

# Sandia National Laboratories

Proposed Activities & Work at the MATIC Facility



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March 28, 2019

# Unmanned Aircraft System (UAS) Flight Operations

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- Up to 55 lbs total weight (however, majority will be less than 20 lbs)
- Beyond visual line of sight (with multiple redundant tracking mechanisms)
- Day and night operations
- Up to 150 mph (Rarely. Most flights will be less than 50 mph)
- Power: electric (battery), gas, hydrogen fuel cell, and hybrid systems (most flights will be electric)
- Launch/land from multiple distant locations (to include the runway)
- Up to 10,000 ft AGL (Rarely. Usually below 1,200 AGL, and coordinated with FAA)
- Carry imagers and other payloads

# UAS Flight Operations (continued):

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- Drop a payload from an aircraft (at approved areas)
- Store aircraft and related flight equipment overnight
- Train additional UAS pilots
- Conduct UAS air-worthiness operations/testing
- Build and modify aircraft
- Fly swarms of aircraft
- Train UAS pilots
- Process flight data



# Counter-Unmanned Aircraft Systems (CUAS)

## activities:

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- Set up and operate equipment designed to sense, assess, identify, track, and neutralize/mitigate UAS
  - Sense/track: Imagers, passive RF receivers, active RF (radars), acoustic sensors, etc.
  - Mitigations: RF emitters, net/entanglement projectiles, directional acoustic emitters
  - Occasionally leave sensors turned on overnight / weekends
- Collect performance data
- Train operators
- Conduct workshops and tours of the equipment, aircraft, operations (escort US and foreign national visitors)

# RF Emissions

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- Power levels: Anywhere from milli-watts up to 100 watts per channel
- Bands: Typical radio control frequency bands
  - 433 MHz (Control)
  - 915 MHz (Control/telemetry)
  - 1,385 MHz (Video)
  - 2.4 GHz (Control/video/telemetry)
  - 5.8 GHz (Control/video/telemetry)
  - LTE/cellular communications
  - GPS/GNSS (very rare, coordinated months in advance with FAA)

# Logistics Topics

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- Security
  - Is there an alarm system? Can we add one? Procedure for responding?
  - Response options during off-hours
    - Remote Monitoring
    - Onsite Emergency Contacts
    - Contacting SNL Security for a Security Event on/off hours
  - Medical care/response?
  - Keys / Codes to access on-site buildings?
  - May we bring/operate our own hand/held radio system? Use yours?
  - Visitor Access (US and Foreign)
- Local approvals/restrictions for working on Site
  - Roads, boundaries, ground disturbance, digging/anchoring, lost equipment, etc?
- 24/7 access if testing has been scheduled and approved?
- Approval to use generators and store Fuel on site in approved structures and containers (to support remote launch/equipment operations)

# Questions

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