

TRANSPORTATION IMPROVEMENT ASSOCIATION

**HOW TO USE DRONES FOR
TRAFFIC INCIDENT MANAGEMENT**

**SOUTHEAST MICHIGAN REGIONAL TRANSPORTATION
OPERATIONS COORDINATING COMMITTEE**

JULY 14, 2023

JIM SANTILLI

- **CEO of the Transportation Improvement Association (TIA)**
 - **22 years of traffic safety experience**
- **8 years of experience flying unmanned aircraft**
 - **Multicopter**
 - **Fixed-wing**
- **Served on a sheriff aviation unit for 4 years**
- **Served on the Michigan Aeronautics Commissions' Unmanned Aircraft Systems (UAS) Advisory Committee**



- **Trained professionals from 131 agencies (federal, state, county, local, tribal, and college/university) and companies in:**
 - **Alabama**
 - **Florida**
 - **Michigan**
 - **Ohio**
 - **South Carolina**
 - **Tennessee**
 - **Virginia**



- Flown numerous public safety missions, including:
 - Drug trafficking
 - Fatal and severe injury crashes
 - Fire
 - Homicide
 - Natural disaster
 - Police involved shooting
 - Search for missing and armed persons



ABOVE: The Macomb County Sheriff's Office recently purchased four drones for its new Unmanned Aerial Vehicle Unit. The largest of the four drones is equipped with a thermal imaging camera for better investigating at night or over the water.

LEFT: Macomb County Sheriff's Office deputies Jim Santilli and Mike Dixon demonstrate the capabilities of one of the drones July 20.

Photos by Deb Jacques

- Flew search missions for Hurricane Ian



PUBLIC SAFETY USES

- **Barricaded Gunman**
- **Disaster Assessment and Response**
- **Energy Infrastructure Emergency**
- **Fire**
- **Hostage**
- **Missing Person**
- **Search and Rescue (Inland and Water)**
- **Special Response Team Operations**
- **Traffic Crash Investigation**
- **Traffic Incident Management**
- **Transportation Infrastructure Inspections**

- **Firefighting**
 - **Quickly locate victims, identify hot spots, and screen for fire risks to draft targeted rescue plans while keeping personnel safe**
- **Law Enforcement**
 - **Gain critical intel in conflicts or emergencies to make timely and informed decisions without putting teams in harm's way**
- **Search and Rescue**
 - **Scan search areas to locate stranded persons and quickly dispatch rescue teams**

FEDERAL REGULATIONS



- **Part 107 and COA's**
- **Knowledge**
 - **Federal Aviation Regulations**
 - **Aeronautical Charts**
 - **Airspace Classification and Flight Restrictions**
 - **Airport Operations**
 - **Night Operations and Physiology**
 - **Aviation Weather**
 - **Physiological Factors Affecting Pilot Performance**
 - **Maintenance and Preflight Procedures**
 - **Crew Resource Management and Aeronautical Decision Making**
 - **Loading and Performance**
 - **Hazards and Emergency Procedures**
- **Operating Restrictions**

SAMPLE QUESTION 1

What are the characteristics of a moist, unstable air mass?

- a) Turbulence and showery precipitation**
- b) Poor visibility and smooth air**
- c) Haze and smoke**

SAMPLE QUESTION 2

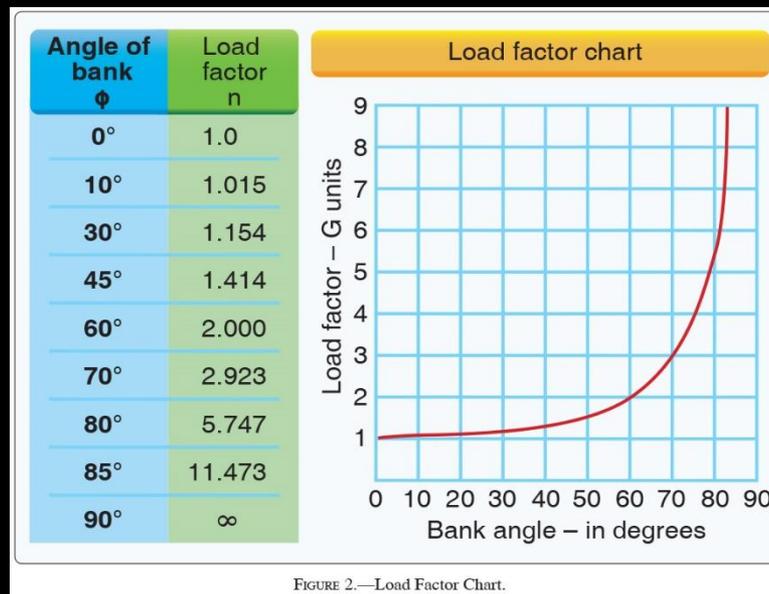
What effect does high density altitude have on the efficiency of a UA propeller?

- a) Propeller efficiency is increased
- b) Propeller deficiency is decreased
- c) Density altitude does not affect propeller efficiency

SAMPLE QUESTION 3

If an unmanned airplane weighs 33 pounds, what approximate weight would the airplane structure be required to support during a 30 degree banked turn while maintaining altitude?

- a) 34 pounds
- b) 47 pounds
- c) 38 pounds



SAMPLE QUESTION 4

What is the floor of the Savannah Class C airspace at the shelf area (outer circle)?

- a) 1,300 feet AGL
- b) 1,300 feet MSL
- c) 1,700 feet MSL



SAMPLE QUESTION 5

While monitoring the Cooperstown CTAF you hear an aircraft announce they are midfield left downwind for RWY 13. Where would the aircraft be relative to the runway?

- a) The aircraft is East
- b) The aircraft is South
- c) The aircraft is West



SAMPLE QUESTION 6

What are the current conditions for Chicago Midway Airport (KMDW)?

- a) Sky 700 feet overcast, visibility 1-1/2SM, rain
- b) Sky 7,000 feet overcast, visibility 1-1/2SM, heavy rain
- c) Sky 700 feet overcast, visibility 11, occasionally 2SM, with rain

SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980 RMK RAB35

AIRCRAFT AND PAYLOADS



DJI MATRICE 30T (M30T)

- **Approx. \$13,999**
- **200x Max. Hybrid Zoom**
- **640 × 512 Thermal Resolution (20x Zoom)**
- **Laser Range Finder**
- **Max. Flight Time is 41 Minutes**
- **With IP55 protection, the M30T can handle adverse weather**
- **Payloads**



DJI MATRICE 300

- Approx. \$13,199
 - Camera: Approx. \$11,209
- 23× Hybrid Optical Zoom
200× Max Zoom
- 640 × 512 Thermal Resolution
- Max. Flight Time is 55 Minutes
- With IP55 protection, the M30T can handle adverse weather
- Payloads



HURRICANE IAN



Palaco Grande

SPEED
LIMIT
40

LEFT TURN
YIELD
ON GREEN

GUTTER
PRO

CENTURY
Selling Part

TRAINING & EVENTS

 **TIA**
TRANSPORTATION IMPROVEMENT ASSOCIATION

















KAYLA NICOLE
FL 20042

W & W
W & W

CAROLINE 39

BUZZAPPA

1302171

BP TIDE

OLSEN MARINE

OLSEN MARINE SERVICES

NIGHT WIND
FT. MYERS BEACH, FLA.

 **TIA**
TRANSPORTATION IMPROVEMENT ASSOCIATION











TRAFFIC CRASHES

FIRE



2023-02-16 10:55:06
42.839603°N 83.014217°W 1085.924ft



2023-02-16 10:57:57

42.839549°N 83.013553°W 1085.412ft



2023-02-16 10:57:03

42.839549°N 83.013555°W 1085.647ft



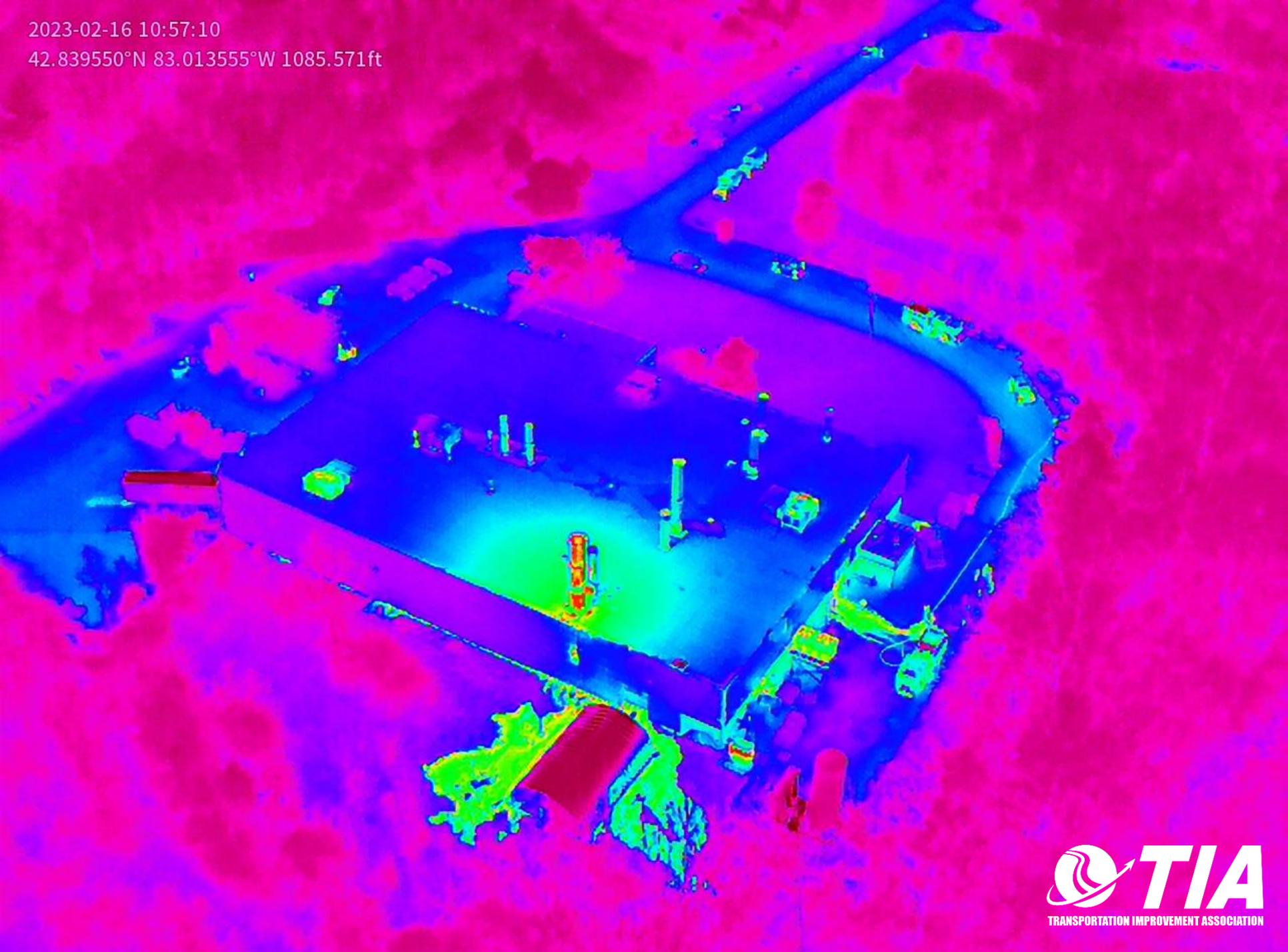
2023-02-16 10:57:15

42.839549°N 83.013553°W 1085.700ft



2023-02-16 10:57:10

42.839550°N 83.013555°W 1085.571ft



2023-07-10 16:03:42
42.623868°N 83.060785°W 941.493ft

TRAFFIC MONITORING



2023-07-10 16:50:19
42.626574°N 83.045120°W 926.198ft



2023-07-10 16:04:29
42.623824°N 83.063681°W 919.032ft



2023-07-10 16:10:27
42.624576°N 83.034588°W 919.051ft



2023-07-10 16:23:39
42.623189°N 83.060397°W 875.650ft



2023-07-10 16:20:08
42.624008°N 83.052819°W 900.527ft



2023-07-10 16:42:59
42.623788°N 83.055910°W 938.774ft



2023-07-10 16:42:59
42.623770°N 83.055910°W 924.777ft

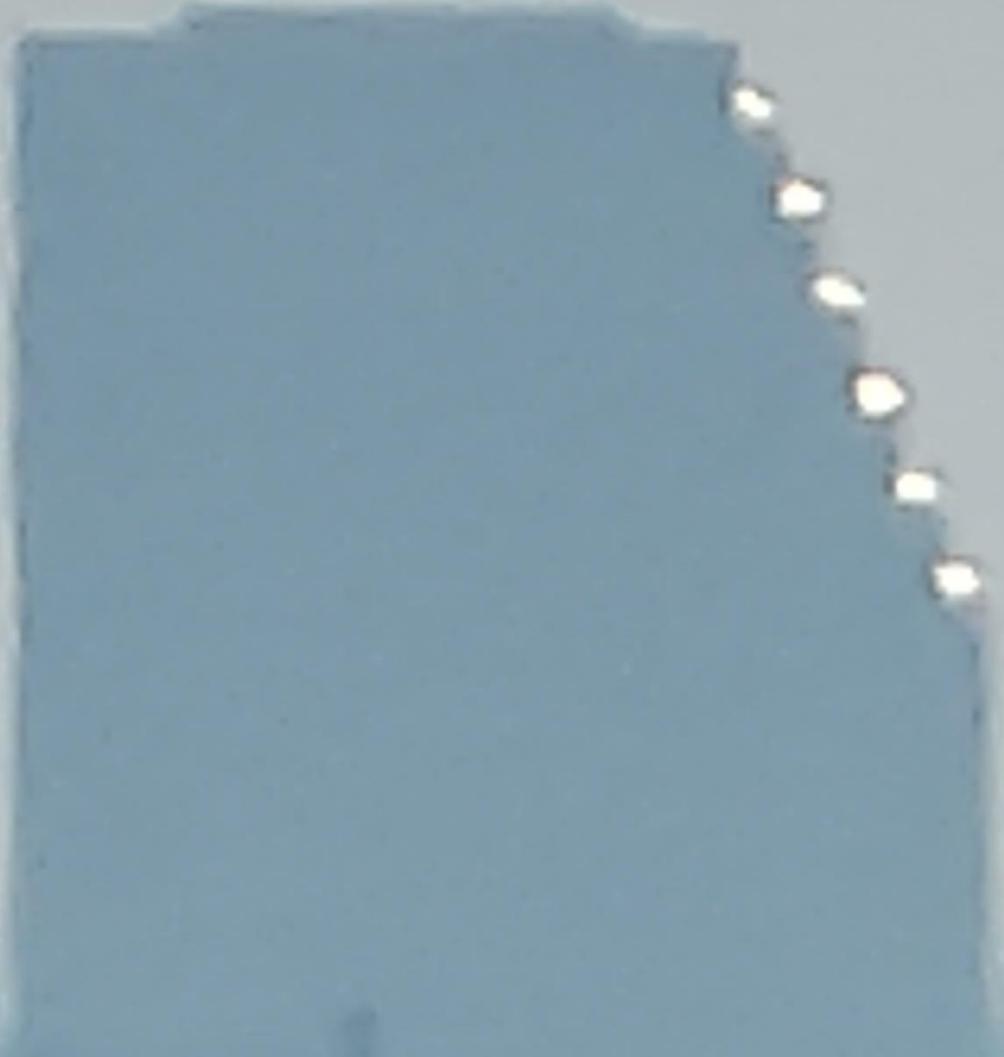


2023-07-10 16:45:26
42.623779°N 83.055906°W 939.418ft



2023-07-10 16:45:42

42.623770°N 83.055904°W 924.792ft



2023-07-10 16:44:27
42.623782°N 83.055902°W 939.178ft



2023-07-10 16:44:27
42.623771°N 83.055908°W 924.995ft



2023-07-10 16:44:48
42.623770°N 83.055906°W 924.840ft



2023-07-10 16:44:40

42.623771°N 83.055907°W 924.749ft

2022-11-04 20:44:58
42.165094°N 83.783665°W 1070.429ft

NIGHT OPERATIONS



2022-11-04 19:33:58

42.162726°N 83.789851°W 1082.792ft



2022-11-04 19:33:58

42.162711°N 83.789891°W 1082.758ft



2023-01-20 19:07:09
42.277472°N 83.255114°W 770.719ft



2023-01-20 19:09:21

42.275202°N 83.258459°W 773.802ft



QUESTIONS?