Damage Assessment
Emergency Managers Use Drone Mosaics to Survey Damage

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3 of 8 tornados in Virginia on February 24th, 2016
Waverly, Virginia - EF1
Essex, Virginia - EF3
Appomattox, Virginia - EF3

Waverly (Sussex)
- Category EF1 tornado (moderate, 73-112 mph winds)
- 2,309 population at 2000 census
- 725.6 people per square mile
- Tornado produced up to 60 mph winds
- 3 fatalities, multiple injured

Appomattox
- Category EF3 tornado (severe, 158-206 mph winds)
- 2,043 population at 2010 census
- 808.7 people per square mile
- Tornado produced up to 165 mph winds
- 1 fatality, seven injured
- 13 mile path of destruction

Essex
- Located in the Eastern part of Virginia
- Population 11,130 (2015 census)
- 39 people per square mile
- Area 286 sq mi
- Topography

February 24th Winter Storm Event

Severe Weather Threat
Essex

- Category EF3 tornado (severe, 158-206 mph winds)
- Tornado produced up to 160 mph winds
- First 911 call was received at 6:49 p.m.
- 25 injuries
- 0 fatalities
- 83 homes damaged
- 33 homes destroyed
- 40 mile path of destruction
- Night time incident

Infrastructure/Economic Impact

- St Jon’s Church (140 years old)
- Isolated Power Outages (3 days)
- Schools Closed 3 days
- Farm Land: 160 acres
- Forest Land: 750 acres
- Total Damage: $4,550,400

Before & After

Massive Amount Damage

Incident Objectives

- Safety
- Search & Rescue
- Patient Care
- Recovery
- Debris Management
- Donation & Volunteer Coordination
- Damage Assessment

Damage Assessment Resources

- Virginia National Guard
- Private Plane
- Boots on the ground
- Drone
Bon Air Drone's Involvement

Bon Air Drone went to the location of the Appomattox tornado, intending to get news coverage of the damages using drones.

Quickly switched from news coverage to VA State Police assistance.

Bon Air Drone then was outsourced by VA Department of Emergency Services to provide mapping and video of damage.

Services Provided

- Bon Air Drone provided mapping of 3 different areas damaged by the tornado at 300 feet using our DJI Inspire.
- Processing and software use:
  - Drone Deploy
  - Pix4D
- 4K video and pictures of the aftermath to give detailed descriptions of damage.
- Used by both VA Department of Emergency Services and homeowners claiming insurance damages.

Mosaic made using Drone Deploy software.

Image taken from a DJI Inspire 1 at approximately 300 feet.
Preplanning of Drone Flight

- In order to fly our drone in the affected area, Bon Air Drone had to file a NOTAM 24 hours prior to flight
  - What is a NOTAM?
  - Why is a NOTAM important?
- Preflight planning prior to mapping
  - Ensure not flying in No Fly Zones
  - VA State Police helped shut down active roads
  - Communicated with landowners whose property was being flown over
  - Cooperation was key