



Paving The Way For Precision Accuracy With UAS

NGAC

March 17th, 2015

Jeff Lovin



WOOLPERT

<https://www.youtube.com/watch?v=vcV71li>

AMWC



Outline for Today

- FAA Section 333 Exemption
- How is Woolpert using small UAS?
- Which vehicles and systems are we using?
- In flight

“The Exemption”

In December 2014 Woolpert received approval from the FAA regarding an exemption seeking relief from selected requirements of Title 14 of the code of federal regulations concerning operation of an unmanned aircraft system over the state of Ohio pursuant to Section **333** of the FAA Modernization and Reform Act of 2012

[First survey & mapping firm in the U.S]

So ... *what does that actually mean?* Translation please!

The Exemption... Translated

- UAS are so new that not all of the existing aviation regulations from the FAA are applicable
- We received exemptions from those that are not applicable
- We provided the FAA with operational and technical UAS information such that the FAA determined our activities would be safe for the national airspace and society in general
- Approval is for a specific make and model of aircraft
- *Yes, the UAS are considered aircraft ... tail number RW937*

Altavian Nova Block III

- Platform: **Nova Block III**
- Endurance: 90min
- Cruise Speed 35mph
- Max Speed 70mph
- Altitude Max. 1000ft AGL
- Wing Span: 108 inches (9ft)
- Length: 67 inches (5.5ft)
- Weight: 15 lbs. maximum takeoff weight (MTOW)



A Conservative Approach

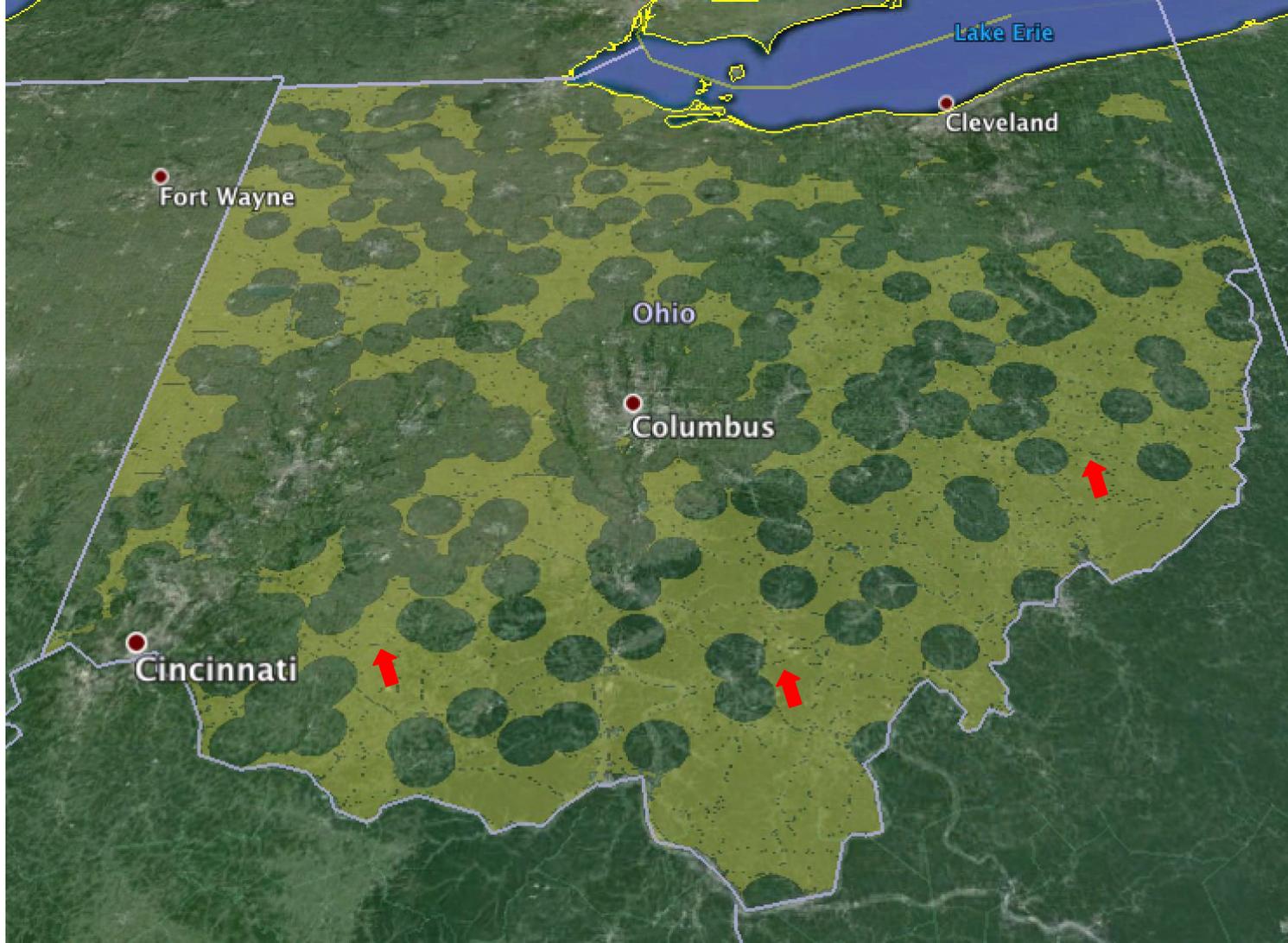
- Being early to submit our “333”, we wanted it to be approved
- Based on legal advice, we listed Ohio as the desired geography in the application to the FAA
- Also listed a requirement for a commercial pilot, not knowing what the FAA would be seeking
- Now that we have succeeded with the approved “333”, we are tweaking it with amendments and other actions
- *We are making the best of a slow and cumbersome process*

Amendments?

- Filed three amendments so far (pending):
 - Permission to use a private pilot
 - Permission to fly near airports, with coordination
 - Permission to fly alongside major roads and highways
 - (Currently need to stay 500ft away from non-participants, objects)
- With no response from FAA regarding flying outside Ohio, we have submitted COAs for flights in other states to see if they receive approval. Our “333” is just as safe in other states.

Where can we Fly?

- Within Ohio... for now
- Ship Island, Mississippi
- 5 miles from airports, helipads and air strips
- Not over populated places (simple example: cities, towns)
- 500ft from non-participating objects and people (FAA rule)
 - At 400ft AGL, trig. dictates a 300ft offset from major roads
- For now that means flying in rural areas

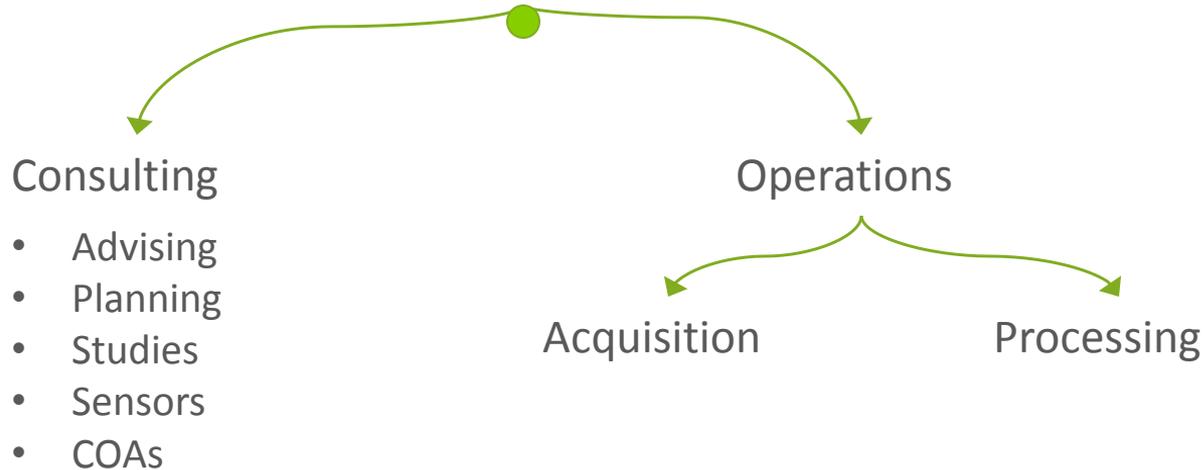


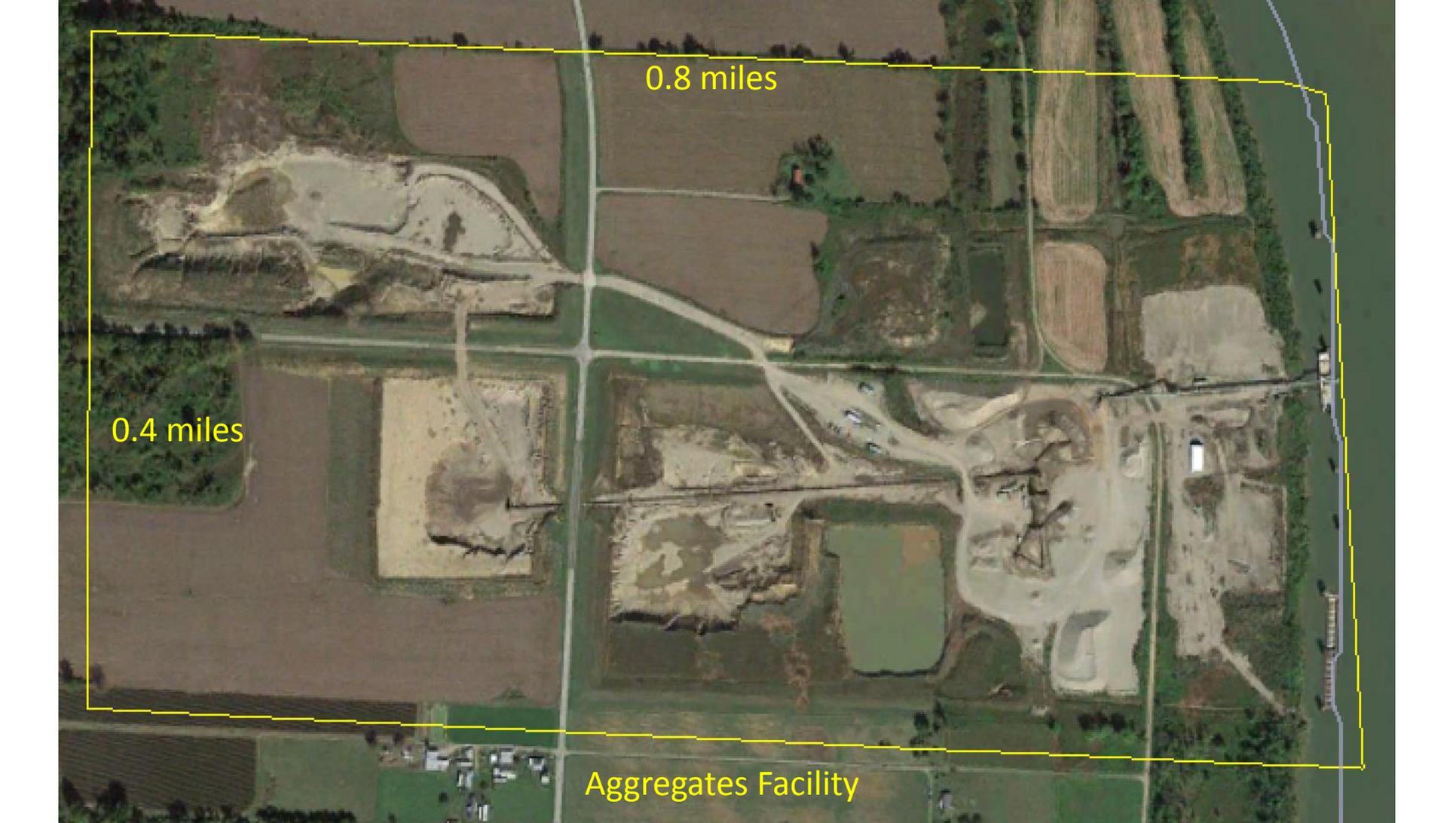
Other Paperwork Still Required

- The “333” covers NAS safety, and the competency of staff safe operations and the aircraft itself
- However, a certificate of authorization (COA) is still required from the FAA on a project by project basis
- The COA provides information specific to the project site and operations for that site
- *Because a COA can take from 60 to 90+ days, it is a cumbersome process, lacking the agility needed in business*
- COA is valid for 1 to 2 years however

Woolpert UAS Strategy

- We have a strategy for the immediate, mid and long-term
- Both from a consulting and technical point of view



An aerial photograph of an aggregate facility, showing various piles of sand and gravel, a central processing area, and surrounding agricultural fields. A yellow bounding box highlights the facility's perimeter. Two distance labels are present: '0.8 miles' at the top and '0.4 miles' on the left side. The text 'Aggregates Facility' is located at the bottom center.

0.8 miles

0.4 miles

Aggregates Facility

0.5 miles

0.5 miles

Drill pad







Samples of 2cm GSD



Our Vehicles and Systems

- Platform: **Skycatch**
- Completely autonomous rotary wing UAS
- Self-landing on purpose built ground station
- Self-charging, batteries inside station recharge from solar, or power
- System can be physically secured
- Ground station has heating capability
- Data can be transferred or picked up
- Several benefits: temporal resolution, unattended





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Thank You!

