



**Golden Triangle  
Regional Airport**

# Unmanned Aircraft Systems (UAS) Seminar

Mike Hainsey, A.A.E.  
Executive Director

# Tonight's Flightplan



UAS rules  
update



Mixing UAS and  
aircraft



Operational uses  
of drones



Discussion





# UAS Seminar: Golden Triangle Regional Airport (KGTR)

Madison Dixon  
UAS Program Manager, Safety Officer  
Mississippi State University  
1/15/2019



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# Madison Dixon

## Current:

- UAS Program Manager, Safety Officer  
MSU Raspjet Flight Research Lab.
- UAS Consultant and Aerial Photographer,  
Dixon-Drone



## Former:

- Graduate Research Assistant - MSU Raspjet Flight Research Lab
- GIS Analyst / UAS Specialist
  - Landpoint, LLC. Bossier City, LA.
  - EMC Surveying & Mapping. Grenada, MS.
- GIS Mapping Technician - Delta State University.



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# Outline

## I. Review

- a) UAS Rules & Regulations
- b) Latest UAS Developments  
& FAA Reauthorization Act 2018
- c) Important Considerations

## II. MSU UAS Research

- a) Research Overview
- b) Brief Update

## III. Q & A - Discussion





# UAS Rules & Regulations

- **Commercial Operations**

- CFR 14 Part 107
- Certain sections subject to waiver  
ex. 107.26 – Daylight Operations = most commonly waived. ~1,200 waivers currently.
- \*FAA Reauthorization 2018 contains multiple sections aimed at expanding commercial UAS operations through additional research, reporting, and rule-making.

- **Civil / Public Operations**

- FAA Certificate of Authorization (COA), and/or
- CFT 14 Part 107
- \*FAA Reauthorization 2018 contains multiple sections specifically dedicated to public UAS operations.

- **Hobby / Recreational Operations**

- ~~Section 336 – Special Rule for Model Aircraft.~~  
\*FAA Reauthorization 2018 immediately repealed.
- See next slides.



# Latest UAS Developments

- Congress passed the Federal Aviation Administration (FAA) Reauthorization Act of 2018 (HR 302) on October 3<sup>rd</sup>, 2018.
- Funds the FAA for next 5 years.
- Directs FAA objectives during that time period.
- 1,205 pages.
- Extensive language/sections on UAS which include regulatory revisions.
- AUVSI has very good summary of UAS sections available online: <http://auvsilink.org/AUVSIDocs/AUVSI%20Summary%20of%20HR%20302.pdf> .





# Latest UAS Developments (cont.)

## ~~• UAS Registration!~~      UPDATE:

- \*Taylor v. FAA legal battle concluded with decision to uphold FAA mandate for comprehensive UAS registration - including model aircraft.
- \*Model Aircraft NO LONGER exempt from registration (or further regulation) under FAA Modernization & Reform Act 2012 – Section 336 Special Rule for Model Aircraft.
- \*FAA Reauthorization Act 2018 – Section 349: Exception for Limited Recreational Operations of Unmanned Aircraft provides latest requirements.
  - See next slide...





# Latest UAS Developments (cont.)

## **\*FAA Reauthorization Act 2018 – Section 349:** **Exception for Limited Recreational Operations of Unmanned Aircraft**

Person may operate a small UAS (< 55 lbs.) without FAA certification IF:

- Flown for recreational purposes.
- Flown in accordance with community based guidelines developed in coordination with the FAA.
- Flown within visual line-of-sight (VLOS)
- Does not interfere with manned aircraft.
- Operating altitude < 400' AGL
- \*Operator passes an online aeronautical knowledge and safety test.
  - Test to be developed (released?) within 6 months of bill passage.
- \*Aircraft is registered with the FAA and appropriately marked.
- FAA may periodically update community based standards including requirements on registration markings, remote ID capability, etc.
  - Reading between the lines – expect future rule making on UAS to include recreational operations.



# Latest UAS Developments (cont.)

## EDUCATIONAL use of UAS?

- Previously, educational use of UAS has been allowed under the (now repealed) regulatory framework of recreational UAS operations – so long as a litany of stipulations were met.
  - **FAA Memorandum, “Educational Use of Unmanned Aircraft Systems (UAS)” issued May 4<sup>th</sup>, 2016 no longer available online.**
- **\*FAA Reauthorization 2018 - Section 380: Transition Language**, ensures that prior regulations (2012) remain in effect until latest rule making is completed and regulations enacted.
- **\*FAA Reauthorization 2018 – Section 350: Use of UAS at Institutions of Higher Education**, requires updated UAS standards and procedures for education/research/etc. be established – but no timeline.





# Latest UAS Developments (cont.)

## PUBLIC use of UAS?

- Still operating via FAA COA and/or CFR Part 107 where applicable.
- \*Specific sections of FAA Reauthorization 2018 pertaining to Public UAS operations include:
  - Section 346: Public Unmanned Aircraft Systems
  - Section 353: Emergency Exemption Process
  - Section 355: Public UAS Operations by Tribal Governments
  - Section 359: Study on Fire Department and Emergency Service Agency Use of UAS
  - Section 366: Strategy for Responding to Public Safety Threats...UAS
  - Section 368: Public UAS Access to Special Use Airspace
- Significant developments expected in the coming years as a result of these Sections.



# Latest UAS Developments (cont.)

## COMMERCIAL use of UAS?

- Still operating via CFR Part 107 and FAA approved waivers.
- Specific sections of FAA Reauthorization 2018 pertaining to commercial UAS operations include:
  - Section 348: Carriage of Property by Small UAS for Compensation for Hire
    - (i.e. Amazon, FedEx, etc.?)
  - Section 352: Part 107 Transparency and Technology Improvements
    - Sample of safety justifications from FAA approved Part 107 waivers.
    - Available online as of 12/21/2018 - [https://www.faa.gov/uas/resources/policy\\_library/section\\_352\\_responses/](https://www.faa.gov/uas/resources/policy_library/section_352_responses/)
  - Section 370: Sense of Congress on Additional Rule-Making Authority
    - NOTICE OF PROPOSED RULEMAKING (NPRM) released **YESTERDAY** by DOT Secretary for:
      - Operation of Small Unmanned Aircraft Systems over People
      - Safe & Secure Operations of sUAS (technically an “Advanced” NPRM = ANPRM)
      - Both will be posted to Federal Register in coming weeks/months.





# Important Considerations

- FAA Low Altitude Authorization & Notification Capability (LAANC).
  - ~~- Limited Airports at this time.~~
  - \*LAANC availability expanded significantly – list of participating airports available at:  
[https://www.faa.gov/uas/programs\\_partnerships/data\\_exchange/laanc\\_facilities/](https://www.faa.gov/uas/programs_partnerships/data_exchange/laanc_facilities/)
- DoT/FAA UAS Integration Pilot Program.
  - ~~- 5 participants to be selected nationwide.~~
  - 10 Participants actually selected. MSU applied, cleared entire review process, unfortunately not selected.
  - \* FAA Reauthorization 2018 – Section 351: Unmanned Aircraft Systems Integration Pilot Program, indicates FAA may be expanding that number of participants.



# Important Considerations

## Additional important sections of FAA Reauthorization 2018:

- **PRIVACY**
  - Section 357: UAS Privacy Policy
    - UAS operations shall be carried out in a manner that respects and protects personal privacy. MS Equivalent = SB 2022 – Mississippi Code of 1972, “Peeping Tom” laws.
  - Section 358: UAS Privacy Review
    - Report due to Congress 180 days after passage.
  - Section 378: Sense of Congress on Privacy
    - Any person who operates a UAS for hire should have a written Privacy Policy consistent with Section 357





# Important Considerations

Additional important sections of FAA Reauthorization 2018 include:

- **ENFORCEMENT**
  - **Section 372: Enforcement**
    - Establishes new Pilot Program to assess Remote ID technologies for purpose of Enforcement
    - Pilot Program will also establish mechanism to report unlawful UAS operations.
    - Data from public reporting will be compiled and reported to Congress one year after passage.
  - **Section 373: Federal and Local Authorities**
    - Study to be conducted on role of Federal, State, Local, and Tribal gov't in regulating low-altitude UAS operations.
    - No timeline provided for study.
  - **Section 382: Prohibition – Part 40A: Operation of unauthorized unmanned aircraft over wildfires**
    - Punishable by fine or up to 2 years imprisonment.
  - **Section 384: Unsafe Operation of Unmanned Aircraft**
    - Punishable by fine or up to 1 year imprisonment.
    - Unsafe operation resulting in seriously body injury punishable by fine AND up to 10 years imprisonment.



# Important Considerations

## Additional important sections of FAA Reauthorization 2018:

- INFORMATIONAL

- Numerous Sections include required deliverables such as UAS Standards (safety, certification, etc.), Studies, Reviews, Reports, Data, etc. Upon public release, be sure to review these deliverables as they will contain vital info and updates.
- Examples include:
  - Section 352: Part 107 Transparency and Technology Improvements
  - Section 358: UAS Privacy Review
  - Section 360: Study on Financing of Unmanned Aircraft Services
  - Section 361: Report on UAS and Chemical Aerial Application
  - Section 364: U.S. Counter-UAS System Review
  - Section 371: Assessment of Aircraft Registration for Small Unmanned Aircraft





# Important Considerations

- Apparent Priorities of FAA Authorization 2018:
  - Continually improve UAS OPERATIONAL SAFETY, COORDINATION, & DECONFLICTION.
  - Development of UAS STANDARDS which have previously been undefined (Safety, Certification, Operational, Reporting, Response, Enforcement).
  - Development and implementation of UAS TECHNOLOGIES (UTM, Remote ID, Detect/Sense and Avoid, Counter-UAS).
  - Achieve UNMANNED TRAFFIC MANAGEMENT (UTM).
  - Address ongoing PRIVACY & SECURITY CONCERNS.
  - Use above items to EXPAND ALLOWABLE UAS OPERATIONS – both PUBLIC and PRIVATE.



# MSU UAS Overview



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# FAA Center of Excellence for UAS



MSU-led Coalition of 20+ Research Universities performing FAA directed research to guide the development of UAS policy and integration.



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# U.S. Dept. of Homeland Security



## DHS Common UAS Demonstration Range Facility



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# Applied UAS Research with Gov't, Industry, & Academic Partners



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# Brief Update



- Group 3 UAS fleet expansion.
  - 2 new aircraft arrived yesterday.
  - Flight training ongoing at KGWO through March 14.
- Additional Ground Control Station (GCS) in development to support expanded fleet.
- COA Expansion & Exercising
- 20+ million in federal funded UAS research through FY2020.



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# Thank You!

## Questions?

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# 14th Flying Training Wing



*Cultivate Airmen, Create Pilots, Connect*



Maj Trae “Shady” Haughton  
14 FTW Chief of Flight Safety

**BLAZE**





# Overview



*Cultivate Airmen, Create Pilots, Connect*

- **Mid-Air Collision Avoidance (MACA)**
  - **Columbus AFB Airspace**
  - **Columbus AFB Aircraft**
- **Drone Incidents**
- **Questions?**



# Columbus Air Force Base



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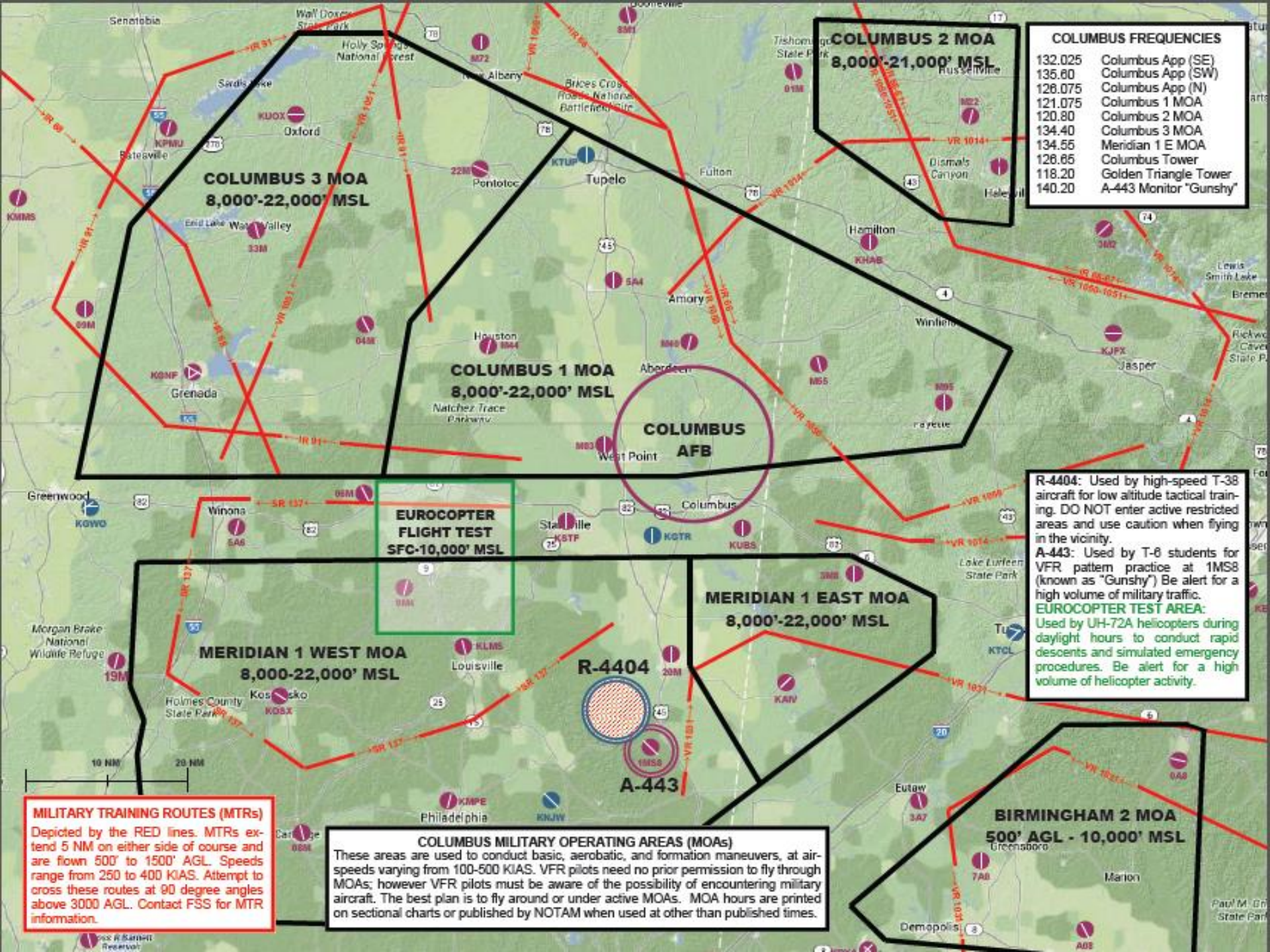


**BLAZE**









**COLUMBUS 3 MOA**  
8,000'-22,000' MSL

**COLUMBUS 1 MOA**  
8,000'-22,000' MSL

**COLUMBUS 2 MOA**  
8,000'-21,000' MSL

COLUMBUS FREQUENCIES	
132.025	Columbus App (SE)
135.60	Columbus App (SW)
126.075	Columbus App (N)
121.075	Columbus 1 MOA
120.80	Columbus 2 MOA
134.40	Columbus 3 MOA
134.55	Meridian 1 E MOA
126.65	Columbus Tower
118.20	Golden Triangle Tower
140.20	A-443 Monitor "Gunshy"

**COLUMBUS AFB**

**EUROCOPTER FLIGHT TEST**  
SFC-10,000' MSL

**MERIDIAN 1 WEST MOA**  
8,000'-22,000' MSL

**MERIDIAN 1 EAST MOA**  
8,000'-22,000' MSL

**R-4404**

**A-443**

**BIRMINGHAM 2 MOA**  
500' AGL - 10,000' MSL

**MILITARY TRAINING ROUTES (MTRs)**  
Depicted by the RED lines. MTRs extend 5 NM on either side of course and are flown 500' to 1500' AGL. Speeds range from 250 to 400 KIAS. Attempt to cross these routes at 90 degree angles above 3000 AGL. Contact FSS for MTR information.

**COLUMBUS MILITARY OPERATING AREAS (MOAs)**  
These areas are used to conduct basic, aerobatic, and formation maneuvers, at airspeeds varying from 100-500 KIAS. VFR pilots need no prior permission to fly through MOAs; however VFR pilots must be aware of the possibility of encountering military aircraft. The best plan is to fly around or under active MOAs. MOA hours are printed on sectional charts or published by NOTAM when used at other than published times.

**R-4404:** Used by high-speed T-38 aircraft for low altitude tactical training. DO NOT enter active restricted areas and use caution when flying in the vicinity.  
**A-443:** Used by T-6 students for VFR pattern practice at 1MS8 (known as "Gunshy") Be alert for a high volume of military traffic.  
**EUROCOPTER TEST AREA:** Used by UH-72A helicopters during daylight hours to conduct rapid descents and simulated emergency procedures. Be alert for a high volume of helicopter activity.





# MACA

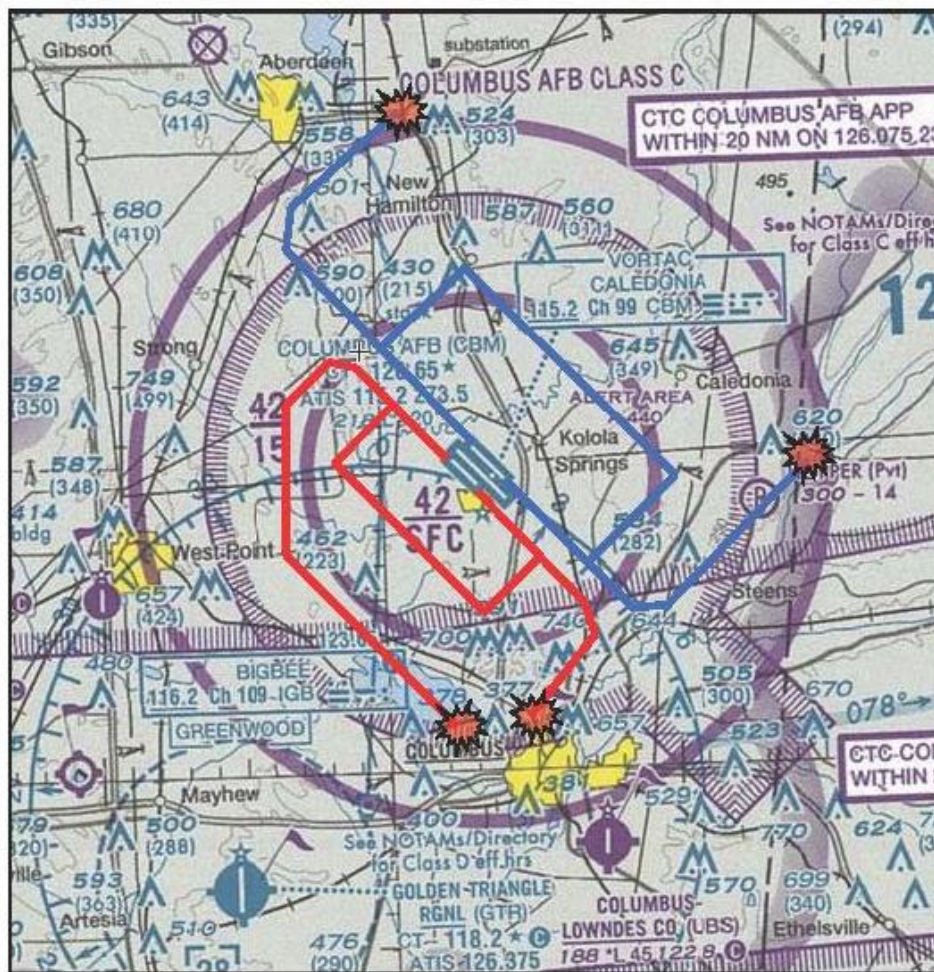


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T-38 Pattern  
(1500' AGL)

T-6 Pattern  
(1000' AGL)

## COLUMBUS AFB TRAFFIC PATTERN



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# MACA



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Beechcraft T-6A Texan II

Max Speed – 316 kts

Cruise/Pattern airspeed – 200 kts

Final airspeed – 110 kts



Northrop T-38 Talon

Max Speed – 814 kts/ 1.23 Mach

Cruise/Pattern airspeed – 300 kts

Final airspeed – 160 kts



Beechcraft T-1A Jayhawk

Max Speed – 330 kts

Cruise airspeed – 250 kts; Pattern airspeed – 180 kts

Final airspeed – 120 kts

**BLAZE**

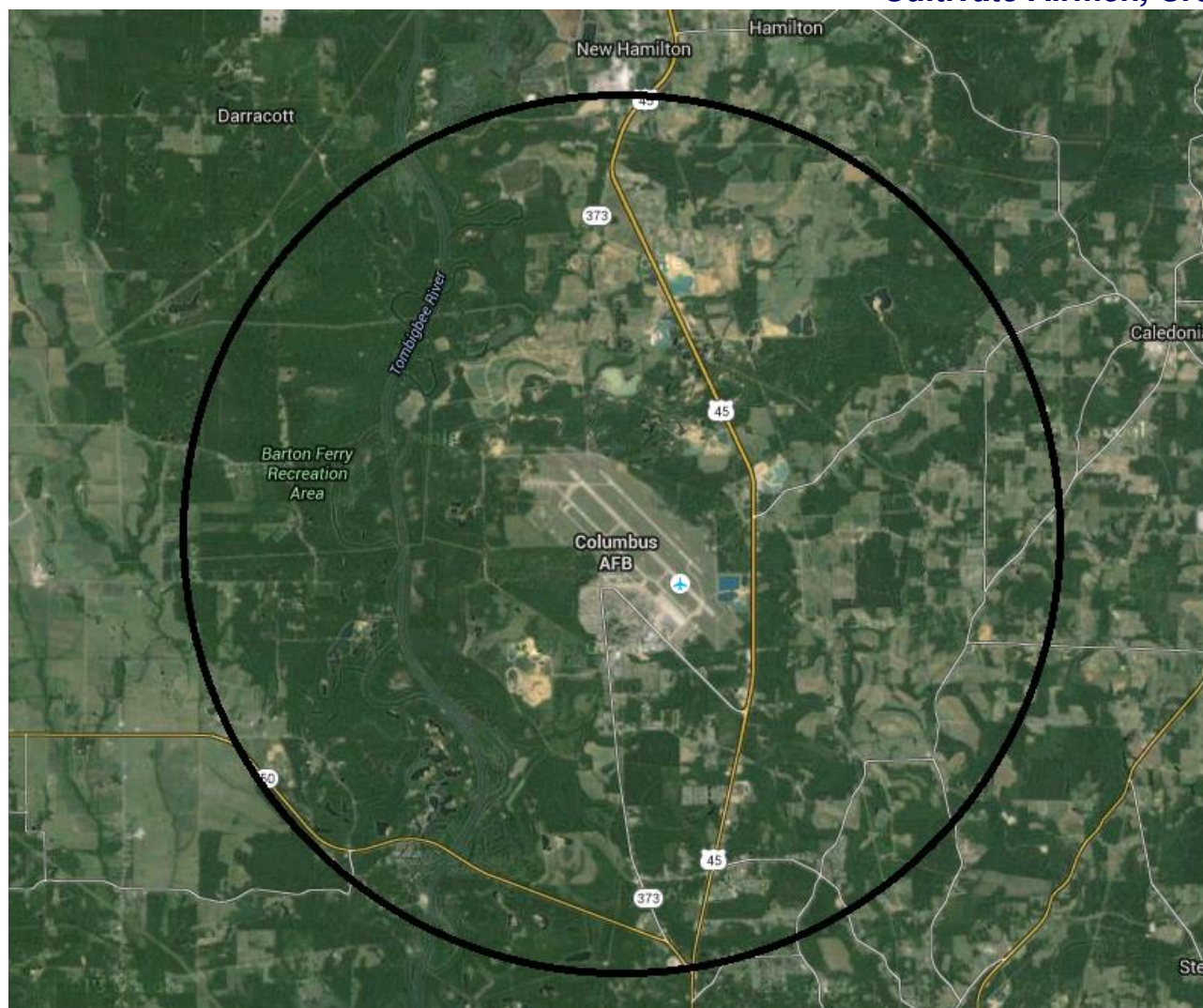




# Columbus AFB 5 Mile Ring



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# Northern Landmark

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Intersection of Kerr McGee Rd and Old Hwy 45 or Tronox Inc

~5.1 mi north of AFB

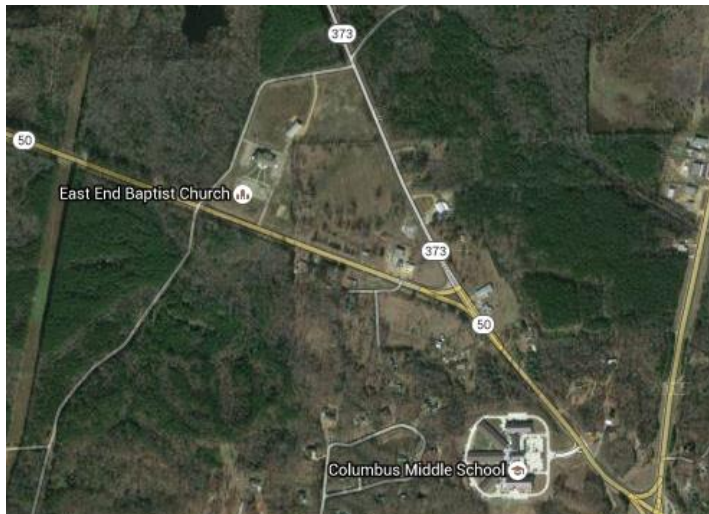






# Southern Landmark

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East End Baptist Church between Hwy 373 and Hwy 50

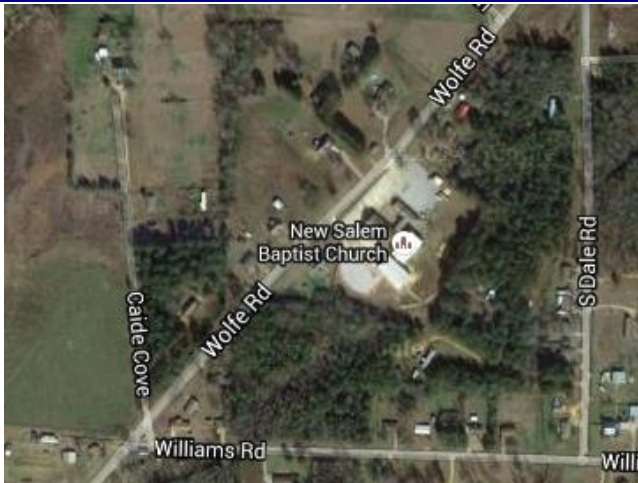
~5.0 mi south of AFB





# Eastern Landmark

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New Salem Baptist Church off Wolfe Rd

~5.6 miles east of AFB







# Western Landmark

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Town Creek Missionary  
Baptist Church  
~5.5 mi west of AFB





# How you can help



*Cultivate Airmen, Create Pilots, Connect*

- **Abide by FAA guidelines**
- **Educate your friends**
- **Report them if you see them**
- **Low Levels (MTRs)**
  - Sectionals
    - Multiple sources online
  - Call (662) 434-2522





# BLAZE





# 2017 Incidents



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- **sUAS near T-6 pattern point, Texas, April 2017**
  - Above 400 AGL
- **sUAS near HH-60G, Okinawa, May 2017**
  - Below 400 AGL
- **sUAS vs. T-6, Texas, July 2017**
  - Above 400 AGL
- **These are only what was reported to Air Force Safety**

**It's only a matter of time in the Golden Triangle region**

**BLAZE**





# Questions?



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## Columbus AFB Flight Safety

**(662) 434-2526/2525/2842**

**BLAZE**



**Golden Triangle  
Regional Airport**

# Airport Drone Program

Matt Dowell, A.A.E.  
Deputy Director



# OUTLINE

Program Overview

Use Cases

Program Development



**Golden Triangle  
Regional Airport**

Global Connections. Local Convenience.



# Program Overview



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# Use Cases



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# Marketing



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# Economic Development



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# Training



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# Emergency



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Videos & Photos

Wildlife

Training

Inspections

Construction Monitoring

Line of Sight Calculations

Engineering/GIS/Mapping

Airport Planning

Marketing Property

Emergency Response

Security

STEM/Outreach



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# Program Development



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# Strategy

- **Research & Identify**
  - Your Use Cases
  - Equipment, Software, Accessories
  - Insurance
  - Budget
- **Procurement**
  - Package vs. Separate Pieces







# Testing

- **Knowledge Test Prep**
  - Free - [faa.gov/uas](https://www.faa.gov/uas)
  - Paid - [kingschools.com](https://www.kingschools.com)
- **Test**
  - 60 Questions
  - Up to 120 Minutes
  - Minimum Score of 70%



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# Training & Documents

- **Hands on Flight Training**
  - Simulator
  - Open Areas
- **Operating Manual**
  - Safety Procedures
  - Checklists
  - Logs & Tracking







# FAA Waivers

- **Operations Outside FAA 107 Limits**
  - Above 400 ft. AGL
  - Over People
  - Night Flying
  - Beyond Visual Line of Sight
  - Controlled Airspace (Airports)
- **Certificate of Waiver or Authorization**
  - Option For Government Agencies



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