

CIVIL AIR PATROL
UNMANNED AIRCRAFT SYSTEMS (UAS)
INTERAGENCY OPERATIONS GUIDELINE PAMPHLET



This *Civil Air Patrol Unmanned Aerial Systems Operations Guide* standardizes the processes and procedures for the Civil Air Patrol's use of unmanned aircraft systems (UAS), including pilot inspections and approvals. In support of search and rescue or disaster management goals and objectives, the Civil Air Patrol (CAP) community references these standards to utilize UAS in a safe, effective, and efficient manner. This guide further serves as a risk assessment for CAP UAS operations and meets federal requirements for aviation safety and operational planning pertaining to recurring aviation missions.

Chapter 1 – UAS Policy and Program Administration

Policy:

- A. The Civil Air Patrol (CAP) unmanned aerial systems operate under 14CFR107 (FAA Small UAS Rule – Part 107), CAP Regulation 70-4 “Unmanned Aerial Systems Flight Management”, and CAP Pamphlet 70-4 “Unmanned Aerial Systems Interagency Operations Guidelines”
- B. The CAP manned aviation programs operate under 14CFR91 (FAA General Aviation Rule - Part 91) and CAP Regulation 70-1 “CAP Flight Management”
- C. Coordination between manned and unmanned aviation programs in CAP is the responsibility of the unit’s Director of Operations.

Program Administration: CAP Operations is responsible for oversight and management of its UAS programs. In order to develop a standardized program, the following roles and responsibilities of program management are provided.

National, Region, and Wing UAS Program Managers are appointed by their respective units and are responsible to administer their respective unit’s UAS program. The UAS Program Manager reports directly to the unit’s Director of Operations.

Interagency scope of responsibilities should include:

- A. Coordinate with other unit program managers, the UAS development program, and interagency UAS personnel.
- B. Coordinate with other agency program managers.
- C. Participate in UAS working groups, committees, and subcommittees.
- D. Collaborate to develop CAP UAS aircraft and pilot specifications and approval standards.
- E. Provide for quality assurance and oversight of operational and training performance standards.
- F. Distribute UAS program related information on an organizational and interagency basis.
- G. Coordinate with agencies that have a desire to develop or enhance a UAS program.
- H. Coordinate operational standards with the U.S. Air Force and Air Force Instructions regarding UAS operations.
- I. Provide input to the revision of the *IUASG* and interagency training management system.
- J. Additional roles and responsibilities may be assigned based on specific needs.

Chapter 2 – UAS Aircraft

NIMS Typing: UAS are built in a multitude of configurations, which makes classification difficult. For SAR/DR management purposes, the following classification applies. Certain aircraft are specialized and will not fit this classification. Currently NIMS typing is being developed by FEMA. CAP will use the USAF UAS Groups for definition purposes. These are different than NIMS typing.

Group	Configuration	Endurance	Typical Data Collection Altitude (AGL)	Equipped Weight (lbs.)	Typical Sensors
1	Fixed Wing / Rotorcraft	20-30 min 20-90 min	400'	0-20	EO/IR/Multi-Spectral, Lidar
2	Fixed Wing / Rotorcraft	1-6 hrs. 20 min - 3 hrs	400-1000'	21 - <55	EO/IR/Multi-Spectral, Lidar
3	Fixed Wing / Rotorcraft	60 min. - 8 hrs	400-5,000	<1,320	EO/IR Video and Stills, OTHR
4 & 5	Fixed Wing / Rotorcraft	Over 6 hours	<>18,000 MSL	> 1,320	EO/IR Video and Stills, OTHR

Operational Characteristics:

Group 3, 4 and 5 UAS:

These aircraft will generally provide strategic situational awareness (SA), large area search, and incident mapping.

They typically operate above all other incident aircraft in the operational area.

Communications are maintained with the UAS crew on the assigned aircraft VHF-AM frequency, CAP VHF-FM frequency, or the assigned interagency air to ground VHF-FM frequencies.

All type 3, 4, and 5 UAS aircraft will be equipped with Mode C transponders.

Typical aircraft are the: Scan Eagle, Aerosonde, or MLB Superbat, MQ-9 Reaper, RQ-4 Global Hawk.

Group 1 and 2 UAS:

These aircraft are generally operated to perform tactical SA, SAR, or mapping missions.

They are carried and flown at the mission site and flown at relatively low levels (generally about 200' AGL).

Communications are maintained with the UAS crew on the assigned air to ground VHF-FM frequency with the UAS Operator.

Most do not carry transponders, but are required to broadcast RemoteID locations and data - beginning 16 September, 2023.

Typical aircraft are the Phantom 3 & 4, Typhoon H, Skydio 2, Skydio X2D, Quantix Recon, E384 and E386.

Sensor payloads are variable but typically include electro-optical (HD daylight), thermal, or mapping cameras. Group 3, 4, and 5UAS may carry multiple camera types in a multi-gimbaled configuration.

Call Signs: UAS Remote Pilots will follow established incident communications protocols and will make radio calls with the following information:

- A. CAP Unmanned Aircraft
- B. Wing, Region, NHQ single or two-digit designator
- C. Configuration (fixed or rotor-wing)
- C. Type
- D. Agency/Interagency assigned aircraft number.

Call Sign Examples

- A. "CAP Unmanned 23R41" (MOWG, Rotor Wing, Type 4 UAS, #1) stated: "CAP Unmanned Twenty-three Romeo Four One"
- B. "CAP Unmanned 12F12" (INWG, Fixed Wing, Type 1 UAS, #2) stated: "CAP Unmanned Twelve Foxtrot One Two"
- C. "CAP Unmanned 94R23" (SER, Rotor Wing, Type 2 UAS, #3) stated "CAP Unmanned Ninety-Four Romeo Two Three"

Chapter 3 – Operational Requirements

Remote pilots shall be certificated by the FAA in accordance with 14CFR, Part 107 (sUAS rule) prior to undergoing SAR/DR UAS training.

Remote pilots will be trained and certificated in accordance CAP policy.

CAPF101 cards indicating SUAS Mission Pilot status are required to be in the possession of remote pilots while on an incident.

UAS aircraft will be certificated in accordance with CAP policy. CAP certification and FAA registration cards are required to be with the aircraft while on an incident.

Mode C transponders are required for all Group 3, 4, & 5 UAS except for the following situations:

- A. Otherwise authorized by the Air Operations Branch Director (AOBD) on-scene at the incident.
- B. On incidents with no on-scene AOBD, the remote pilot must de-conflict with other incident aircraft using the established CAP communications guidelines and protocols.
- C. On incidents with no aircraft on-scene, the Remote Pilot must coordinate UAS operations with the incident commander (or designee) and the appropriate flight following entity for that incident as required by the Incident Commander and CAP requirements.

UAS Remote Pilots will:

- A. Obtain approval from the Incident Commander or his designee prior to conducting incident assignments/missions.
- B. Obtain the appropriate level of airspace authorization prior to conducting incident missions.
 - i. FAA part 107. Or
 - ii. Emergency COA (ECOA) for flights beyond visual line of sight (BVLOS) in a TFR. **Or**
 - iii. CAP/FAA Memorandum of agreement for night flights. **Or**
 - iv. USDA/CAP Memorandum of agreement for USFS flights.
 - v. Flights utilizing an FAA memorandum of agreement or ECOA have additional provisions, which must be followed by the remote pilot.
- C. File a Notice to Airman (NOTAM) in accordance with CAP/FAA regulations.
 - i. As soon as practicable on initial response or an incident with no TFR.
 - ii. In accordance with the provisions of a TFR.
 - iii. In accordance with the provisions of a Memorandum of Agreement with the FAA. Typically prior to 24-72 hours of the flight.
- D. Confirm airspace deconfliction with the AOBD or the TFR controlling authority (when applicable) prior to conducting incident missions.

- E. Coordinate and receive clearance for mission flights with the AOBD, OSC, or IC when they are on scene and prior to conducting incident missions.
- F. Coordinate mission flights with participating aircraft when aerial supervision is not on scene,
- G. Make a blind call on the assigned the air to ground frequency when no aircraft are reported to be

Chapter 4 – Operational Considerations

The following information should be considered when planning to utilize UAS to conduct emergency response missions:

- What is the data objective for the mission? Photos, video, SA, mapping/GIS, Thermal/IR?
- How big is the mission area?
- Endurance – Consider length of mission, distance from launch area, and area of availability.
Aircraft performance – Consider operating environment, and payload.
- Maneuverability – It is essential that the UAS aircraft can be positioned for the particular mission observation requirements. Multi-rotors are excellent for SA in SAR and DR.
- Launch Area – Mission requirements may necessitate the need for a fixed wing aircraft and a large launch area.
- Consider performance capability of the aircraft for the density altitude and terrain at which operations are conducted.

Chapter 5 – Interagency & Wildland Airspace Coordination

CAP sUAS shall comply with the following when operating under an interagency or wildland fire operation where airspace supervision is under USFS, BLM, FEMA, or DOI control and not under CAP supervision.

Comprehensive airspace policy is referenced in the *Interagency Airspace Coordination Guide*, <https://www.nwcg.gov/sites/default/files/committee/docs/iasc-interagency-airspace-coordination-guide.pdf>.

- A. **Fire Traffic Area (FTA) Protocol:** Firefighting aircraft follow a communications protocol known as the Fire Traffic Area (FTA), which is typically a 12-mile radius from the center point of an incident. UAS are typically launched and recovered from inside the FTA. Remote pilots must follow this protocol before the aircraft is launched and recovered.

See https://www.nwcg.gov/sites/default/files/publications/pms505d_FTA-card-2015.pdf for FTA diagram and additional information. The airspace surrounding an incident is managed by the aerial supervisor who must implement FTA procedures. All wildland incidents, regardless of aircraft on scene, have an FTA. If an incident has an active TFR in place FTA rules apply to the TFR and clearance from the controlling aircraft is required prior to TFR UAS operations. If aerial supervision is not on scene, the first aircraft on scene will establish the FTA protocol.

The FTA is a communication protocol for interagency firefighting agencies. It does not pertain to other aircraft who have legal access within a TFR (Medevac, Law Enforcement, Media, VFR airport traffic, IFR traffic cleared by the FAA.)

- B. Key components and procedures of the FTA include:

Initial Communication (ICOM) Ring – A ring 12nm from the center point of the incident. At or prior to 12nm, inbound aircraft contact the ATGS or appropriate aerial resource for permission to proceed to the incident. Briefing information is provided to the inbound aircraft by the aerial supervision resource over the incident (ATGS, ATCO, ASM, and HLCO).

No Communication (NOCOM) Ring – A ring 7nm from the center point of the incident that should not be crossed by inbound aircraft without first establishing communications with the appropriate aerial supervision resource.

Three (3) C's of initial contact – Communication requirements and related actions to be undertaken by the pilot of the inbound aircraft:

Communication – Establish communications with the controlling aerial supervision resource over the incident. (ATGS, ATCO, ASM, HLCO).

Clearance – Receive clearance from aerial supervision resource to proceeding with UAS operations. Inbound pilot will acknowledge receipt of clearance or (hold) outside the NOCOM ring, or on the ground as UAS, until the clearance is received and understood.

Comply –UAS aircraft will comply with clearance from aerial supervision resource. If compliance cannot be accomplished, the UAS will remain on the ground until an amended clearance is received and understood.

Departing Aircraft – UAS departing incident airspace must follow assigned departure route and altitude. Aerial Supervisors must establish/de-conflict routes for departing aircraft through or away from other incident aircraft operations.

- C. UAS flights by properly accredited news representatives, prior to entering the area, shall ensure a flight plan is filed with the appropriate FAA or ATC facility specified in the Notice to Airmen and the operation is conducted above the altitude used by the disaster relief aircraft, unless otherwise authorized by the official in charge of on scene emergency response activities.

Chapter 6- UAS Mission Planning

The following planning elements are recommended in order to effectively conduct UAS missions.

UAS Mission Planning – This process applies to incident operations.

Pre-Mobilization:

- A. Obtain mission briefing from customer/requesting entity
- B. Determine mission complexity
- C. Location
- D. Land status (ownership)
- E. Size of area
- F. Topography
- G. Vegetation type
- H. Data objective (final data product) for the area
- I. Data collection timeframe (window)
- J. Acquire GIS data/maps for the area

1. Recommended Documentation:

- A. Crew Qualification Cards (CAPF 101)
- B. Aircraft Registration Cards
- C. Airspace Authorizations
- D. Maps
 - a. Project location
 - b. TFR
 - c. NOTAM
 - d. Incident perimeter
 - e. Flight hazard map
- E. FAA correspondence
- F. Cooperative agreements (MOU's, LOA's, etc)
- G. Land use permits/authorizations
- H. Planning documents (Project Aviation Safety Plan (PASP), Operations plans, etc.)
- I. CAPF XXX (Sortie Paperwork, ORM, W&B – as needed)

2. Personnel:

- a. Identify the UAS Crew:
 - i. UAS Mission Pilot / Team Leader
 - ii. UAS Mission Observer
 - iii. Mission Staff Assistant(s)
 - iv. Observer(s)
 - v. Public Information Officer (PIO) – as needed

Identify a POC at the requesting entity to coordinate the project with the team leader. Determine data processing schedule and final product delivery deadlines.

3. Equipment

- a. Determine aircraft to be used
- b. Determine sensor payloads to be used
- c. Cameras
- d. Mounts
- e. Data storage
- f. Determine computer hardware and software requirements
- g. GIS
- h. GCS
- i. Data development / Processing

4. Operations/Safety Plans

- a. Project Aviation Safety Plan (ICSF 208, ICSF 223, UAS ORM)
- b. New or challenging terrain
- c. High public exposure
- d. Prescribed fire with multiple aircraft
- e. High programmatic or operational risk
- f. Non-recurring mission
- g. Recurring Mission
- h. UAS Mission Notification (entity specific policy)

- i. Training and proficiency
- j. Low complexity mapping/photography
- k. Recurring flights in the same area
- l. UAS mission on an incident

5. Agency Authorization

- a. Incident mission number and symbol
- b. Requesting entity Administrator
- c. Incident Commander
- d. Private landowner authorization/notification
- e. Airspace Authorization – Determine the appropriate level of authorization.
- f. FAA Part 107
- g. FAA Part 107 with waiver (submit waiver request 90 days in advance)
- h. CAP/FAA Certificates of Authorization (COA)
 - i. BVLOS in TFR
 - ii. SFC-1200' agl
 - iii. Night operations
 - iv. COA or ECOAs
- i. Other applicable FAA authorizations.
- j. NOTAMs: Filed in accordance with CAP, requesting entity, and FAA regulations.
- k. Sortie release by an UAS Flight Release Officer

Pre-Flight:

1. Verify authorizations
 - a. Agency
 - b. Incident
 - c. Airspace (LAANC filed as needed?)
2. Verify the crew and aircraft are authorized and approved for sortie
3. Flight & Duty Limitations – Ensure crew is within work/rest policy.
4. Perform UAS preflight checklist.
5. Verify weight, balance, and attachment of payloads.
6. Ensure proper fuel load/batteries are fully charged.
7. Obtain a weather briefing
8. Obtain a Sortie Briefing. Determine what the data objective is for the sortie and obtain the

following information.

- a. Initial Response Briefings
 - b. Incident name, number, mission symbol
 - c. Ordering Agency
 - d. Incident location
 - e. Frequencies and Channels (ICSF 205)
 - f. Flight following
 - g. Air-to-Ground
 - h. Air-to-Air (FM and/or AM)
 - i. Contacts: ground and air
 - j. Air resources assigned
 - k. Other resources dispatched (as practical)
 - l. Aerial and ground hazards
 - m. Restricted / controlled airspace
9. Special information such as land status: wilderness, urban interface, suburban, urban.

Large Response and Large Fire Operations Briefings – UAS personnel will attend major incident briefings. If this is not possible critical information should be relayed by phone, radio, fax or messenger. A copy of the IAP is essential. UAS personnel may have to seek some of this information:

- 1. Incident objectives by division
- 2. Organization Assignment List (ICSF 203) or list of key operations people
- 3. Air Operations Summary (ICSF 220) or list of assigned aircraft
- 4. List of all aircraft by make/model and radio identification
- 5. Incident Radio Communications Plan (ICSF 205) or list of frequencies
- 6. Incident Map
- 7. Fire Behavior Report and local weather
- 8. Air resource availability/status
- 9. Incident Medevac Plan and Medevac helicopter assigned

Chapter 7 – Mission Flight Procedures

The following procedures shall be followed by all UAS flight crews:

1. Before Takeoff:

- a. Confirm authorizations (agency, incident, airspace)
- b. Confirm/test communications (AM/FM/Cell/Sat).
- c. Coordinate with the mission base, AOBD, aircraft and ground personnel in the area.
- d. Record launch coordinates (lat/lon, DD MM.mm).
- e. Determine mission altitude (Garmin Fortrex, Foreflight, or comparable).
- f. Confirm sensor payload is attached and functioning.
- g. Complete the aircraft preflight checklists.
- h. Obtain takeoff clearance or coordinate flight as required

2. After Takeoff:

- a. Record take off time.
- b. Monitor assigned frequencies
- c. Complete the aircraft takeoff and flight checklists.
- d. Establish flight following as required.
- e. Coordinate/communicate with aircraft and ground

3. Personnel Aircraft Coordination Procedures

A. Pilots shall maintain aircraft separation by:

- Using standard aviation ‘see and avoid’ visual flight rules
- Having access to the appropriate radio frequency for position reporting
- Adhering to Fire Traffic Area (FTA) procedures.
- UAS shall give way to manned aircraft.
- Do not fly UAS until you have established positive contact with on-scene aircraft/aerial supervision.

Aircraft Coordination Scenarios: CAP should follow the Fire/Interagency Traffic Area (FTA) Protocol: UAS crews shall follow the procedures listed below. There are four typical scenarios: Aerial supervision is on scene; aerial supervision is not on scene, but other aircraft are; there are no aircraft on scene; an aircraft calls inbound in the blind during UAS operations.

- **Scenario 1:** Aerial Supervision is on scene. Initiate radio contact with aerial supervision. Give your call sign, location, mission, and requested operating altitude.

Example:

“Hunt River Air Attack, CAP Unmanned 6R41 on air to ground”. “CAP Unmanned R41, Hunt River Air Attack, go ahead”.

“CAP Unmanned 6R41 is at Helispot 10 requesting clearance for a mapping mission in Division Alpha at 300 AGL”.

“CAP Unmanned 6R41, Hunt River Air Attack, Altimeter 3002, clear to lift, maintain 300 AGL and below, Air Attack is at 1500 AGL, no other aircraft in your area”.

UAS Remote Pilots are responsible for ensuring separation and de-confliction with manned aircraft on scene. If there is any doubt about de-confliction or separation with manned aircraft, the UAS shall stay on the ground until those issues are resolved.

- **Scenario 2:** Aerial supervision is not on scene, but other aircraft are. The remote and manned aircraft pilots are responsible to maintain separation.

Example:

“Highway Patrol Helicopter 12, CAP Unmanned 23R44”

“highway Patrol Helicopter 12, CAP Unmanned 23R44 is at H21, has you in sight and will be lifting for a mapping mission at the Steeplechase Subdivision once you are clear”.

“Highway Patrol Helicopter 12 copies, I’ll call when I’m clear”.

“CAP Unmanned 23R44 copy, standing by”.

Remote Pilots are responsible for ensuring separation and de-confliction with manned aircraft on scene. If there is any doubt about de-confliction or separation with manned aircraft, they UAS shall stay on the ground until those issues are resolved.

- **Scenario 3:** No aircraft on scene. The remote pilot must verify that no aircraft are on scene. Call dispatch and the IC to confirm and then make a blind call on air to ground prior to launch.

Example:

“CAP Unmanned 14R47 in the blind on air to ground to any aircraft over the Reedy Creek and Highway 37 area. Launching UAS at the bridge 400 AGL and below.”

- **Scenario 4:** UAS is in flight and incoming aircraft calls in the blind. The remote pilot must respond and coordinate with the incoming aircraft.

Example:

“Birds’ Point Levee air traffic, CAP 2330 is inbound from the south”.

"CAP 2330, CAP Unmanned 23R42 in on scene and flying a mapping mission near the point of origin". "We are at flying at 2,500' on altimeter 29.92".

"CAP 2330 copies, I'm 7 miles out and will maintain 3,000' until you're done with the mission.

"CAP Unmanned 23R42 copies, we'll call when we're clear of the airspace"

Vertical Separation (typical aircraft altitudes for interagency operations)

Mission	Altitude (agl)	Normal Pattern
Media	As assigned	Right or left
CAP Surrogate Predator	3000 and above	Right or left
CAP VIRB, GoPro, Waldo Air	2500	Right of left
CAP Oblique Photos	1000	Right or left
CAP SAR Patterns	1000	Right or left
ATGS – Fixed Wing	2000 to 2500	Right
ATGS – Helicopter	500 to 2000	Right or left
Airtanker Orbit	1000 to 1500	Left – outside to observe
Airtanker Maneuvering	150 to 1000	Left
Air Attack Lead plane	150 to 1000	Left
Helicopters	0 to 500 (hard ceiling)	Left or right
Smokejumper Ram Air Chute	3000	Left
Smokejumper Round Chute	1500	Left
Paracargo	150 to 1500	Left
Unmanned Aircraft (T1)	3000 and above	Variable
Unmanned Aircraft (T2)	1200 and below	Variable
Unmanned Aircraft (T3)	1200 and below	Variable
Unmanned Aircraft (T4)	400 and below	Variable

Horizontal Separation

- A. UAS crews must ensure there is adequate visibility to conduct operations safely regardless of the airspace classification.
- B. Flight patterns must be adequate, i.e. not hindered by terrain.
- C. Consult Air Tactical Group Supervisor (ATGS) for interagency, CAP Air Operations Branch Director (AOBD), and/or pilots before finalizing patterns and routes.
- D. Advise pilots on location of other aircraft if visual contact has not been reported.
- E. Geographic references, such as a ridge or a river, can be used to separate aircraft provided aircraft maintain assigned flight patterns.
- F. Virtual Fences and UAS Routes – Effective for maintaining air traffic control with minimal radio traffic.
- G. Remote Pilots may be required to report arrival at a virtual fence and wait for clearance from ATGS or AOBD before proceeding. Known geographic locations make effective check points and virtual fences.

- i. Virtual Fences – Roads, power lines, ridges, lakes, etc.

After Landing:

- A. Notify the AOBD, aircraft in the area, or ground personnel.
- B. Close out flight following as required.
- C. Record landing time complete shutdown checklist.

Post Mission:

- A. Confirm need for UAS aircraft for next day.
- B. Debrief with available air resources.
- C. Debrief with AOBD and the Mission Base.
- D. Complete post mission checklist
- E. Attend or provide input to incident planning meeting for next day's operations.
- F. Complete required documentation (CAPF 109U, ICSF 214, etc.).

UAS Emergency Procedures: Approved UAS have built in failsafe systems. The aircraft will return to home (launch/recovery site) in the event of low battery voltage or loss of link with the ground control station (GCS).

- A. Lost control, communication, or visual contact with UAS: If control of the UAS is lost and a flyaway occurs:
 - i. Immediately notify the ATGS, AOBD, supervision, aircraft in the area, and ground personnel.
 - ii. Clear the affected airspace and suspend air operations in the area.
 - iii. Notify flight following contact/mission base as required.
 - iv. Wait for the duration of the fuel/battery load time to expire
 - v. Resume air operations
 - vi. Search for the missing UAS
- B. Follow established incident/mishap reporting procedures noted within CAPR 62-1, 62-2

Chapter 8 – Safety

Safety is the principal consideration in all aspects of UAS operation. A safe UAS operation depends on accurate risk assessment and informed decision-making.

Risk levels are established by the severity of possible events and the probability that they will occur. Assessing risk identifies the hazard, the associated risk, and places the hazard in a relationship to the mission. A decision to conduct a mission requires weighing the risk against the benefit of the mission and deciding whether the risks are acceptable.

Examples of the Safety Operations and the Risk Management Process are available in CAPR 62-1 *CAP Safety Responsibilities and Procedures* and CAPP 217 *Specialty Track Study Guide – Safety Officer*

Factors to consider during the risk assessment process:

- Any flight mission has a degree of risk that varies from 0% (no flight activity is conducted) to 100% (aircraft and/or personnel experience a mishap).
- The UAS crew must identify hazards, analyze the degree of risk associated with each, and place hazards in perspective relative to the mission or task.
- Hazards might not always be limited to the performance of flight but may include hazards to personnel if the flight is not performed.
- The risk assessment may include the Ground Branch Director, Air Operations Branch Director, Safety Officers, Agency Representatives, Incident Commanders, Flight Release Officers, and Line Officers/Managers.
- Ultimately the pilot in command has the authority to decline a flight mission that he or she considers excessively hazardous.

Mitigating Risk: In some cases, the UAS crew may have to shut down UAS operations. UAS operations must not proceed until risk mitigation measures are implemented.

Risk Mitigation Considerations:

1. Monitor the overall aviation operation for human factors related issues
 - a. Task saturation
 - b. Fatigue, burnout, and stress
 - c. Acceptance of risk as normal
 - d. Lack of situational awareness
2. Utilize the appropriate aircraft for the mission
 - a. Fixed wing vs. Multi-rotor
 - b. Density altitude
 - c. Payload types
 - d. Flight duration
3. Communications Planning – When discrete radio frequencies are used during incident

operations, ensure appropriate ground personnel monitor contact frequencies such as command and air to ground. Make sure that ground personnel know how to reach the UAS crew.

4. Obtain Input – Discuss operations safety with other pilots. Mission debriefings are an excellent source of information; UAS crewmembers will utilize After Action Reviews (AAR) to critique mission effectiveness with other incidents and personnel when possible.
5. The CAP Operational Risk Management Form for UAS operations will be used for all UAS Operations

Chapter 9 – UAS Incursions

The following information pertains to UAS incursion during incident operations:

1. A UAS incursion is defined as a non-participating UAS operating over or near an emergency incident that:
 - a. Intrudes into a Temporary Flight Restriction (TFR), or
 - b. Interferes with emergency response efforts and the interference is documented through the appropriate CAP reporting system, such as SIMS, SAFECOM, etc.
2. The NWCG UAS incursion protocol is located in appendix C
3. The NWCG UAS Incursion Re-engagement protocol is located in appendix D

Key considerations regarding incursions include:

1. UAS are like any other hazard. “If you see something, say something”.
2. CAP personnel should report all unauthorized UAS, activity via the CAP SIMS. UAS information (color, size, altitude, flight pattern) should be reported if known. All UAS Incursions should be reported to FAA.
3. Unless a Temporary Flight Restriction (TFR) is in place, it may be possible for the drone activity to be a “legal” operation. If anticipating extended air operations, requesting a TFR is recommended.
4. If you encounter a person operating a UAS over your incident, a simple request for them to stop should be made. If they fail to comply, law enforcement should be notified. Safety of personnel should be assessed in any operator contact.
5. Mission base staff should report UAS incursions to the nearest Air Traffic Control Center
6. Safety of flight should be primary over locating the operator of a UAS intruding into emergency operations.
7. The FAA has developed additional guidance for Law Enforcement personnel:
https://www.faa.gov/uas/resources/law_enforcement/media/FAA_UAS-PO_LEA_Guidance.pdf.

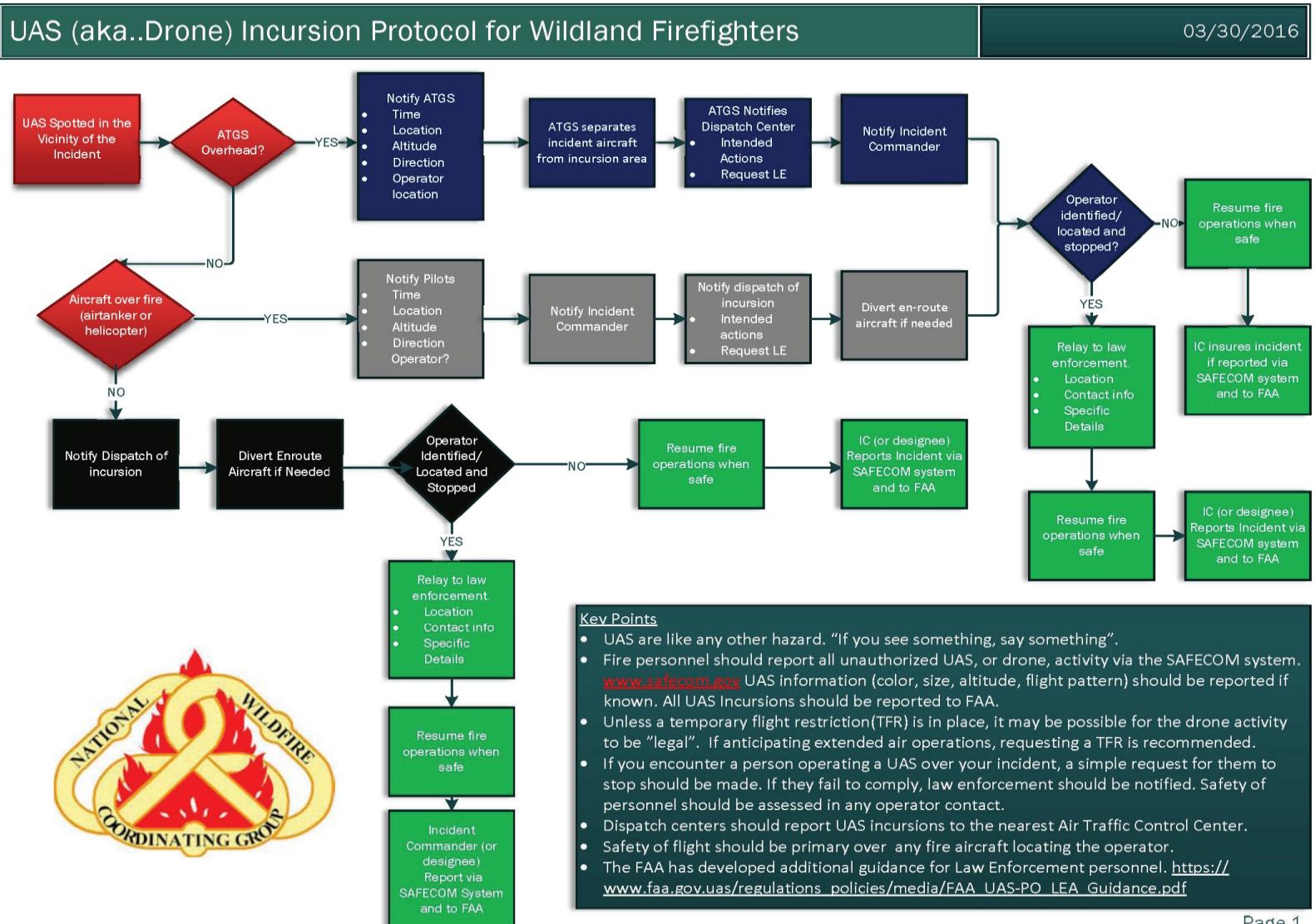
Chapter 10 – Suggested Job Aids

1. UAS Operations Kit: Each CAP UAS crewmember should have and maintain a kit. The following items are recommended:
 - a. A handheld GPS device
 - b. Computer with following software:
 - Mission Planner
 - WinSCP
 - Geosetter
 - Adobe Pro ®
 - ArcGIS®
 - Metashape®
 - Irfranview
 - Google Earth
 - Tablet
 - GCS app
 - High capacity portable hard drive
 - Portable internet connection (MiFi/smart phone/Starlink)
 - c. Frequency Guide
 - d. Batteries and cables – Camera, flashlight, etc.
 - e. Flashlight
 - f. Camera
 - g. Overnight Bag
 - h. Maps
 - i. Current FAA sectional chart coverage area
 - j. Agency Maps
 - k. Local Hazard Map (from Dispatch)
 - l. Incident Map (updated daily)

2. Publications

- a. CAPR 70-4 *CAP sUAS Flight Operations*
- b. CAPR 162-1 *CAP Safety Responsibilities and Procedures*
- c. Aviation Safety Communiqué (SAFECOM): FS-5700-14 and OAS-34
- d. National Interagency Mobilization Guide, NFES 209 (if operating with USDI-USDA teams or in a wildland fire environment Agency aviation management manuals)
- e. USDI - USDA aircraft radio communications and frequency guide (if operating with USFS, BLM, or other DOI agencies)
- f. Requesting Agency Aviation Response Plan
- g. Interagency *Aviation Mishap Response Guide and Checklist*, PMS 503. (if operating with USDI-USDA agencies or in a wildland fire environment)

NWCG UAS Incursion Protocol



NWCG UAS Re-engagement Process

UAS Incursion Re-engagement Process - DRAFT

August 15, 2016

