



NORTH CAROLINA

Department of Transportation



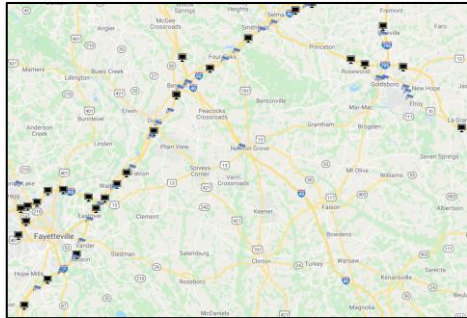
NCDOT Tethered Drone Pilot

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State Traffic Operations Engineer

December 2, 2021

How we got to tethered drones



Need situational awareness



\$25K for 5 x drones w/ SHP
No control during incidents



CCTV on IMAP
Poles over max GVWR
Low pole height



Regular drones need
FAA license



Source: Fotokite.com

Background – Connected Technology Pilot

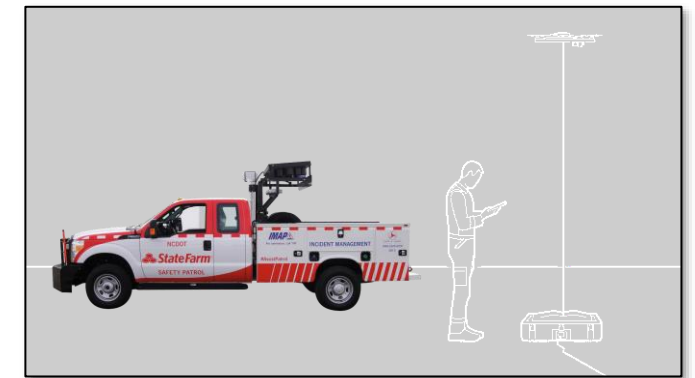
- FHWA FY 20 STIC Grant - Tech Pilot
 - \$50K grant (final report due around 2023)
 - Tethered Drones (situational awareness)
 - Emergency Vehicle Alerting Devices (safety)
- Systems
 - Funding for 2 x systems (\$18K-24K)
 - Fotokite
 - Drone Supply (Mavik 2 w/ V-line tether)
 - Includes controller, drone, tether, streaming
- Capabilities
 - Operator license not required, < 150' AGL
 - High loiter time w/ minimal operation required
 - Live Streaming in STOC
 - Collaboration w/ Div of Aviation



Source: Fotokite.com



Source: Florida Drone Supply



Tethered Drone Pilot

Evaluation Criteria

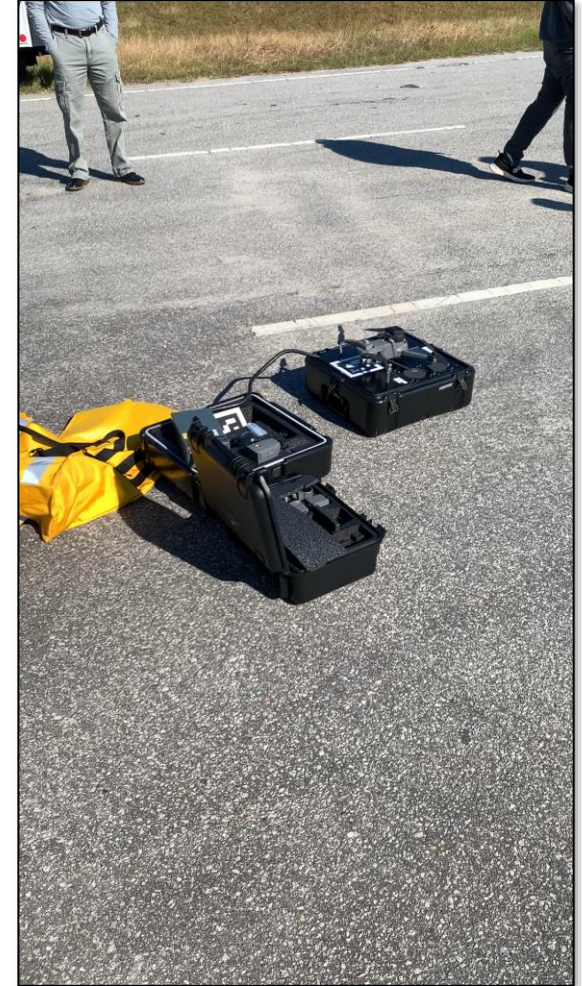
- Geography
- Weather
- Urban and rural
- Communications
- Portability

Procurement Strategies

- Fotokite – ITRE (Research)
- Mavik 2 – Div of Aviation (Low Bid)



Fotokite



Mavik 2 w/ V-line Tether

Mavik 2 with V-Line Tether



Video Sharing w/ Teams

December 2, 2021



Power Supply Box



Tether / Launch Box 5

Use Cases

- Locations with limited CCTV camera coverage
- Major incidents on interstates
- SSP Supervisor
- Supports
 - Incident Commander (field)
 - STOC / TMC
- Training
 - Div of Aviation: Drone checklists
 - IM Program: SOPs for use

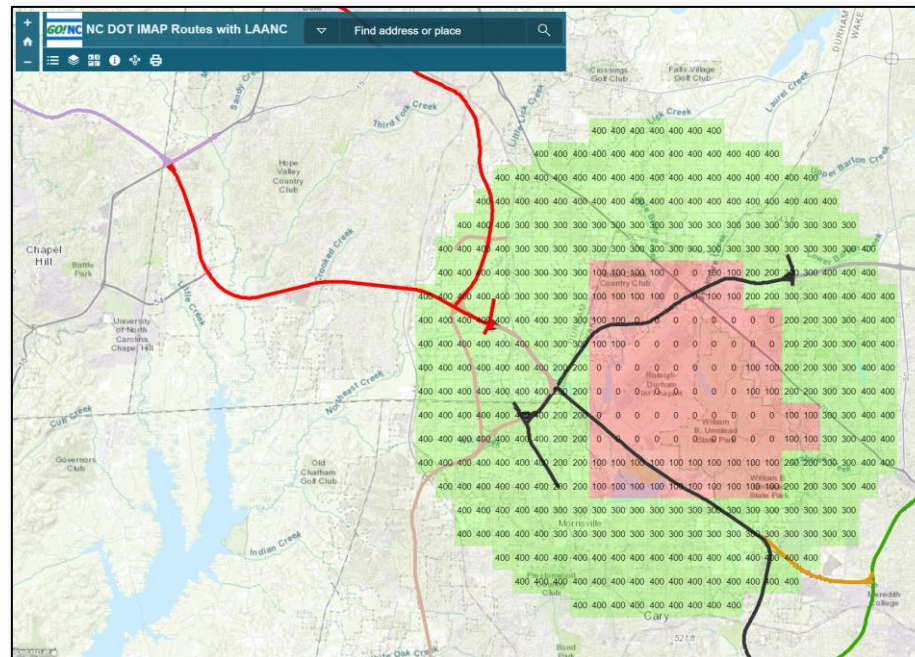


Challenges

- Laws, FAA guidelines, restricted airspace
- Line of Sight vs Beyond Line of Sight
 - 49 USC 44801 – Actively Tethered Unmanned Aircraft Systems
 - Must be line of sight (not remote from STOC)
- Safety and operation during incidents
- Use around traffic
- Weather
- Live streaming



December 2, 2021



132 STAT. 3284 PUBLIC LAW 115-254—OCT. 5, 2018

(1) the Office for Victims of Crime and the Office on Violence Against Women of the Department of Justice; (2) the Federal Bureau of Investigation; and (3) the Department of Transportation.

Subtitle B—Unmanned Aircraft Systems

SEC. 341. DEFINITIONS; INTEGRATION OF CIVIL UNMANNED AIRCRAFT SYSTEMS INTO NATIONAL AIRSPACE SYSTEM.

(a) IN GENERAL.—Part A of subtitle VII of title 49, United States Code, is amended by inserting after chapter 447 the following:

“CHAPTER 448—UNMANNED AIRCRAFT SYSTEMS

“Sec.
“44801. Definitions.
“44802. Integration of civil unmanned aircraft systems into national airspace system.

49 USC 44801. “§ 44801. Definitions

“In this chapter, the following definitions apply:

The term ‘actively tethered unmanned aircraft system’ means an unmanned aircraft system that is physically attached to a ground station with a tether that provides control, data, and power to the aircraft.

(A) ‘ARCTIC’ means the United States zone of the Chukchi Sea, Beaufort Sea, and Bering Sea north of the Aleutian chain.

(B) ‘B’ is physically attached to a ground station with a tether that provides control, data, and power to the aircraft.

(C) ‘controlled and retrieved by a ground station through physical manipulation of the tether’ means—

(1) ‘CONTROLLING COMMITTEES OF CONGRESS.—The term ‘appropriate’ means the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives.

(2) ‘ARCTIC’ means the United States zone of the Chukchi Sea, Beaufort Sea, and Bering Sea north of the Aleutian chain.

(3) ‘CERTIFICATE OF WAIVER; CERTIFICATE OF AUTHORIZATION.—The terms ‘certificate of waiver’ and ‘certificate of authorization’ mean a Federal Aviation Administration grant of approval for a specific flight operation.

(4) ‘COUNTER-UAS SYSTEM.—The term ‘counter-UAS system’ means a system or device capable of lawfully and safely disabling, disrupting, or seizing control of an unmanned aircraft or unmanned aircraft system.

(5) ‘PERMANENT AREAS.—The term ‘permanent areas’ means areas on land or water that provide for launch, recovery, and operation of small unmanned aircraft.

(6) ‘PUBLIC UNMANNED AIRCRAFT SYSTEM.—The term ‘public unmanned aircraft system’ means an unmanned aircraft system

Support from Division of Aviation, UAS Program Manager



Questions?

- Will this meet the need - juice worth the squeeze?
- Drone types and costs?
- Software and streaming?
- Who should have them and where during incidents?
- Success with FAA and laws?
- Next up – peer exchange on January 19, 2022

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