the first time you've ventured into the world of model aviation, welcome! Welcome to the stimulating and enjoyable world of model aviation and a community of thousands of aeromodeling enthusiasts who for more than 100 years have enjoyed the fascination and allure of virtual flight through model aircraft.

Model aircraft have operated in the National Airspace System (NAS) for decades and have done so safely and responsibly. The aeromodeling activity conducted within the safety guidelines of the Academy of Model Aeronautics has achieved an excellent safety record, a record that surpasses most other forms of aviation. The success of this community was recently recognized by Congress in the FAA Modernization and Reform Act of 2012 with the addition of the Special Rule for Model Aircraft, now Public Law 112-95, Sec. 336.

The establishment of this Special Rule reflects Congress' recognition of community-based programming as an effective and sensible means of managing the recreational small unmanned aircraft activity, and it was Congress' intent to protect this community from onerous and unnecessary federal regulation.

The key to the success of the community and the longevity of the aeromodeling activity is the individual commitment to operating their aircraft in a safe and responsible manner and in accordance with a community-based set of standards.

sUAS are defined as being less than 55 pounds; however, the majority of the platforms in use today are less than 20 pounds, and most are less than 10 pounds. This safety guide is intended to help the sUAS operator to fly his or her aircraft in a safe and responsible manner.

Flying sUAS in a safe and responsible manner certainly means doing so in way that does not endanger persons or property. But, it also means operating your device in a manner that is respectful of community standards, the concerns of others, property and privacy rights, and flying in a community friendly manner. As a general rule:

- Don't operate on or fly over private property without first obtaining permission from the property owner and/or the property tenant.
- Don't fly where the operation of radio control aircraft is prohibited.
- Don't fly near open assemblies of people without first obtaining permission or otherwise making prior arrangements to do so.
- Don't fly near or over sensitive infrastructure or property such as power stations, water treatment facilities, correctional facilities, heavily traveled roadways, government facilities, etc. without making prior arrangements to do so.

Fly friendly, fly safely, and enjoy the hobby!

Academy of Model Aeronautics

Basic sUAS Safety Principles

- Do not interfere with manned aircraft operations.
- Yield right of way to manned aircraft. See and avoid other aircraft at all times (AMA Doc #540-D).
- Do not endanger persons or property. No intentional overflight of moving vehicles or unprotect persons. Fly no closer than 25 feet.
- Fly no higher than necessary (less than 400 feet). Remain below surrounding obstacles when possible.
- Avoid operations in close proximity to airports. When within 5 miles of an airport, contact the airport/Air Traffic Control (ATC).
- Enssure pilot competency/proficiency and the safe operation of the aircraft.
- Remain within visual line of sight (VLOS). Use a spotter when necessary/appropriate.

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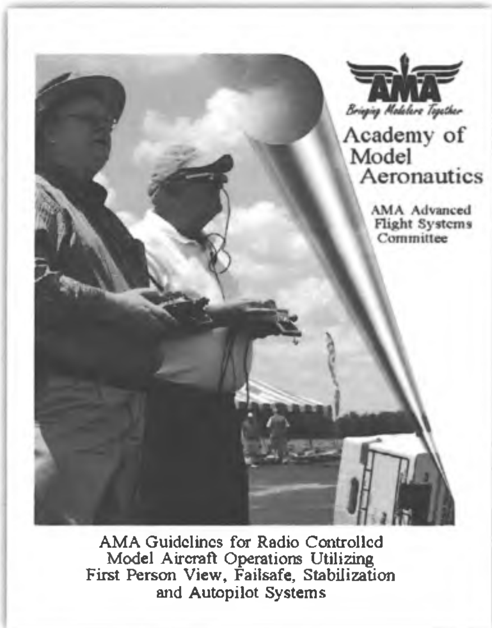

AMA's Privacy Policy

"The use of imaging technology for aerial surveillance with radio control model aircraft having the capability of obtaining high-resolution photographs and/or video, or using any types of sensors, for the collection, retention, or dissemination of surveillance data or information on individuals, homes, businesses, or property at locations where there is a reasonable expectation of privacy is strictly prohibited by the AMA unless written expressed permission is obtained from the individual property owners or managers."

"SEE AND AVOID" GUIDANCE

A. General:

1. The primary means to avoid collisions between all aircraft flying within our National Airspace System (NAS) is "See and Avoid."

2. Vigilance must be maintained by each person operating an aircraft (whether model or manned) so as to "see and avoid" other aircraft.

3. Model aircraft must avoid manned aircraft. Our privilege to fly model aircraft in the NAS depends on our commitment to remain "well clear" of manned aircraft.

4. Simply avoiding an actual collision is not enough. A "near miss" is not acceptable.

5. Unless flying at a mixed-use site where manned and model aircraft routinely share airspace through their own site-specific rules, model aircraft must fly sufficiently far away from manned aircraft so as not to create a collision hazard.

6. Model aircraft flying must not only be safe, it must be perceived to be safe by the greater manned aviation community. Modelers must continually demonstrate their respect for the safety of manned aircraft by remaining vigilant and well clear.

7. Whenever a potential conflict arises between model aircraft and manned aircraft, the pilot of the model aircraft must always give way to the manned aircraft.

8. The pilot of a model aircraft must never assume the pilot of a manned aircraft can see the model or will perform any maneuver to avoid the model's flight path.

9. Visual Line of Sight is required by the Safety Code. It means that visual contact with the aircraft must be maintained without enhancement other than by corrective lenses prescribed for the model aircraft pilot. All RC flying must remain clear of clouds smoke or any other obstruction to the line of sight.

10. "Blue Sky" is a term used to explain the method used to increase separation between a model and a manned aircraft in the same vicinity. The modeler should maneuver the aircraft in such a way as to increase the amount of *blue sky* perceived between the model and the manned aircraft. By increasing the blue sky separation, the question about depth perception is taken out of the equation and the modeler need not worry whether the model is closer to him than the manned aircraft or further away. Increasing the blue sky between the model and the manned aircraft automatically increases separation between them.

11. A modeler should never place any consideration for the well-being of the model aircraft above the safety of manned aircraft. Maneuvering to avoid the conflict may require that the model aircraft be sacrificed.

12. Free flight models should not be launched with relatively low altitude manned aircraft in sight and downwind or headed downwind from the launch site.

8/2012

B. Spotters:

1. Before a flight, the pilot must insure that the spotter understands his/her duties and expectations.

2. A spotter should be used to assist in monitoring the surrounding airspace for manned aircraft whenever a flight is expected to exceed 400 feet above the ground and that operation is expected to be in proximity to known manned aircraft traffic such as at a mixed-use facility or within three miles of an airport. The spotter must have sufficient visual acuity and be mature enough to take this responsibility very seriously.

3. A spotter should also be prepared to assist his/her pilot in the event that another model aircraft or spectators become endangered or in turn are perceived to be a danger to the pilot or the pilot's model aircraft.

4. If a model aircraft pilot experiences what he or she considers a near miss with a manned aircraft, that model aircraft pilot should notify AMA Headquarters with a written report of the incident, including action taken by the model aircraft pilot to avoid the manned aircraft. This report is intended to help the modeler, the club, and the AMA capture as much detail as possible so that it may be used to assist all parties in recalling the particulars of the incident at a later time. Call 1-800-435-9262 (1-800-IFLYAMA) extension 230 or 251 for assistance with this report.

Radio Controlled Model Aircraft Operation Utilizing "First Person View" Systems

1. DEFINITION OF TERMS:

Please refer to Page 5 section 7 which contains an alphabetical listing of the definitions of the terms in italics that are used in this document.

2. GENERAL:

FPV flying of radio control model aircraft by AMA members is allowed only for noncommercial purposes as a hobby/recreational and/or competition activity and must be conducted in accordance with AMA's current National Model Aircraft Safety Code and any additional rules specific to a flying site/location.

3. OPERATIONS – REQUIREMENTS – LIMITATIONS:

a) *FPV novice pilots* undergoing training at low altitude must use a buddy-box system with an *FPV spotter,* or must go to a safer altitude if no buddy-box system is used.

b) All *FPV* flights require an AMA *FPV pilot* to have an AMA *FPV spotter* next to him/her maintaining *VLOS* with the *FPV aircraft* throughout its flight.

c) The *FPV pilot* must brief the *FPV spotter* on the *FPV spotter's* duties, communications and hand-over control procedures before *FPV flight.*

d) The AMA *FPV spotter* must communicate with the *FPV pilot* to ensure the *FPV aircraft* remains within *VLOS*, warning the *FPV pilot* of approaching aircraft, and when avoidance techniques are necessary.

e) During an FPV flight, the FPV spotter must be prepared to acquire the transmitter/control from the *FPV pilot* and assume *VLOS* control of the model aircraft at any time safe operation of the flight is in question.

f) If an *FPV pilot* experiences a safety issue that does not appear to be a brief glitch, they must abandon *FPV* mode and fly *VLOS.*

g) Before the initial *FPV* flight of an *FPV model aircraft* and/or after any changes or repairs *to essential flight systems*, the *FPV model aircraft* must have an *R/C test flight* by conventional *VLOS.*

h) *FPV model aircraft* must use frequencies approved by the FCC for both the RC system and the wireless video system. Pilots must meet applicable FCC licensing requirements if they choose to operate the RC flight control system or the wireless video system on Amateur Band frequencies.

i) AMA *FPV pilots* must first be capable of flying their FPV model aircraft manually before utilizing *FPV* flight.

4. RANGE – ALTITUDE – WEIGHT – SPEED:

a) One of the requirements in Federal Law (Public Law 112-95 Sec 336 (c) (2) February 14, 2012) for model aircraft to be excluded from FAA regulations is that model aircraft must be flown within *VLOS* of the operator.

b) Model aircraft flown using *FPV* must remain at or below 400 feet AGL when within 3 miles of an airport as specified in the AMA Safety Code.

c) Model aircraft flown *FPV* are limited to a weight (including fuel, batteries, and onboard *FPV* equipment) of 15lbs. and a speed of 70mph.

5. RECOMMENDATIONS & INFORMATION:

a) AMA *FPV novice pilots* should consider using a cockpit view flight simulator to become accustomed to *FPV* flight.

b) AMA *FPV pilots* should consider using a programmable *autopilot* (AMA Document #560) with a failsafe "return to launch" (RTL) feature that will maintain control of the aircraft in the event of signal loss.

c) When purchasing *FPV* operational systems, always try to select quality equipment, verify its compatibility, install components for interference rejection, and determine that signal range is adequate for maximum VLOS range.

6. PRIVACY PROTECTION SAFEGUARDS:

The use of imaging technology for aerial surveillance with radio control model aircraft having the capability of obtaining high-resolution photographs and/or video, or using any types of sensors, for the collection, retention, or dissemination of surveillance data information on individuals, homes, businesses, or property at locations where there is a reasonable expectation of privacy is strictly prohibited by the AMA unless written expressed permission is obtained from the individual property owners or managers.

7. DEFINITIONS OF TERMS:

AMA FPV Pilot is an AMA member who is capable of maintaining stable flight of a model aircraft within its intended flight envelope when flown FPV without losing control or having a collision.

Buddy-Box System is a system that has one transmitter operating as the master controller, while a second transmitter is linked/slaved to it allowing dual control of an aircraft. The operator of the master transmitter allows one or the other transmitter to control the aircraft through the use of a spring-loaded switch. The switch provides instantaneous transfer of control from one transmitter to the other. The buddy-box system is an efficient and effective means of achieving a position transfer of control from one pilot to another.

Although this system is commonly used for training novice fliers, it is also useful in situations where an experienced pilot may have an increased likelihood of needing a second pilot's assistance in maintaining control of the aircraft. The use of the buddy-box may be helpful in assisting pilots with physical limitations, flying in congested environments, during times of reduced visibility, or anytime during FPV when a timely transfer of control may be beneficial.

Essential Flight Systems are any systems or components necessary to maintain stable flight within a model aircraft's flight envelope. (This includes primary radio control systems and any stabilization or gyros required to maintain stability and heading in certain types of model aircraft that would be uncontrollable/unstable without their use).

First Person View (FPV) refers to the operation of a radio controlled (R/C) model aircraft using an onboard camera's cockpit view to orient and control the aircraft.

Flight Envelope is defined as the range of airspeeds, attitudes, and flight maneuvers which a model aircraft can safely perform/operate for its intended use.

FPV Aircraft is an RC model aircraft equipped with a video transmitter to send real-time video images from an onboard camera to a ground based receiver for display on a pilot's video monitor/goggles. (*FPV model aircraft* types include: Fixed Wing, Rotary Wing, and Multi-Rotor Platforms).

FPV Novice Pilot is an AMA member learning to fly *FPV* utilizing a buddy-box system with an experienced AMA *RC pilot* operating the master transmitter and serving as the *FPV spotter*.

FPV Spotter is an experienced AMA *RC pilot* who has been briefed by the *FPV pilot* on the tasks, responsibilities and procedures involved in being a spotter; is capable and mature enough to perform the duties and is able to assume conventional *VLOS* control of the aircraft.

Non-Essential Flight Systems are any systems or components that are not necessary to maintain stable flight within the model aircraft's *flight envelope*. (This includes *autopilot* or *stabilization systems* that can be activated and deactivated in flight by the pilot without affecting stable flight).

R/C Test Flight requires an *AMA Pilot* to manually operate an R/C transmitter to control a model aircraft's flight path and determine if the aircraft is capable of maintaining stable flight within its *flight envelope*.

Visual Line Of Sight (VLOS) is the distance at which the pilot is able to maintain visual contact with the aircraft and determine its orientation without enhancements other than corrective lenses.

Academy of Model Aeronautics
AMA Advanced Flight Systems Committee
amaflightsystems@gmail.com

Radio Controlled Model Aircraft Operation Utilizing Failsafe, Stabilization and Autopilot Systems

1. DEFINITION OF TERMS:

Please refer to Page 3, section 7 which contains an alphabetical listing of the definitions of the terms in italics that are used in this document.

2. GENERAL:

All model aircraft flights utilizing *stabilization* and *autopilot* control systems must be conducted in accordance with AMA's current National Model Aircraft Safety Code and any additional rules specific to a flying site/location.

3. OPERATIONS – REQUIREMENTS – LIMITATIONS:

a) AMA members flying radio controlled model aircraft equipped with flight *stabilization* and *autopilot* systems must maintain *VLOS* with the aircraft at all times including programmed autopilot waypoint flight.

b) *AMA Pilots* must be able to instantaneously deactivate programmed flight of *autopilot systems* at any time during flight and resume manual control of the model aircraft.

c) *AMA Pilots* must perform an *R/C Test Flight* of a model aircraft before activating a newly installed *autopilot* or *stabilization system* and/or after any repairs or replacement of model aircraft *essential flight systems.*

d) Model aircraft exceeding 15lbs and/or 70mph may only use an *autopilot* for a programmed "return to launch" (RTL) flight and not for programmed waypoint flying of a predetermined course.

e) **STABILIZATION & AUTOPILOT SYSTEMS MAY BE USED FOR/TO:**

- Stabilization/automatically stabilize aircraft to level flight when control sticks are centered.
- Recovery/activate TRX switch to recover an out of control aircraft to level flight.
- Heading/activate TRX switch to hold a model aircraft's heading for precision flight path.
- Altitude/activate TRX switch to maintain fixed aircraft altitude while allowing directional control.
- Return GPS/activate TRX switch to return aircraft via GPS to launch point.
- Return FSS/failsafe activated from radio signal loss to return aircraft via GPS to launch point.
- Fixed circle/activate TRX switch to circle aircraft at point of activation at fixed altitude.
- Waypoint/activate TRX switch to initiate an autopilot programmed flight path via waypoints.
- Fencing/autopilot programed to display site unique boundaries on video monitor/goggles.

4. **<u>RANGE – ALTITUDE – WEIGHT – SPEED:</u>**

a) One of the requirements in Federal Law (Public Law 112-95 Sec 336 (c) (2) February 14, 2012) for model aircraft to be excluded from FAA regulations is that model aircraft be flown within *VLOS* of the operator.

b) Model aircraft must be flown at or below 400 feet AGL when within 3 miles of an airport as stated in the AMA Safety Code.

c) Model aircraft utilizing an *autopilot* for waypoint flying are limited to a maximum weight (including fuel, batteries, and onboard *autopilot systems*) of 15lbs and a speed of 70mph.

5. **<u>RECOMMENDATIONS & INFORMATION:</u>**

a) If your radio system lacks *failsafe* capability, consider using programmable digital servos or auxiliary *failsafe* modules. In the event of a radio signal failure these components will activate desired safe servo settings or an *autopilot* for return to base/launch (RTL).

b) When using an *autopilot system* the "return to launch" (RTL) feature should be programmed to return the aircraft to a safe location and safely terminate the flight should manual control of the aircraft be lost. When using RTL, pay particular attention to the manufacturer's throttle recommendations to prevent stalling.

c) The use of *stabilization systems* is recommended when flying FPV to improve flight stability and video quality.

d) Pilots usually choose to incorporate *stabilization* and *autopilot systems* for model aircraft flying to enhance flight performance, correct bad tendencies of the model aircraft, maintain stability in windy weather, establish precision heading holds for takeoffs/landings, flight training for novice pilots, create a steady flight platform for cameras, and generally just to make an airplane easier and safer to fly.

e) When purchasing *stabilization* and *autopilot systems*, always try to select quality equipment from reputable dealers, ensure for compatibility with other onboard systems, and install components according to manufacturers' instructions.

6. **<u>PRIVACY PROTECTION SAFEGUARDS:</u>**

The use of imaging technology for aerial surveillance with radio control model aircraft having the capability of obtaining high-resolution photographs and/or video, or using any types of sensors, for the collection, retention, or dissemination of surveillance data or information on individuals, homes, businesses, or property at locations where there is a reasonable expectation of privacy is strictly prohibited by the AMA unless written expressed permission is obtained from the individual property owners or managers.

7. DEFINITIONS OF TERMS:

AMA Pilot is an AMA member who is capable of manually operating an R/C transmitter to control a model aircraft's flight path within its safe intended *flight envelope* without losing control or having a collision.

Autopilot Systems incorporate programmable flight *stabilization* with an altitude sensor and a GPS receiver for accurate positioning and to navigate/control a radio controlled model aircraft's flight path. Advanced systems offer software for entering navigable waypoints. The flight data waypoints may be saved to autopilot's/GPS memory for programmed flight.

Essential Flight Systems are any systems or components necessary to maintain stable flight within a model aircraft's *flight envelope*. (This includes primary R/C systems and any *stabilization* or gyros required to maintain stability and heading in certain types of model aircraft that would be uncontrollable/unstable without their use).

Failsafe Systems are designed to minimize or prevent damage and safely terminate a flight when a radio controlled model aircraft loses radio signal. Modern radio systems can be programmed to position servos to a desired control setting in the event of radio signal failure.

First Person View (FPV) refers to the operation of a radio controlled (R/C) model aircraft using an onboard camera's cockpit view to orient and control the aircraft. (AMA Document #550).

Flight Envelope is defined as the range of airspeeds, attitudes and flight maneuvers which a model aircraft can safely perform/operate for its intended use.

Non-Essential Flight Systems are any systems or components that are not necessary to maintain stable flight within the model aircraft's intended flight envelope. (This includes *autopilot* or *stabilization systems* that can be activated and deactivated in flight by the pilot without affecting manually controlled stable flight).

R/C Test Flight requires an AMA Pilot to manually operate an R/C transmitter to control a model aircraft's flight path and determine if the aircraft is capable of maintaining stable flight within its safe intended *flight envelope*.

Stabilization Systems are designed to maintain intended model aircraft flight attitudes. The pilot can install, program and/or activate a system to stabilize yaw, pitch, or roll or any one attitude or combination of attitudes. Systems are often based on rate/heading hold gyros or inertial motion sensors utilizing multi-axis gyros and accelerometers for attitude stabilization.

Visual Line of Sight (VLOS) is the distance at which the pilot is able to maintain visual contact with the aircraft and determine its orientation and attitude without enhancements other than corrective lenses.

Academy of Model Aeronautics National Model Aircraft Safety Code

Effective January 1, 2014

A. **GENERAL**: A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.

1. Model aircraft will not be flown:
   (a) In a careless or reckless manner.
   (b) At a location where model aircraft activities are prohibited.
2. Model aircraft pilots will:
   (a) Yield the right of way to all human-carrying aircraft.
   (b) See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)
   (c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.
   (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.
   (e) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A.)
   (f) Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors.)
   (g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.
   (h) Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the model.
   (i) Not operate model aircraft carrying pyrotechnic devices that explode or burn, or any device which propels a projectile or drops any object that creates a hazard to persons or property.
   Exceptions:
   - Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.
   - Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.
   - Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document. (AMA Document #718.)

   (j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A.)
3. Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:
   (a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.
   (b) An inexperienced pilot is assisted by an experienced pilot.
4. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. **RADIO CONTROL (RC)**

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.
2. A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.
3. At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #706.)
   (a) Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.
   (b) At air shows or demonstrations, a straight safety line must be established.
   (c) An area away from the safety line must be maintained for spectators.
   (d) Intentional flying behind the safety line is prohibited.
4. RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
5. RC model aircraft will not knowingly operate within three (3) miles of any pre-existing flying site without a frequency-management agreement. (AMA Documents #922 and #923.)
6. With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flightline.
7. Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is still under power, except to divert it from striking an individual.
8. RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.
9. The pilot of an RC model aircraft shall:
   (a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.
   (b) Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.
   (c) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

C. **FREE FLIGHT**

1. Must be at least 100 feet downwind of spectators and automobile parking when the model aircraft is launched.
2. Launch area must be clear of all individuals except mechanics, officials, and other fliers.
3. An effective device will be used to extinguish any fuse on the model aircraft after the fuse has completed its function.

D. **CONTROL LINE**

1. The complete control system (including the safety thong where applicable) must have an inspection and pull test prior to flying.
2. The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category.
3. Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.
4. The flying area must be clear of all utility wires or poles and a model aircraft will not be flown closer than 50 feet to any above-ground electric utility lines.
5. The flying area must be clear of all nonessential participants and spectators before the engine is started.

ACADEMY OF MODEL AERONAUTICS

About AMA

We stand on our own for our members and for the future of aeromodeling.

The Academy of Model Aeronautics is the world's largest model aviation association. It is the official sanctioning body for model aviation in the United States, representing the interests of aeromodeling across the United States and around the world. As a self-supporting, nonprofit organization, its purpose is to promote the development of model aviation as a recognized hobby, sport, and family recreational activity that is both fun and educational.

Founded in 1936, the Academy of Model Aeronautics was charged with promoting the popularity of aeromodeling and associated contests, which coincided with the development and advancement of commercial and military aircraft design, engineering, and manufacturing. Today, the AMA still fosters the innovation born from competition on an international scale through the sanctioning of more than 2,000 aeromodeling competitions each year.

Government relations

The AMA has a long and successful history of advocating for the flying privileges of the aeromodeling community. As the liaison with the Federal Aviation Administration, Federal Communications Commission, Environmental Protection Agency, and other governmental entities, AMA works diligently with some of the most respected organizations in aviation and government to protect modelers' right to fly in the national airspace while providing an exceptional safety program.

Educational outreach

Our active educational outreach program assists teachers who utilize aviation activities in support of science, technology, engineering, and math curricula. Additionally, AMA has awarded more than $800,000 dollars in scholarships to hundreds of students in pursuit of study in the fields of aerospace design and engineering along with other aviation-related fields.

To learn more about the Academy of Model Aeronautics, or to become a member, visit **www.modelaircraft.org** or call **1-800-I-FLY-AMA.**

AUVSI®

DO'S AND DONT'S

Stay up-to-date with the latest operations limits.

PRIVACY STATEMENT

AUVSI supports the expanded use of unmanned aircraft systems (UAS) and encourages open discussion of privacy concerns and proposed changes to existing rules, regulations and laws.

AUVSI CODE OF CONDUCT

This code is intended to provide those who design, test, and operate UAS for public and civil use, a set of guidelines and recommendations for safe, non-intrusive operations.

FAA UAS WEBSITE

FAA

The Federal Aviation Administration is the national aviation authority of the United States. The use of unmanned aircraft systems (UAS) in civil airspace raises many technical, policy and procedure questions. Visit the FAA website to better understand how unmanned aircraft can be integrated into the National Airspace System.

AUVSI®

Who will be flying the UAS?

A business (e.g. photography, filmmaking, agriculture), recreational user (e.g. hobbyists, modelers) or a public agency/university (e.g. first responders, university researchers)?

A Business | Recreational User | Public Agency or University

AUVSI®

A Business

You must check with the FAA to obtain approval to fly. It's possible you may qualify for either a special airworthiness certificate or a commercial exemption.

The FAA grants two types of special airworthiness certificates: special flight permits and experimental certificates. Special flight permits are issued for production flight testing new production aircraft. Experimental certificates are issued only for the purposes of research and development, crew training and market surveys.

In addition, in May 2014, the FAA announced that it would consider granting exemptions for certain low-risk commercial applications such as precision agriculture, power line inspections, and movie production.

If you receive any of the above certifications or exemptions, you may fly.

To learn more about requesting a special airworthiness certificate from the FAA, click here.

To learn more about requesting a commercial exemption from the FAA, click here.

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Recreational User

Hobby or recreational flying (not for hire or as part of business) can be done without FAA approval, but operators should check local or state laws for usage restrictions and/or privacy rules and must follow safety guidelines including:

- Follow community-based safety guidelines
- Fly under 400 feet and within line of sight of the operator
- Not fly near manned aircraft
- Contacting the airport or control tower before flying within five miles of an airport

To learn more about these safety guidelines from the FAA, click here.

Home

AUVSI.org Increasing Human Potential FAA Request Information

AUVSI®

Public Agency or University

If you are a public agency or university, you must apply for a Certificate of Waiver or Authorization (COA) from the FAA. COAs allow use of UAS in a defined block of airspace and include special provisions unique to the proposed operation.

If you receive the above certifications or exemptions, you may fly.

To learn more about applying for a COA from the FAA, click here.

Home

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PRIVACY STATEMENT

I. EXECUTIVE SUMMARY

The Association for Unmanned Vehicle Systems International (AUVSI)[1] supports the expanded use of unmanned aircraft systems (UAS) and encourages open discussion of privacy concerns and proposed changes to existing rules, regulations, and laws. These discussions should occur concurrently with the integration of UAS into the National Airspace System (NAS)[2] in order to fully realize the benefits of rapidly advancing UAS technology and so that a greater understanding of UAS technology's potentialcan be achieved. Enactment of legislation now – before sufficient experience with integration of UAS into the NAS exists – is premature, and will hinder the creation and development of this new industry. Barring unnecessary delays, AUVSI estimates that this new industry is poised to create over 70,000 new jobs and $13.6 billion in economic impact within the first three years of integration alone.[3]

New legislation at the federal or state level that is not technology neutral or that is inconsistent with existing privacy rules, regulations, and laws would stifle innovation and cause delay, and may prevent or discourage the use of UAS by public safety agencies and other potential users. Fourth Amendment jurisprudence, existing federal and state privacy laws, and comprehensive Federal Aviation Administration (FAA) regulations already provide extensive guidance that would allow for initial integration of UAS operations. The FAA, for example, has taken steps to address privacy concerns relating to the use of UAS at test sites, which will help gather knowledge and best practices about UAS operations. If the FAA completes its required and pending rulemaking activities for UAS integration, there will be ample opportunities for multi-stakeholder input.

II. EXISTING FOURTH AMENDMENT PROTECTIONS

The Fourth Amendment and related case law already governs UAS operations by government users, ensures accountability, and guides the use of aircraft in which the cockpit and pilot are on the ground. Federal, state, and local government agents must obtain search warrants when their use of any technology, including UAS, may violate an individual's reasonable expectation of privacy protected by the Fourth Amendment.[4] These protections are well-established and address many different privacy concerns relating to government adoption and use of advancing technologies, such as UAS. For more than 220 years, the Fourth Amendment has been applied to new technologies used in warrantless observations – including several Supreme Court decisions on aerial observations[5] and, more recently, thermal imaging[6] and GPS technologies[7] – and it will continue to be applied to UAS and other future technologies that have not yet been invented. The Court, in a 2013 decision, held that law enforcement use of a highly-trained drug sniffing dog, roaming outside a home, was "an unlicensed physical intrusion" distinguishable from "Girl Scouts and trick-or-treaters," and was thus an unreasonable search.[8] UAS technology is not so distinct from other advanced technologies as to require supplemental legislation.[9] On the contrary, UAS-specific legislation and laws may have unintended effects, including confusing and complicating the application of existing search warrant requirements[10] that have been carefully developed over two centuries.

AUVSI strongly supports the International Association of Chiefs of Police (IACP) recommended guidelines for UAS operations and associated data collection,[11] which the Airborne Law Enforcement Assocation (ALEA)[12] and others have adopted and even the American Civil Liberties Union (ACLU) has praised.[13] Like IACP, AUVSI recognizes the "proven effectiveness" of UAS and that the "potential benefits [to public safety] are irrefutable."[14] AUVSI opposes any legislation that hamstrings first-responders.

III. FAA'S APPROACH TO PRIVACY AND RULEMAKING

The Congressionally-mandated FAA rulemaking processes for the integration of small UAS (sUAS) will provide ample opportunities for the public to comment on privacy issues relating to UAS operations.[15] Unlike government operators, who are permitted to operate UAS, albeit through a cumbersome process,[16] civilian operators have no practical, legal means of doing so until the FAA completes its legally required, and long-delayed, rulemakings.[17] Recognizing the importance of addressing privacy concerns, the FAA has taken extraordinary measures to permit public participation in determining the privacy policies that will govern UAS test sites – the agency's first major step toward integration.[18] Indeed, FAA "aim[ed] to assure maximum transparency of privacy policies associated with UAS test site operations in order to engage all stakeholders in discussion about which privacy issues are raised by UAS operations and how law, public policy, and operators should respond to those issues in the long run."[19] Rather than passing uninformed[20] and potentially unenforceable[21] legislation now, Congress and state lawmakers should wait for the FAA to complete its rulemaking processes.

The FAA's primary mission is, and must remain, aviation safety. Still, insofar as privacy issues are inextricably linked to the agency's creation of a regulatory framework for the integration and operation of UAS, the FAA rulemaking process is the appropriate forum to address privacy concerns. The FAA has properly recognized the role that federal and state law enforcement agencies play in enforcing laws regarding the protection of an individual's right to privacy, as well as its complementary authority to revoke or suspend a UAS operator's license. Like the Fourth Amendment jurisprudence applicable to public UAS operators, analogous state laws relevant to civil operators that "address trespass, invasion of privacy, harassment, and stalking [are] well established."[22] AUVSI supports the FAA's position that Fair Information Practice Principles (FIPPs) should inform UAS privacy policies on the collection, storage, and use of data.[23] Clearly, the registration of certain UAS and pilots with the FAA, the equipage of UAS with identification/position broadcast capability, and the guidelines set forth in AUVSI's UAS Operations Code of Conduct[24] could all contribute to the creation of an overall approach to managing privacy concerns. FAA rulemaking proceedings are the proper forum to address all of these important considerations.

CONCLUSION

AUVSI supports the integration of UAS into the NAS in a safe and responsible manner, while safeguarding the existing right to privacy and ensuring transparency and accountability. Existing federal and state privacy protections should extend to the operations of UAS, just as they do to the operations of any other advanced technology. But before consideration of any supplemental technology neutral privacy legislation, the FAA should be allowed to gain experience through the UAS test site program and to then complete the well-established regulatory processes for UAS integrationthat Congress has already mandated. Fourth Amendment jurisprudence, federal and state privacy protections, and other existing laws and regulations are sufficiently robust to guide this effort.

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1 AUVSI – the world's largest non-profit organization dedicated to the advancement of unmanned systems – represents more than 7,000 members from 55 allied countries and 2,500 organizations involved in fields of government, industry and academia.

2 The FAA Modernization and Reform Act of 2012 requires FAA to safely integrate UAS into the NAS by September 2015, and mandates, among other things, the creation of UAS test sites and rulemaking proceedings addressing the integration of civil UAS operations. P.L. 112-95, §§ 331-334, 126 Stat. 11, 72-77 (2012).

3 AUVSI, *The Economic Impact of Unmanned Aircraft Systems Integration in the United States* (Mar. 2013), at 2, http://www.auvsi.org/econreport.

4 *See Katz v. United States*, 389 U.S. 347 (1967).

5 *See Florida v. Riley*, 488 U.S. 445 (1989) (naked-eye observations through greenhouse roof from helicopter at 400 feet not an unreasonable search); *Dow Chemical Co. v. United States*, 476 U.S. 227 (1986) (precision aerial photographs of industrial complex from 1,200-12,000 feet not a prohibited search); *California v. Graolo*, 476 U.S. 207 (1986) (no reasonable expectation of privacy from naked-eye observations of yard from fixed-wing aircraft flying at 1,000 feet).

6 *See Kyllo v. United States*, 533 U.S. 27 (2001) (warrantless use of thermal imaging device to see heat emanating from inside home deemed an unreasonable search). 7 *See United States v. Jones*, 132 S. Ct. 945 (2012) (month-long tracking with GPS required a warrant).

8 *Florida v. Jardines*, 133 S.Ct. 1409, 1415 (2013).

9 "In combination, however, [*the Graolo, Riley, Dow Chemical, Kyllo and Jones*] rulings indicate that the Fourth Amendment is likely to provide significantly more protection from government UAS observations than is commonly assumed." John Villasenor, *Observations from Above: Unmanned Aircraft Systems and Privacy*, 36 HARV. J.L. & PUB.POL'Y 457, 516 (2013). 10 *See* Richard M. Thompson II, CONG. RESEARCH SERV., R42701, *Drones in Domestic Surveillance Operations: Fourth Amendment Implications and Legislative Responses* (Apr. 3, 2013), at 18-21 (reviewing several bills that "establish arguably greater constraints on [UAS] usage than the Fourth Amendment requires." Id. at 18).

11 IACP, *Recommended Guidelines for the Use of Unmanned Aircraft* (Aug. 2012) ("IACP Guidelines").

12 ALEA, *Resolution in Support of the International Association of Chiefs of Police Aviation Committee's Recommended Guidelines for the Use of Unmanned Aircraft* (Aug. 29, 2012), http://www.alea.org/assets/cms/files/Resolutions/In%20Support%20of%20UAS%20Guidelines.pdf

13 *See* Jay Stanley, *Police Chiefs Issue Recommendations on Drones: A Look at How they Measure Up*, ACLU (Aug. 17, 2012, 9:39 AM), http://www.aclu.org/blog/technology-and-liberty/police-chiefs-issue-recommendations-drones-look-how-they-measure.

14 IACP Guidelines, at 1. What appears to be the first documented instance of a human life being saved with a UAS occurred in Canada earlier this year. *See Single Vehicle Rollover - Saskatoon RCMP Search for Injured Driver with Unmanned Aerial Vehicle*, ROYAL CANADIAN MOUNTED POLICE (May 9, 2013), http://www.rcmp-grc.gc.ca/sk/news-nouvelle/video-gallery/video-pages/search-rescue-eng.htm. It will certainly not be the last.

15 P.L. 112-95, § 332 (requiring the sUAS and integration final rules by August 14, 2014 and December 14, 2015, respectively).

16 FAA, *Unmanned Aircraft Systems (UAS): Certifications and Authorizations, http://www.faa.gov/about/initiatives/uas/cert/; see also Felicity Barringer, F.A.A.'s Concerns Hold Up Use of Wildfire Drones*, N.Y. TIMES (May 21, 2013), http://www.nytimes.com/2013/05/22/us/faas-concerns-hold-up-use-of-wildfire-drones.html?_r=0.

17 *See* Alissa M. Dolan and Richard M. Thompson II, CONG. RESEARCH SERV., R42940, *Integration of Drones into Domestic Airspace: Selected Legal Issues* (Apr. 4, 2013), at 4 (internal citations omitted). Indeed, the FAA's sUAS notice of proposed rulemaking has already been delayed more than two years beyond the agency's initially projected publication date of March 10, 2011. DEPT. TRANSP., *Report on DOT Significant Rulemakings* (May 10, 2013), at 13.

18 *See* Unmanned Aircraft Test Site Program, 78 Fed. Reg. 12,259 (Feb. 22, 2013); *see also* FAA, *Transcript of OnlineSession on UAS Test Site Privacy Policy* (Apr. 3, 2013), http://www.faa.gov/about/initiatives/uas/media/UAStranscription.pdf.

19 78 Fed. Reg. at 12,260.

20 *See supra* note 9, at 517 (contrasting UAS with other emerging technologies in that the focus on privacy concerns has come before the benefits are widely recognized).

21 *See supra* note 17, at 27-29 (noting that state and local regulation of UAS may be subject to challenge on federal preemption grounds).

22 *See supra* note 9, at 514.

23 78 Fed. Reg. at 12,260.

24 http://www.auvsi.org/conduct.

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UNMANNED AIRCRAFT SYSTEM OPERATIONS INDUSTRY "CODE OF CONDUCT"

The emergence of unmanned aircraft systems (UAS) as a resource for a wide variety of public and private applications quite possibly represents one of the most significant advancements to aviation, the scientific community, and public service since the beginning of flight. Rapid advancements in the technology have presented unique challenges and opportunities to the growing UAS industry and to those who support it. The nature of UAS and the environments which they operate, when not managed properly, can and will create issues that need to be addressed. The future of UAS will be linked to the responsible and safe use of these systems. Our industry has an obligation to conduct our operations in a safe manner that minimizes risk and instills confidence in our systems.

For this reason, the Association for Unmanned Vehicle Systems International (AUVSI), offers this Code of Conduct on behalf of the UAS industry for UAS operation. This code is intended to provide our members, and those who design, test, and operate UAS for public and civil use, a set of guidelines and recommendations for safe, non-intrusive operations. Acceptance and adherence to this code will contribute to safety and professionalism and will accelerate public confidence in these systems.

The code is built on three specific themes: Safety, Professionalism, and Respect. Each theme and its associated recommendations represent a "common sense" approach to UAS operations and address many of the concerns expressed by the public and regulators. This code is meant to provide UAS industry manufacturers and users a convenient checklist for operations and a means to demonstrate their obligation to supporting the growth of our industry in a safe and responsible manner. By adopting this Code, UAS industry manufacturers and users commit to the following:

SAFETY

- We will not operate UAS in a manner that presents undue risk to persons or property on the surface or in the air.
- We will ensure UAS will be piloted by individuals who are properly trained and competent to operate the vehicle or its systems.
- We will ensure UAS flights will be conducted only after a thorough assessment of risks associated with the activity. This risks assessment will include, but is not limited to:
  - Weather conditions relative to the performance capability of the system
  - Identification of normally anticipated failure modes (lost link, power plant failures, loss of control, etc.) and consequences of the failures
  - Crew fitness for flight operations
  - Overlying airspace, compliance with aviation regulations as appropriate to the operation, and off-normal procedures
  - Communication, command, control, and payload frequency spectrum requirements
  - Reliability, performance, and airworthiness to established standards

PROFESSIONALISM

- We will comply with all federal, state, and local laws, ordinances, covenants, and restrictions as they relate to UAS operations.
- We will operate our systems as responsible members of the aviation community.
- We will be responsive to the needs of the public.
- We will cooperate fully with federal, state, and local authorities in response to emergency deployments, mishap investigations, and media relations.
- We will establish contingency plans for all anticipated off-nominal events and share them openly with all appropriate authorities.

RESPECT

- We will respect the rights of other users in the airspace.
- We will respect the privacy of individuals.

- We will respect the concerns of the public as they relate to unmanned aircraft operations.
- We will support improving public awareness and education of the operation of UAS.

As an industry, it is incumbent upon us to hold ourselves and each other to a high professional and ethical standard. As with any revolutionary technology, there will be mishaps and abuses; however, in order to operate safely and gain public acceptance and trust, we should all act in accordance with these guiding themes and do so in an open and transparent manner. We hope the entire UAS industry will join AUVSI in adopting this industry Code of Conduct.

AUVSI.org Increasing Human Potential FAA Request Information

Federal Aviation Administration

Unmanned Aircraft Systems

(http://www.faa.gov/news/press_releases/news_story.cfm?newsId=16875)

FAA Announces Virginia Tech UAS Test Site Now Operational (http://www.faa.gov/news/press_release newsId=16875)

Research in Virginia, New Jersey and Maryland to benefit technology development. Photo: VA Tech

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Safety is the FAA's top mission, and the agency maintains the world's safest aviation system. The FAA first authorized use of unmanned aircraft in the National Airspace System (NAS) in 1990.

Today, unmanned aircraft are flying in the NAS under very controlled conditions, performing border and port surveillance by the Department of Homeland Security, helping with scientific research and environmental monitoring by NASA and NOAA, supporting public safety by law enforcement agencies, helping state universities conduct research, and supporting various other missions for public (government) entities. Operations range from ground level to above 50,000 feet, depending on the specific type of aircraft. However, UAS operations are currently not authorized in Class B airspace (http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/pilot_handbook/media/PHAK%20-%20Chapter%2014.pdf) (PDF), which exists over major urban areas and contains the highest density of manned aircraft in the National Airspace System.

What are the different types of UAS operations?

There are three types of unmanned aircraft system operations: Civil, Public and Model Aircraft.

- **Civil UAS**

  Obtaining a Special Airworthiness Certificate (http://www.faa.gov/aircraft/air_cert/airworthiness_certification/sp_awcert/experiment/sac/) in the experimental category for a particular UAS is currently the only way civil operators of unmanned aircraft are accessing the NAS. Experimental certificate regulations preclude carrying people or property for compensation or hire, but do allow operations for research and development, flight and sales demonstrations and crew training. The FAA is working with civilian operators to collect technical and operational data that will help refine the UAS airworthiness certification process. The agency is currently developing a future path for safe integration of civil UAS into the NAS as part of NextGen implementation. Read more about Civil Operations (civil_operations/).

  The FAA has been working for several months to implement the provisions of Section 333 (legislative_programs/section_333/) of the FAA Modernization and Reform Act of 2012, "Special Rules for Certain Unmanned Aircraft Systems," which will allow for commercial operations in low-risk, controlled environments. Read more about Section 333 (legislative_programs/section_333/).

- **Public UAS**

  COAs (http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/aaim/organizations/uas/coa/) are available to public entities that want to fly a UAS in civil airspace. Common uses today include law enforcement, firefighting, border patrol, disaster relief, search and rescue, military training, and other government operational missions. Applicants make their request through an online process (http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/aaim/organizations/uas/coa/) and the FAA evaluates the proposed operation to see if it can be conducted safely. Read more about Public Operations (public_operations/) .

- **Model Aircraft**

  Recreational use of airspace by model aircraft is covered by FAA Advisory Circular 91-57 (http://www.faa.gov/documentLibrary/media/Advisory_Circular/91-57.pdf) (PDF), which generally limits operations for hobby and recreation to below 400 feet, away from airports and air traffic, and within sight of the operator. In June 2014, the FAA published a Federal Register notice (media/model_aircraft_spec_rule.pdf) (PDF) on its interpretation of the statutory special rules for model aircraft in the FAA Modernization and Reform Act of 2012. The law is clear that the FAA may take enforcement action against model aircraft operators who operate their aircraft in a manner that endangers the safety of the national airspace system. In the notice, the FAA explains that this enforcement authority is designed to protect users of the airspace as well as people and property on the ground. Read the full press release (http://www.faa.gov/news/press_releases/news_story.cfm?newsId=16474) . Read more about Model Aircraft Operations (publications/model_aircraft_operators/) .

What can I do with my model aircraft?

Having fun means flying safely! Hobby or recreational flying doesn't require FAA approval but you must follow safety guidelines. Any other use requires FAA authorization. Here is a list of Do's and Don'ts for flying model aircraft (publications/model_aircraft_operators) .

Contact Us (contacts/)

The agency wants the public to know how and when to contact the FAA regarding safety concerns with UAS operations. You can visit the Agency's Aviation Safety Hotline website (http://www.faa.gov/contact/safety_hotline/) or call 1-866-835-5322, Option 4.

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Federal Aviation
Administration

What Can I Do With My Model Aircraft?
Hobby/Recreational Flying

Having fun means flying safely! Hobby or recreational flying doesn't require FAA approval but you must follow safety guidelines. Any other use requires FAA authorization.

Avoid doing anything hazardous to other airplanes or people and property on the ground.

"Dos"

- **Do** fly a model aircraft/UAS at the local model aircraft club
- **Do** take lessons and learn to fly safely
- **Do** contact the airport or control tower when flying within 5 miles of the airport
- **Do** fly a model aircraft for personal enjoyment

"Don'ts"

- **Don't** fly near manned aircraft
- **Don't** fly beyond line of sight of the operator
- **Don't** fly an aircraft weighing more than 55 lbs unless it's certified by an aeromodeling community-based organization
- **Don't** fly contrary to your aeromodeling community-based safety guidelines
- **Don't** fly model aircraft for payment or commercial purposes

Model Aircraft Operations Limits

According to the FAA Modernization and Reform Act of 2012 as (1) the aircraft is flown strictly for hobby or recreational use; (2) the aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization; (3) the aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization; (4) the aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; (5) when flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower…with prior notice of the operation; and (6) the aircraft is flown within visual line sight of the operator.

- More information about safety and training guidelines

The FAA welcomes comments from the public on its Interpretation of the Special Rule for Model Aircraft, which may help further inform its interpretation of the statutory language in Section 336 of the FAA Modernization and Reform Act of 2012 regarding Model Aircraft operations. Please visit the Federal Rulemaking Portal (http://www.regulations.gov/#!submitComment;D=FAA-2014-0396-0781) and follow the instructions for sending your comments electronically.

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1/30/2013

RATING	sUAS Student Pilot	sUAS Private	sUAS Commercial	sUAS Instrument	sUAS Instructor	sUAS Instrument Instructor	UAS Type Rating	Examiner
PURPOSE & PRIVLEDGES	Aquire sUAS training to qualify for sUAS Private	Operate sUAS for Private ops, aquire sUAS hours to qualify for Commercial	PIC sUAS for Comp or Hire	PIC sUAS outside line of Sight (OLOS), applied to sUAS Private or sUAS Commercial	Instruct to level held by Instructor	Instruct sUAS Private and Commercial pilots in BLOS operations	Required for all UAS over 55 lb, turbine powered, or capable of speeds of ???	Examine applicants to level authorized by FAA
REQUIRED EXPERIENCE	None logged	To be determined	To be determined	To be determined	sUAS Commercial	sUAS Instructor	sUAS Private or sUAS Commercial	To be determined
KNOWLEDG TEST	Pre-solo Oral Exam	Privte sUAS Ground Schools UAS written	sUAS Commercial Written	Instrument Written	Fundamentals of Instruction (unless exempt) UAS Instructor written	UAS Instrument/BLOS	Appropriate systems and operations knowledge	Needs to be written into Part 183 Posess Certificates and rating for examination given
MEDICAL	Student Pilot with demonstrated waivers for sUAS	Third Class with demonstrated waivers for sUAS	Second Class with demonstrated waivers for sUAS	Third or Second with demonstrated waivers for sUAS depending on Certificate held	None	None	Third or Second with demonstrated waivers for sUAS depending on Certificate held	None
PRACTICAL TEST to include ORAL EXAM to determine adequate knowledge of applicable regulations & systems knowledge		Demonstrate competence of LOS sUAS TO/LND, Basic Maneuvers, lost link, Emergency notification, camera operation	Demonstrate command of aircraft & sensor system in advance maneuvers with percision. Recover from emergency senarios.	Demonstrate control of the aircraft & sensors, emergency recovery procedures & waypoint manipulation without visual refference	Demonstrate abillity to teach sUAS. Recover from student loss of control senarios. Demonstrate command of required paperwork	Demonstrate abillity to teach sUAS. Recover from student loss of control senarios. Demonstrate command of required paperwork	Demonstrate command of UAS to level of certificates held, or limitations placed on certificate	Needs to be written into 183.23

Unmanned Aircraft Systems
Type and Capability Matrix

	Hobby	Commercial	Government	Military
Purpose and Common Use	recreation personal use video extreme sport video wildlife viewing hobby competition	cinematography photography real estate agriculture athletic replay structure analysis disaster response	life and safety cost savings risk reduction improved accuracy disaster response	surveillance life and safety weapon
Flight Requirements	none **line of sight operation**	**FAA approved COA same as manned aircraft**	**FAA approved COA same as manned aircraft**	**Military approval**

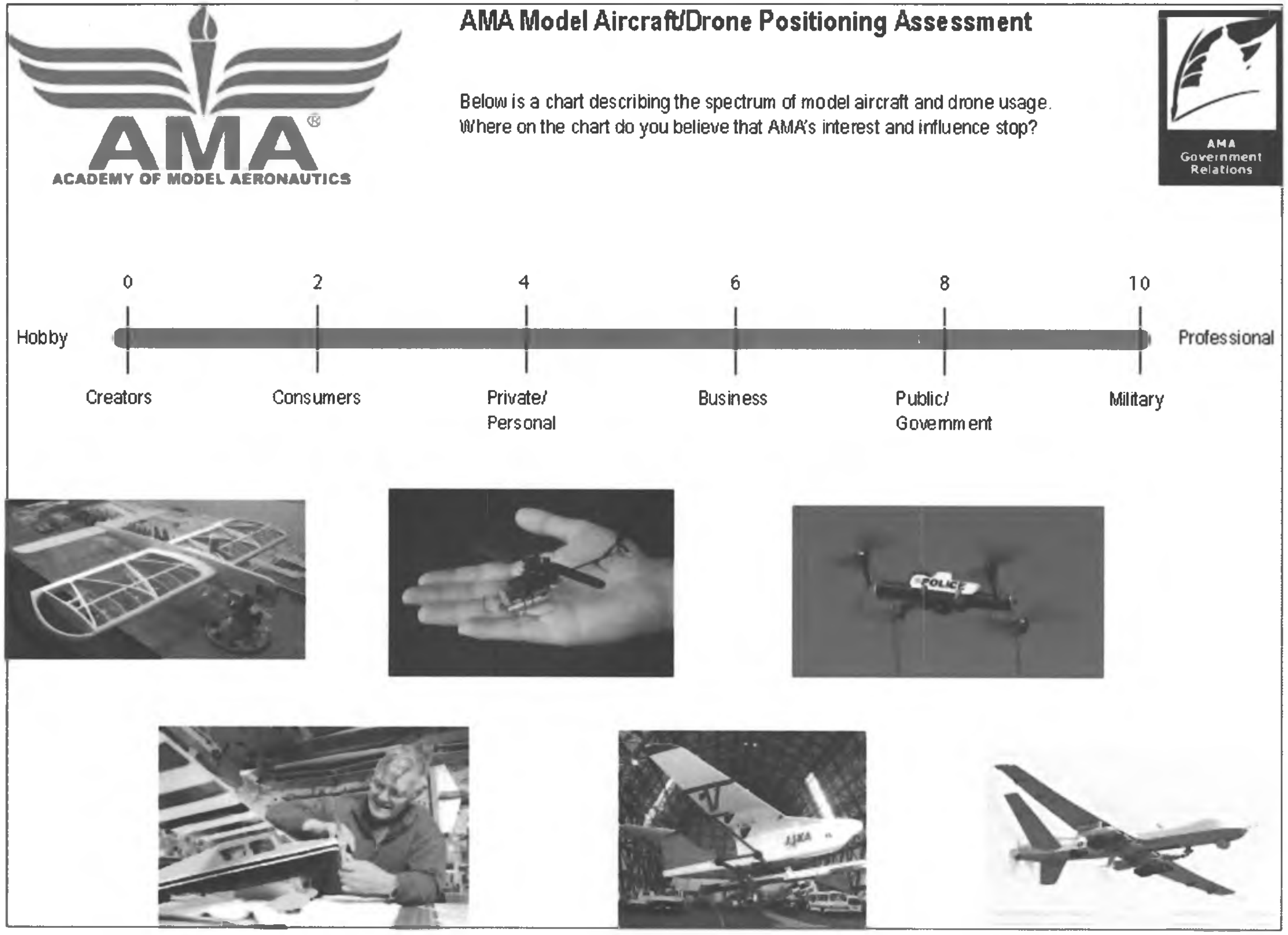
Capability	Accessories	Size
real time downlink to ap available on all levels		
flight duration less than 5 mins	joy stick control ready to fly out of box camera	Micro = und 1lb
flight duration 5 mins - 30 mins	image software auto home function	Macro = 1 lb - 3 lb
flight duration 30 mins - 3 hours	airport guard GPS safety features	Under 55 lbs
flight duration 3 hours - 24 hours	pre-programmed flight plan specialized software	Over 55 lbs
flight duration more than 24 hours	advanced functionality	Large







Positioning Graphic



Definitions

- **Hobby:** Recreational users primarily involved for fun and/or competition.

0. **Creators:** Designers, Manufacturers, Distributors, Retailers

2. **Consumer:** Purchasers from mall kiosks/big box stores, attracted by intrigue/impulse (i.e. AR Drone)

4. **Private/Personal:** Light commercial, incidental business application, community service, personal use (i.e. aerial photography, agriculture, search and rescue, journalism, etc.)

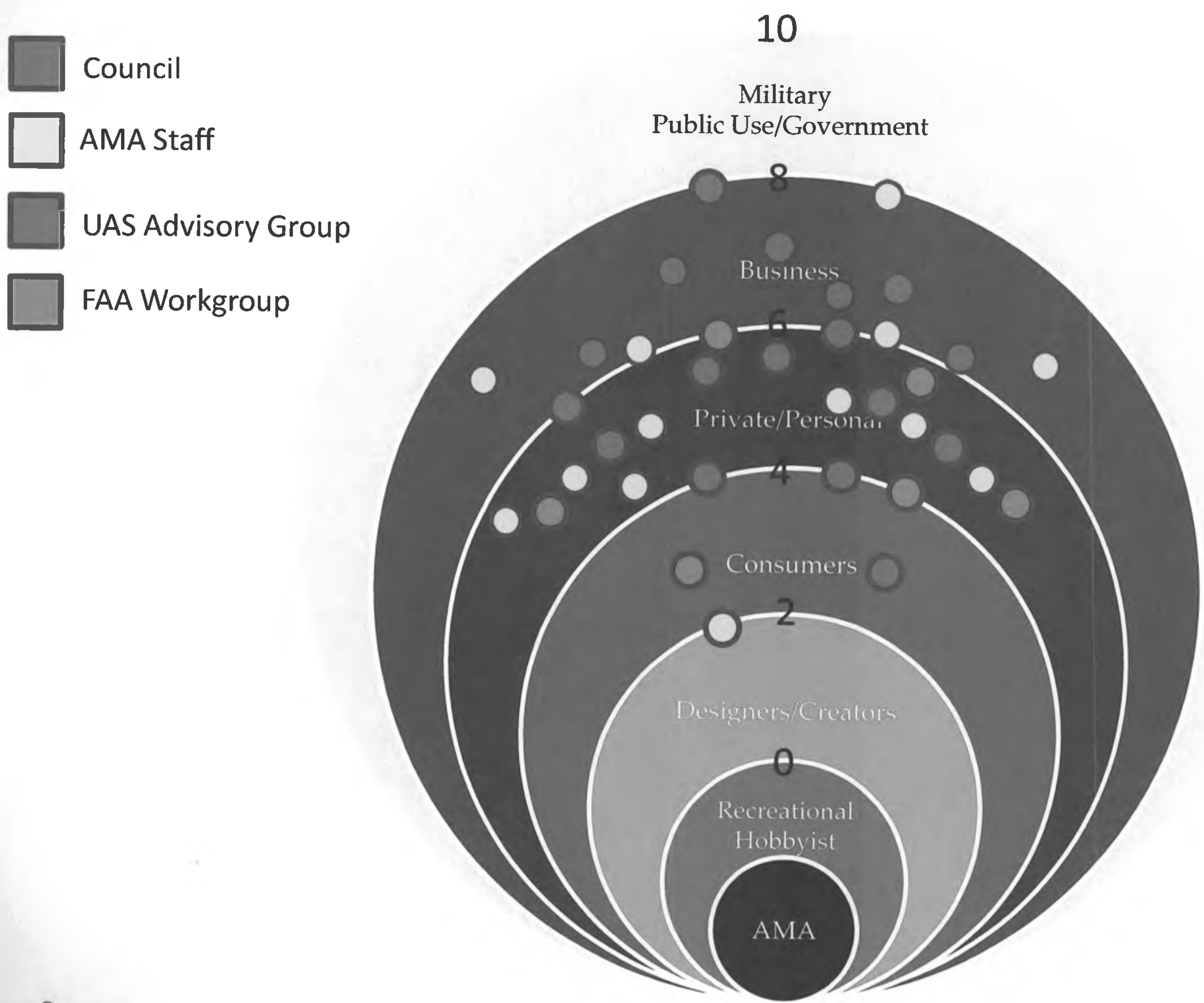
6. **Business:** Commercial use, significant business purpose

8. **Professional:** Exclusively business use, multi-million dollar community

10. **Public/Government:** Law enforcement, surveillance purposes, border patrol

10. **Military:** Warfare, military surveillance, defense

AMA Universe



ALASKA STATE LEGISLATURE

REPRESENTATIVE
SHELLEY HUGHES

Economic Development
Trade and Tourism Committee
Chairman
Energy Committee
State Affairs Committee
Military & Veterans' Affairs Committee
University Finance Subcommittee
Fish & Game Finance Subcommittee

Session:
State Capitol, Room 409
Juneau, Alaska 99801-1182

Interim:
600 E. Railroad Ave.
Wasilla, AK 99654
(907) 376-3725
Toll Free 1-800-565-3743

housemajority.org

HOUSE OF REPRESENTATIVES

District 8 – Greater Palmer

September 19, 2014

Dear Commissioner,

The Legislative Task Force on Unmanned Aircraft Systems has identified the need for public awareness in the use of small unmanned aircraft systems (UAS) by government agencies. The Task Force respectfully requests that each State agency that intends to use UAS in its work, to provide the task force with a point of contact for your agency. We ask for this point of contact to be provided by January 1, 2015 or prior to a scheduled UAS mission if it will occur prior to January.

The Task Force is currently developing a public education strategy so that all users and observers of UAS understand the rules and expectations thereby, eliminating fear and reducing opportunity for inappropriate use of these aircraft. State agency participation is vital to the education campaign and will provide the Task Force with a better understanding of how our government agencies are planning to use UAS.

Thank you for time.

Sincerely,
Representative Shelley Hughes
Senator Donny Olson

Task Force:

- Is there anything additional that needs to be included in this request?
- Is January 1, 2015 an appropriate date?
- Address the letter to each commissioner or in general with a list in the CC:
- How should the header read?

ALASKA STATE LEGISLATURE

Please enter into the record my testimony to the Legislative Task Force on Unmanned Aircraft Systems
Committee Name

Committee on "Education Campaign"? Dated 9/19/14
Bill / Subject

Thank you for your work & attention to the need to protect the public in this fast-growing industry.

It appears that industry and the desire of officials to bring industry $ to the state are leading the discussion.

Please remember that the legislature is to serve the public - the individual people of Alaska, and that other concerns are more important than $:

- Privacy, as explicitly protected by Article I-10 of our Alaska Constitution and as also protected by the 4th Amendment to the U.S. Constitution dealing with illegal search + seizure. This needs to be protected before ~~address~~ collection, not just later.
- Safety vs. manned aircraft, including private small craft.
- Compliance with morals and international law banning use of illegal weapons systems.
- I object to our state dedicating funding and making regulatory exceptions to promoting the drone tech site.

SIGNED: Heather Koponen
Testifier Alaska Peace Center

Representing

687 Chena Ridge, Fbks 99709 479-0981
Address / Phone Number

Thanks for Skaggs' expertise + Colligan's remarks to protect public.
→ I would like to be provided copies of letters authored by this committee.

LTFUAS PUBLIC COMMENT 9-18-14

Introductions of Task Force members.

1.) **Gary Williams**, AeroForensics, Anchorage, AK: What infrastructure currently exists to support this program, what hardware exists at the test site? What do you anticipate existing "test site to me means facilities on site, hardware, vehicles, etc..."
RO: infrastructure of PanPacific Test Site, 3 different ranges: AK, Hawaii, Oregon. A few different ranges in AK are currently available – Kodiak, Poker Flats. What we don't have is a whole lot of hardware, we have a radar system, but the system is not certified. We have eight different types of UAS, a total of over 100 items. I don't anticipate our test site will ever look like an airforce base...but we will be deployable and can meet the needs of industry.
Gary: So we obviously have the airspace, but will there will be a permanent deployable location?
Ro: Poker Flats is semi-permanent, we have facilities and a few vehicles.
Gary: How many people dedicated full time?
Ro: 21 right now, more to come. A few temporary, part-time employees.
2.) **Bernie Zak** - Sandia National Laboratory, Engineering Laboratory that is contracted through the Department of Energy: Testifying on behalf of his interest of UAF work, talked about Sandia's operations in Barrow and Ilikotok, where they study climate change and have about 100 instruments used. Sandia has operated closely with UAF for over two decades now. Glad to see these developments in regard to state involvement. Sandi/DOE now has restricted airspace over Iliktok. The main purpose of their facilities are climate research. Facilities are for public use and they have had dozens of applications for use of their Barrow and Iliktok facilities.
    - Steve Wachowski Comment: his company FairWeather has worked with Sandia in the past.
3.) **Rob Mulford**, Fairbanks, with Veterans for Peace: against military and government encroachment: talked about UAS conferences he attended where DOD and Military officials detailed the "plans" for drone roll out and future of drones in military. Went into "Network-Centric" warfare and the use of ground to air symmetry. Attended a conference in Arlington, VA: an intelligence surveillance conference, where they thanked Lockhead Martin for their production of high-frequency sensors. Concerned with privacy and assassinations on US soil via drone targeting technology. Very skeptical of the use of UAVs in commercial airspace, referred to them as "monsters in the sky."
4.) Letter form **Brandon Anderson**: concerned with outside companies crowding the market for UAS in Alaska, hopes that those who guide the development of the market will allow for Alaska's talented companies who are already here to get their fair chance at the market. Also introduced plans to base a UAS activity hub out of Seward, AK.
    - Wachowski adds that hiring of Alaska Natives is a priority of FairWeather, considering they are a subsidiary of a Native Corporation. Believes it will remain that way and is optimistic that Alaskans will have ample opportunity in the industry.

    - Steve Colligan addresses the importance of making the industry and STEM education more appealing for the younger generation. Transferability from xbox and gaming to actually flying UAS and using the tech is very possible.

5.) **Jeff Robins**, Alaska Aerospace, Palmer, AK – Are there any potential tax incentives being discussed to attract business to the state, similar to the film industry?
RO: In a military zone (set up during this past legislative session) there are tax incentives currently set up for business development within these military zones. This would include UAS related businesses. Fairbanks Northstar Borough is pushing this very hard. Slow process, but it's in the works.

- Joe Jacobson Response: Doesn't think it's a good comparison between film industry and UAS industry, but he believes that the state could possibly partner with a company like Lockhead Martin or others. Does not foresee tax subsidies as a necessity for this industry because the industry is budding and has potential to attract investment without needing incentives.
- Mike O'Hare: spoke on the fact that the incentives for UAS development in Alaska are the fact that we have so much airspace and we are a UAS friendly state.

6.) **Barbara Johnson**: Special Assistant to Mayor Hopkins: Spoke about the Military Facility Zones and Rep. Thompson's bill. They are pursuing a "tech park" in Fairbanks area with partners from both the industry and the state. Very optimistic about Alaska UAV future.

Closed meeting.

Legislative Teleconference Network

SPONSOR: Rep Hughes
SUBJECT: UAS Task Force
Date: 19 Sep 14

Please Print

NAME	CITY OF RESIDENCE	REPRESENTING	QUESTIONS ONLY (?) TESTIFY (Y or N)	BILL NO.
CHRISTI BELL	ANCHORAGE	University of AK		
Mike McCRARY	ANCHORAGE	Self		
Tyler Hawker	Fort Collins, CO	Self	N	
Robert Mulford	Fairbanks	Veterans For Peace, Alaska Peace Center	Y	
Kerry Long	ANC	FAA Regional Admin.	~~N~~	
Jay Skaggs	ANC	FAA, Flight Standards		
Tracy Wiegman	ANC	FAA, Cong. Liaison		