



# OSHA INSTRUCTION

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

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**DIRECTIVE NUMBER:** CPL 02-01-169 | **EFFECTIVE DATE:** December 22, 2021

**SUBJECT:** OSHA's Use of Small Unmanned Aircraft Systems

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## ABSTRACT

**Purpose:** This Instruction, OSHA's Use of Small Unmanned Aircraft Systems, provides policies and procedures for the continued use of Small Unmanned Aircraft Systems ("SUAS" or "drones") by OSHA.

**Scope:** This Instruction applies OSHA-wide.

**References:** OSHA Memorandum for Regional Administrators, *OSHA's use of Unmanned Aircraft Systems in Inspections*, May 18, 2018.

**Cancellations:** N/A

**State Impact:** This Instruction describes a Federal Program for which adoption by State Plans is not required but encouraged (see [Section VII](#)).

**Action Offices:** National, Regional, and Area Offices.

**Originating Office:** Directorate of Construction (DOC).

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By and Under the Authority of

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## **Executive Summary**

This Instruction provides updated guidance to the Occupational Safety and Health Administration's (OSHA) national, regional, and area offices for their use of Small Unmanned Aircraft Systems ("SUAS" or "drones"). On May 18, 2018, OSHA issued an Enforcement Memorandum for Regional Administrators, "OSHA's use of Unmanned Aircraft Systems in Inspections," to provide initial guidance on the use of SUAS during compliance inspections and for other purposes. In light of recent improvements by the Federal Aviation Administration (FAA) to help SUAS pilots fly safely in the national airspace, an upsurge in the commercial use of SUAS, and technical advances to the SUAS themselves, the agency has determined that additional guidance is warranted. This Instruction provides information and enforcement guidance to support OSHA's use of SUAS for any approved purpose as outlined in this directive, including in the following circumstances to use SUAS:

- To collect evidence during compliance inspections in certain workplace settings, including in areas that are inaccessible or pose a safety risk to inspection personnel.
- For technical assistance in emergency situations.
- During compliance assistance activities.
- For training activities.

### **Significant Changes from the 2018 OSHA Enforcement Memo on Drones**

This Instruction includes the following significant changes from OSHA Memorandum for Regional Administrators, OSHA's use of Unmanned Aircraft Systems in Inspections, May 18, 2018:

- Updates references to include new documents and the current versions of documents previously listed.
- Updates guidance regarding FAA requirements and procedures, including 14 CFR part 107 SUAS operations, waivers, and FAA's significantly improved/streamlined online waiver application process.
- Updates and adds electronic links to enhance web-based usability, including FAA's "DroneZone" webpage, SUAS webinar series, and the B4UFLY Mobile App.
- Updates recommended best practices for SUAS operations.

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- I. Purpose. This Instruction provides updated guidance to OSHA’s national, regional, and area offices for their use of SUAS. The intent of this directive is to offer guidance and flexibility to the Regional Administrators to run their SUAS Program.
- II. Scope. This Instruction applies OSHA-wide.
- III. Cancellation. N/A
- IV.
- V. Significant Changes. This Instruction includes the following significant changes:
  - Updates references to include new documents and the current versions of documents previously listed.
  - Updates guidance regarding FAA requirements and procedures, including 14 CFR part 107 SUAS operations, waivers, and FAA’s significantly improved/streamlined online waiver application process.
  - Updates and adds electronic links to enhance web-based usability, including FAA’s “DroneZone” webpage, SUAS webinar series, and the B4UFLY Mobile App.
  - Updates recommended best practices for SUAS operations.
- VI. Reference.
  - Federal Aviation Administration, Aeronautics and Space, Small Unmanned Aircraft Systems, [14 CFR part 107](#) (“Part 107”).
  - Occupational Safety and Health Administration, OSHA Directive Number CPL 02-00-164, [Field Operations Manual](#) (FOM).
- VII. Expiration Date. This Instruction will remain in effect until canceled or superseded by another instruction or notice.
- VIII. State Program Change. Notice of Intent Required and Adoption Encouraged. This Instruction describes a federal program change that provides policies and procedures for the continued use of SUAS by OSHA. State Plans may, but are not required to, adopt this Instruction, and State Plans that adopt this Instruction should implement it in an at least as effective manner.

Within 60 days of the effective date of this directive, a State Plan must submit a notice of intent indicating whether they already have a similar policy in place, intend to adopt new policies and procedures, or do not intend to adopt this Instruction. If a State Plan does not adopt at first, but at some later point decides to adopt this Instruction or an at least as effective version of this Instruction, the State Plan must notify OSHA of this change in intent. Within 60 days of adoption, the State Plan must provide an electronic copy of the policy or link to where their policy is posted on the State Plan’s website. The State Plan must also provide the date of adoption and identify differences, if any, between their policy and OSHA’s. OSHA will provide summary information on the State Plan responses to this Instruction on its website at <https://www.osha.gov/stateplans/>.

IX. Action Information.

- A. Responsible Office. Directorate of Construction (DOC), Office of Construction Services (OCS).
- B. Action Offices. National, Regional, and Area Offices; On-site Consultation Programs.
- C. Information Offices. None.

X. Definitions & Terms.

- A. CSHO: Compliance Safety & Health Officer
- B. FAA: Federal Aviation Administration
- C. LAANC: Low Altitude Authorization and Notification Capability
- D. NTSB: National Transportation Safety Board
- E. Part 107: FAA Regulations for Small UAS, 14 CFR part 107
- F. RPIC: Remote Pilot in Command
- G. SPM: SUAS Program Manager
- H. SUAS: Small Unmanned Aircraft Systems, weighing between .55 and 55 pounds with associated support equipment
- I. UAS/Drone: Unmanned Aircraft Systems
- J. VO: Visual Observer

X. Application. This Instruction applies OSHA-wide to the use of SUAS for any approved purpose as outlined in this directive. Such purposes may include the use of SUAS: to collect evidence during compliance inspections in certain workplace settings, including in areas that are inaccessible or pose a safety risk to inspection personnel; during compliance assistance activities; for technical assistance in emergency response situations; and for training activities.

XI. Background. On May 18, 2018, OSHA issued an Enforcement Memorandum for Regional Administrators, “OSHA’s use of Unmanned Aircraft Systems in Inspections,” to provide initial guidance on the use of SUAS during compliance inspections and for other purposes. In light of recent improvements by the FAA to help SUAS pilots fly safely in the national airspace, an upsurge in the commercial use of SUAS, and technical advances to the SUAS themselves, the agency has determined that additional guidance is warranted.

XII. SUAS / Drone Resources External to OSHA. While OSHA considers the entities below to be valuable resources for information concerning safe and healthful workplace practices in the use of SUAS/drones, it does not control the publication of information on the websites listed and cannot vouch for the accuracy, reliability, or timeliness of information contained in these websites.

- A. General SUAS information, rules for flying, and becoming a SUAS pilot: FAA website at <https://www.faa.gov/uas/>
- B. General information on SUAS registration and waivers: FAA DroneZone website

at <https://faadronezone.faa.gov/#/>

- C. FAA Advisory Circular (AC 107-2): FAA website at [https://www.faa.gov/documentlibrary/media/advisory\\_circular/ac\\_107-2.pdf](https://www.faa.gov/documentlibrary/media/advisory_circular/ac_107-2.pdf)
  - D. Waivers: Specific operations of SUAS outside the limitations of Part 107 are allowed under and require a waiver. For specific information, including what operations may be waived, see the FAA Part 107 Waivers website at [https://www.faa.gov/uas/commercial\\_operators/part\\_107\\_waivers/](https://www.faa.gov/uas/commercial_operators/part_107_waivers/)
  - E. Airspace authorizations: Under Part 107, SUAS pilots planning to fly in controlled airspace must get permission from the FAA. For additional information on these airspace authorizations and the Low Altitude Authorization and Notification Capability (LAANC), see the FAA LAANC website at [https://www.faa.gov/uas/programs\\_partnerships/data\\_exchange/](https://www.faa.gov/uas/programs_partnerships/data_exchange/)
  - F. FAA Advisory Circular (AC 90-48D) “Pilots’ Role in Collision Avoidance”: FAA website at [https://www.faa.gov/documentlibrary/media/advisory\\_Circular/ac\\_90-48D.pdf](https://www.faa.gov/documentlibrary/media/advisory_Circular/ac_90-48D.pdf)
  - G. FAA Aero Medical Factors: FAA website at [https://www.faa.gov/regulations\\_policies/handbooks\\_manuals/aviation/phak/meda/19\\_phak\\_ch17.pdf](https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/meda/19_phak_ch17.pdf)
  - H. Part 141 Pilot Schools: FAA website at [https://www.faa.gov/licenses\\_certificates/airline\\_certification/pilotschools/](https://www.faa.gov/licenses_certificates/airline_certification/pilotschools/)
- XIII. OSHA Use of SUAS. As a Federal agency, there are currently two legal frameworks available to OSHA under FAA rules for the use of SUAS: either as a Public Aircraft Operator flying missions that meet the governmental functions listed in the Public Aircraft Statute (49 U.S.C. §§ 40102(a)(41) & 40125), or as a Civil Operator under the civil rules found at 14 CFR Part 107 (“Part 107”). OSHA has historically conducted all operations under Part 107, and the agency will continue to conduct all SUAS operations under Part 107 civil rules. All Regions using SUAS, including SUAS operations conducted by a third-party vendor on behalf of the Region, must be conducted in accordance with a SUAS Program that meets the criteria listed below. SUAS Programs which deviate from the criteria listed below (e.g., waiver) must be approved by the National Office. The below criteria includes both Part 107 and additional agency-specific requirements. However, it is not an exhaustive list of all Part 107 requirements; accordingly, any Region using UAS should review Part 107 to ensure complete compliance with its requirements.
- XIV. Regional SUAS Program.
- A. Regional SUAS Program Manager. All Regions using SUAS must designate a Regional SUAS Program Manager (SPM) who, under the oversight of the Regional Administrator, will oversee and periodically evaluate all program elements established within that Region. The SPM shall ensure that all OSHA SUAS operations, including those conducted by a third-party vendor on behalf of the Region, follow Part 107’s requirements which include, but are not limited to, the following:

1. Remote Pilot in Command (RPIC) shall pass a FAA Aeronautical Knowledge Test, and obtain a Remote Pilot Certificate with a SUAS rating.
2. Register all SUAS using the FAA's DroneZone website at <https://faadronezone.faa.gov/#/>.
3. Ensure accidents are reported to FAA (see 14 CFR § 107.9 and paragraph J below) and the National Transportation Safety Board (NTSB) as required (see 49 CFR 830.5 and [NTSB SUAS Operator Advisory](#)).

Where necessary, specific operations of aircraft outside the limitations of Part 107 may be allowed under a waiver. Apply and obtain approval for a waiver pursuant to FAA Part 107, subpart D, when unable to operate under Part 107 rules. For specific information, including what operations are allowed under a waiver, see the FAA Part 107 Waivers website.

B. Regional SUAS Program Elements. Each OSHA Regional SUAS Program shall include, but is not limited to, the following program elements:

1. All OSHA Regional SUAS Programs shall be in writing.
2. Proper selection of SUAS, including maintaining a record of its model name and FAA registration number.
3. Identification of SUAS team (must include RPIC and Safety Monitor, at a minimum, and a visual observer (VO) when necessary).
4. A training plan.
5. Establishment and maintenance of logbooks for RPICs and all SUAS.
6. Deployment Requests.
7. Safe use of SUAS, including pre-and post-flight operations/procedures.
8. Emergency procedures.
9. Accident Reporting to FAA (refer to 14 CFR § 107.9 & Appendix A of this directive), NTSB (see 49 CFR 830.5 and [NTSB SUAS Operator Advisory](#)), and appropriate OSHA Regional/National Office personnel.
10. An annual SUAS Program audit by the Regional SPM to ensure continued program compliance with these program elements. A report on this annual SUAS Program audit will be provided during the month of October to the National Office (DOC Director, Office of Construction Services). At a minimum, the report should include the number of flights that were conducted and a summary of the types of inspections conducted by industry, a description of any incidents involving injury to persons or damage to property, and if there were any refusals to allow the flight of OSHA's SUAS.
11. Whenever the Region uses a third-party vendor to conduct SUAS operations, procedures for monitoring the third-party vendor and assessing whether the SUAS operation is in compliance with Part 107, and the requirements of this directive.
12. Appropriate OIS coding of inspections involving use of an OSHA or other requested SUAS (N-01-DRONE).
13. Procedures for preservation of evidence and maintenance of records/records retention.

- C. Selection of SUAS. Prior to using SUAS for OSHA inspections or other approved purposes as outlined in this directive, SUAS must be selected that weigh less than 55 pounds total, including everything on board or otherwise attached. The SUAS must be registered with the FAA if they weigh more than 0.55 pounds (8.8 ounces). Registered SUAS must be labeled with the registration numbers provided by the FAA.
- D. Training. Training consists of instruction for both OSHA consultation and OSHA staff involved in SUAS operations. The key to continued safe operation is by maintaining a professional level of competency, which shall include establishing minimum qualifications for potential operators and crew members, and training those personnel. A regional training plan must be developed by the SPM and receive approval from the Regional Administrator. This training plan must comply with the requirements of Part 107 and address the following:
1. Initial Training.
    - A. VOs and RPICs must have completed initial training prior to participating as a member of a SUAS flight team. Initial training, at a minimum, must include the following topics:
      - Requirements of Part 107.
      - Requirements of General Operating and Flight Rules (14 CFR Part 91).
      - Knowledge of the rules and responsibilities described in this directive and the regional SUAS Program.
      - Training Base Tasks (see paragraph XIV.D.2 below).
      - Training should follow traditional 14 CFR Part 141 (Part 141) pilot school characteristics. Note that there is no current FAA requirement to apply Part 141 to SUAS training and qualification. For additional information about Part 141 pilot training, please see the FAA/Part 141 Pilot Training website at [https://www.faa.gov/licenses\\_certificates/airline\\_certification/pilot\\_schools/](https://www.faa.gov/licenses_certificates/airline_certification/pilot_schools/).
    - B. Safety Monitors must have completed initial training prior to participating as a member of a SUAS flight team. Initial training for Safety Monitors, at a minimum, must include knowledge of the rules and responsibilities described in this directive and the regional SUAS Program.
  2. Training Base Tasks
    - A. Training base tasks for RPIC. These tasks will be demonstrated to the SUAS coordinator/evaluator. Examples of training tasks for the RPIC include, but are not limited to:



- Understanding of take-off and emergency landing procedures, including recovering to a designated location.
  - Demonstrating the ability to take off the SUAS from the ground to a hover, perform directional flight, fly the SUAS in normal flight mode to an altitude determined by the coordinator/evaluator, conduct maneuvering flight, avoid obstacles designated by the coordinator/evaluator, and land the SUAS.
  - Exhibiting knowledge and a thorough understanding of preflight inspection procedures, including identification of SUAS discrepancies that would render the aircraft unsafe for flight.
  - Demonstrating understanding and competency regarding SUAS operations involving other crew members, including working effectively with a VO.
- B. Training base tasks for the VO. Examples of training base tasks for the VO include, but are not limited to:
- Understanding of take-off/landing considerations, weather conditions, hazards, and pre-designated or identified no-fly zones, as briefed to him/her by the RPIC.
  - Understanding of meteorological (weather) conditions as briefed to him/her by the RPIC.
  - Understanding and demonstrating proficiency assisting the RPIC controlling the SUAS, in visually tracking the SUAS.
  - Understanding how to perform as a flight crew member, and brief-back details pertaining to their position as a VO (route of flight, emergencies, return-to-home recovery location, hazard avoidance, and mishap procedures) to the RPIC.

### 3. Recurring Training.

- A. All SUAS flight team members shall maintain proficiency in their operator/observer/safety monitoring abilities.
- B. For RPICs and VOs, recurring training is not limited to actual operating/observer skills but includes knowledge of all pertinent UAS/aviation matters.
- C. For RPICs, recurring training for operator skills will be conducted in accordance with the requirements of the FAA and this directive.
- D. Other recurrent training for SUAS flight team members, including knowledge of the rules/responsibilities of this directive and the regional SUAS program, shall be conducted, at a minimum, annually.
- E. Appropriate recurring training will be conducted any time inadequacies in an SUAS flight team member's skills or knowledge indicate that the team member no longer has the requisite understanding or skill necessary to properly operate the SUAS equipment or perform their required tasks safely.
- F. Training Base Tasks for RPIC and VOs (see paragraph XIV.D.2 above)

G. The RPIC must demonstrate flight proficiency and currency, in accordance with the requirements of the FAA, for retention of their Remote Pilot Certificate with a SUAS rating.

The SPM must ensure that these items are covered and successfully completed. The SPM must ensure that any third-party vendor contracted to conduct SUAS operations on behalf of the Region has a training plan that provides initial and recurring training for RPIC as required by Part 107 as well as training for visual observers. This is not intended to include emergency response operations where a concurrent law enforcement investigation is ongoing with OSHA.

- E. Request for SUAS Operations. The Regional SPM will coordinate requests for SUAS use, and make recommendations to the Regional Administrator regarding the deployment and use of SUAS. The SPM will determine whether the request for SUAS and mission demands can be successfully fulfilled under applicable FAA and state/local rules and regulations and the requirements of this Instruction. The SPM's recommendation will include a hazard assessment.
- F. OSHA Use of Personal SUAS. OSHA personnel may only use OSHA-provided SUAS for which they have received the necessary training. The Regional SPM, with approval from the Regional Administrator, may utilize the services of a third-party vendor to conduct SUAS operations on behalf of the Region. The SPM may also allow coordinated use of SUAS owned by law enforcement, government entities, or private employers, where mission specific conditions require it.
- G. SUAS Inspection. The RPIC must inspect all equipment prior to each SUAS operation to ensure their functionality and calibration. The RPIC will ensure adherence to the procedures, cautions, warnings, and applicable notes detailed within the SUAS operators manual, or operators' instructions. This inspection should also be in accordance with the Region's program requirements. For additional information, see Appendix A.
- H. Consent for SUAS Use. OSHA personnel will attempt to obtain express consent from the employer prior to deploying an SUAS on any inspection. This consent is not required to be in writing. The Compliance Officer will advise the employer of the purpose of using the SUAS. To ensure the safety and cooperation of individuals that may be affected by the aerial inspection, OSHA must notify employees in the vicinity of the aerial inspection prior to launching a SUAS. Employers may be initially apprehensive towards the use of the SUAS, due to concerns related to unassociated hazards that may exist in the vicinity of the proposed flight operation. To address an employer's concerns, the RPIC will inform employers of the altitudes and intended route of flight, as well as safety measures being taken to ensure overall safe operations. Whenever the employer refuses to consent to the SUAS flight, OSHA personnel will take the following steps:
  - 1. CSHOs will attempt to obtain as much information as possible about the establishment and the reasons for the employer's refusal.
  - 2. CSHOs will then report the refusal to the Area Director who, in consultation with the Regional Office, SPM, and the CSHO, will determine whether the inspection can be completed without use of the SUAS.
  - 3. If the Area Director determines that use of the SUAS is essential to the inspection,

they shall inform the RSOL of the employer's refusal to determine if a warrant is needed. (See Field Operations Manual, Chapter 15, Legal Issues).

4. If there is a delay in deployment of the SUAS, CSHOs should consider any site preservation and chain of custody issues.
- I. SUAS Operational Limitations. SUAS operations will follow the manufacturer's instructions and all applicable OSHA, FAA, state, and local rules and regulations. The RPIC must comply with the operational limitations found in Subpart B of Part 107, or apply and obtain approval for FAA waiver when unable to operate under Part 107 rules. The RPIC must ensure that they keep apprised of any changes to Part 107, as well as FAA advisory circulars, or safety of flight information. These operational requirements include, but are not limited to, the following:
1. The RPIC and/or the VO must keep a visual line-of-sight with the SUAS.
  2. The SUAS may be operated only during daylight hours (i.e., generally between sunrise and sunset, subject to the specifications of 14 CFR § 107.29).
  3. Flight speed must not exceed 100 mph.
  4. The SUAS may not operate higher than 400 feet above the ground, except when within 400 feet of a structure. In these cases, they are permitted to fly up to 400 feet above the structure's immediate uppermost limit.
  5. The SUAS must yield the right of way to all manned aircraft.
  6. The SUAS may not operate over any persons not directly participating in the operation, unless they are under a covered structure or inside a stationary vehicle that can provide reasonable protection from a falling SUAS.
  7. The RPIC must have their current Airman/Remote Pilot Certificate readily accessible during all SUAS operations.

Recommended best practices for SUAS operations are included in detail in Appendix A to this directive.

- J. Accident Reporting. No later than 10 calendar days after an operation that meets the criteria of either paragraph (a) or (b) of 14 CFR § 107.9, a RPIC must report to the FAA any operation of the SUAS involving at least:
1. Serious injury to any person or any loss of consciousness; or
  2. Damage to any property, other than the SUAS, unless one of the following conditions is satisfied:
    - A. The cost of repair (including the materials and labor) does not exceed \$500; or
    - B. The fair market value of the property does not exceed \$500 in the event of total loss.

These accident reports must be submitted through the FAA's DroneZone website at <https://faadronezone.faa.gov/#/>.

Note that SUAS accidents and incidents meeting certain criteria must also be reported to NTSB. See 49 CFR 830.5 and [NTSB SUAS Operator Advisory](#) for additional details and reporting requirements/timeframes.

The Regional Administrator must also be notified immediately of any incidents involving injury to any person or damage to any property, even if the incident is not required to be reported to the FAA under Part 107. The Regional Administrator will report these events to the National Office. If an event is to be reported to the FAA or NTSB, the Regional Administrator and the National Office will be notified prior to any such notification to the FAA or NTSB.

Workers reporting accidents and injuries involving the use of SUAS, or other unsafe conditions or concerns involving SUAS as well as workers who might sustain injuries because of a SUAS crash or have safety concerns involving SUAS flight plans or paths may have whistleblower protections under one or more of the whistleblower statutes enforced by OSHA. Workers and employers should be aware of OSHA's resources and best practices concerning worker rights and employer responsibilities, available at <http://www.whistleblowers.gov>.

- XV. Coordination. This Instruction will be coordinated by the Directorate of Construction (DOC). Questions and comments should be directed to DOC at (202) 693-2020 or by fax at (202) 693-1689 (10 pages maximum please). The [DOC Webpage](#) provides additional contact information and links to related OSHA compliance and outreach.

## **Appendix A: Recommended Best Practices for OSHA Regional Small Unmanned Aircraft System (SUAS) Program**

### **I. Pre-Deployment**

Each Region shall have a deployment kit which should include the following items:

- Spare / extra batteries.
- Battery chargers including a car charger.
- Extra memory cards.
- Two way radios for ground communication.
- Binoculars.
- Laptop.
- Smart Phone or Tablet.
- Spare parts kit (rotor blades, etc.).
- Tool kit.
- UV lenses kit for SUAS camera.
- Caution Tape
- Flags
- Weather station (or similar equipment able to measure wind speed)
- Wind sock (or similar equipment)
- Landing pad

Pre- and post-flight checklists should be developed for each SUAS in accordance with the manufacturer's instructions. These procedures will address any ancillary system that may need servicing, for example, the backing up of data and the replacement of batteries in controller equipment. Pre-flight checks must include an assessment of the navigation system (GPS), spatial orientation & flight awareness systems, and recognition of unsafe flight parameters, including advisories, cautions, and warnings as listed in the SUAS operating manual.

### **II. Pre-Flight Operations**

Before flight operations begin, the SUAS Program Manager (SPM) will ensure that the mission is approved and that a qualified team is available to conduct the operation. The SPM will ensure that the SUAS mission is conducted under 14 CFR Part 107. A team must include a RPIC and a Safety Monitor. Additionally, a VO may be used to assist the RPIC as needed. The role of the Safety Monitor must be carried out by the CSHO conducting the inspection. Except for SUAS operations conducted by a third-party vendor on behalf of the Region, the roles of RPIC and VO must be carried out by employees of OSHA. If the SUAS operation is contracted out to a third party, the RPIC and VO may be non-OSHA personnel; however, the third-party vendor must use a Safety Monitor and that role must be carried out by the CSHO conducting the inspection.

The VO will assist the RPIC to identify and avoid other air traffic or objects aloft and/or on the ground. The VO shall ensure constant contact with the RPIC, and is responsible

for maintaining overall situational awareness of the flight environment. The VO is responsible for the timely recognition, and notifying the RPIC, of hazardous conditions, such as obstacles, non-participating aircraft, or introduction of non-essential equipment or personnel, as well as the formation of hazardous weather activity within the flight environment.

The Safety Monitor's role is to help ensure the overall safety and effectiveness of the SUAS operation by communicating with the RPIC about the evidence being sought, ensuring that the RPIC is aware of his/her surroundings, and maintaining proper crowd control around the RPIC. The Safety Monitor also assists the RPIC and VO, including providing assistance between crew members when the VO repositions to maintain a visual line of sight with the SUAS. If properly qualified and trained as a VO, the Safety Monitor may assist the VO and be used as an additional crew member (i.e., VO) on locations where it is not possible for the VO to maintain visual contact with both the SUAS and the RPIC.

All team members, as well as other OSHA staff, will be briefed regarding mission parameters and expectations, roles and responsibilities, safety precautions, operating parameters, and limitations. If the flight is to support an inspection, the SPM along with the CSHO will brief the team on the evidence needed and the mission of the flight. The VO or Safety Monitor must understand the evidence collection system (including collection procedures) and how to preserve evidence in order to assist the RPIC. Prior to beginning a SUAS operation, a checklist must be developed and used by the RPIC. The checklist, as informed by 14 CFR § 107.49, should include those requirements and any additional considerations, such as:

- The mission to be performed.
- Pre-flight inspection of equipment, including but not limited to connectivity between SUAS and controller; controller and tablet/smartphone; cameras; anti-collision sensors; basic controls (e.g. take/off and landing, hover, rotate, left, right, forward, backwards); GPS connectivity; magnetic interference; etc.
- Go/No-Go conditions, including weather, wind, and visibility.
  - As a best practice, the RPIC should utilize Federal Aviation Administration (FAA) approved weather resources such as: Meteorological Terminal Aviation Weather Reports (METARS), Terminal Area Forecasts (TAF), Notices to Airmen (NOTAMs), and Temporary Flight Restrictions (TFRs) to obtain the best information.
  - Wind conditions should not exceed the aircraft limits stated in the aircraft operations manual/specifications. An anemometer can be utilized in order to help determine if the wind speed is within the acceptable limits to fly the SUAS.
  - The RPIC should ensure that the flight will occur within the weather requirements specified in 14 CFR § 107.51(c)-(d). Basic Visual Flight Rules (VFR) are summarized as three (3) statute miles flight visibility, and the SUAS must be kept at least 500 ft. below a cloud and at least 2,000 ft. horizontally from a cloud.
- Aircraft in the area.
- An employer's or land owner's express consent to use the SUAS, if applicable.

- Notification of affected personnel on the site.
- Hazards to aviation and flight restrictions. Verify through the [FAA B4UFLY](#) mobile app, FAA NOTAMs, and FAA TFRs. For additional information on NOTAMs and TFRs, please see the FAA NOTAMs/TFR website at [https://www.faa.gov/pilots/safety/notams\\_tfr/](https://www.faa.gov/pilots/safety/notams_tfr/)
- Consideration of site specific hazards, e.g. cables, antenna, vehicles. Conduct a survey of the proposed area of operation. Prepare a list to describe potential hazards and possible mitigation techniques, as well as a sketch of the site to highlight locations. Once the locations are recorded, define the flight route(s) to include direction and proposed altitudes, as well as to identify what evidence is to be collected, if applicable. Use this as a tool to brief all participants.
- “Geo Fencing” of the site area by the SUAS manufacturer. This is a relatively new issue which is beginning to involve larger areas. Check with the SUAS manufacturer to confirm how this is to be addressed.
- Brief the methods of communication between participants and crew members. While two-way radio communication is not specifically required, it serves as an efficient means of communication at extended distances between crew members and participants.
- A team briefing for all team members.
- Discuss the planned operation with those having an interest in the flight operation. Explain what you are doing, why, and where they should be located (a safe location) during the flight.
- Under Part 107, SUAS pilots planning to fly in controlled airspace must obtain permission from the FAA. Flight within controlled airspace requires authorization. These necessary authorizations can be obtained using the Low Altitude Authorization and Notification Capability (LAANC), including through electronic applications. LAANC provides operators with access to controlled airspace at or below 400 feet, provides awareness of restricted or no-fly areas, and provides air traffic control operators with situational awareness on where SUAS are operating. LAANC automates the application and approval process for these airspace authorizations. The system affords an option of notification to local air traffic control towers when specifically requested in an authorization. For additional information on these airspace authorizations and LAANC, see the FAA LAANC website [https://www.faa.gov/uas/programs\\_partnerships/data\\_exchange/](https://www.faa.gov/uas/programs_partnerships/data_exchange/)
- Verification with local law enforcement to ensure compliance with state and local ordinances.
- Checking the FAA’s NOTAM website for the local operating area at <https://notams.aim.faa.gov/notamSearch/nsapp.html#/>
- Abort procedures. Several conditions may require a flight to terminate, including un-forecasted weather, unanticipated aircraft incursions, or degraded SUAS operations, such as inertial navigation, GPS, or aircraft system failure. The RPIC and SUAS operator should refer to their respective operating manual and flight procedures to ensure a thorough understanding and operability of the system.
- Alternate/emergency landing site.
- Flight operations.

SUAS use on-site will be the responsibility of the senior on-site OSHA official. The RPIC will make the final determination if a flight will be conducted. When working in an area with other federal agencies and employers, coordination will be made with all parties on-site prior to using the SUAS. When operating under the Incident Command Structure, airspace surrounding the incident may be restricted. You must coordinate with the Incident Commander for approval to operate the SUAS within the restricted airspace.

In circumstances when OSHA is conducting an inspection onsite and SUAS flights are requested of OSHA by another government/public entity, such flights will be considered. In each instance, the Regional Administrator will make the decision whether such flights will be conducted.

All flight operations will be conducted in accordance with FAA rules, state and local regulations, and applicable OSHA guidance, including the Field Operations Manual. State and local governments may impose stricter guidelines concerning SUAS operations. The SPM, Area Director (AD), and RPIC are responsible for identifying and following state and local SUAS laws, requirements, restrictions and/or special conditions that may be present in the area of intended operation.

The RPIC's primary mission is to safely operate the SUAS. The RPIC has the authority to conduct, not conduct, or abort a flight for any reason. Furthermore, the RPIC will ensure that each SUAS mission adheres strictly to the operational limitations set forth in FAA Part 107 rules or within the authorization granted under any applicable Part 107 waiver.

Advisory Circular (AC) 120-51E - Crew Resource Management describes the requirements for crew members to operate cooperatively during a flight to prioritize essential tasks, enhance safety, and avoid omission of critical tasks during times of peak workloads. It is important for crew members to discuss critical aspects of the planned flight, and delineate division of duties to safely conduct the proposed operation.

The VO and Safety Monitor's primary responsibilities are to assist the RPIC in maintaining situational awareness and alerting the RPIC of unsafe or unforeseen circumstances. The VO and Safety Monitor will make recommendations to the RPIC on conditions at the flight operation site and will invoke the abort procedures if required.

### **III. Post-Flight Field Procedures**

A post-flight field checklist should be followed based on the type of SUAS system used. Each SUAS should have its own checklist in accordance with the manufacturer's instructions. At a minimum, the checklist will address the following:

- SUAS airframe, antenna, motors, and electronics are free of visual damage following inspection. Remove debris and clean if necessary.
- Camera is free of damage and lens is clean.
- Gimbal, if equipped, is free of damage and secured for transport.



- Rotor blades are free of damage and clean, and are removed from SUAS for transport.
- Batteries are removed from SUAS, and any other equipment (e.g., the camera), visually inspected, and stored for transport.
- SUAS battery use is documented in the maintenance logbook.
- Onboard recording systems data is collected and preserved, if equipped.
- Team members are debriefed and the flight report, which includes mission details, accomplishments, successes/failures, and all equipment used in the operation, is completed.
- Equipment is reset for use.
- Data is copied to suitable media for use.
- Batteries are charged as necessary.
- Lenses of cameras, monitors, and any other equipment used for visual awareness during flight is cleaned.

#### IV. **Post-Flight Office Procedures**

After each SUAS operation, the team should conduct a debriefing either in-person, or by remote means, with the SPM and the office requesting support. The report should provide the SPM and AD with the following:

- Post-flight briefing, including the documented flight report (see paragraph V).
- Mission summary description.
- Mission accomplishments and any outstanding actions.
- Successes/failures for the SUAS operation to develop lessons learned.

After each SUAS operation, the following items should be completed:

- Copy data to suitable media for use.
- Charge batteries in accordance with the manufacturer's instructions.
- Store equipment in accordance with office procedures and the manufacturer's recommended actions.

#### V. **Flight Report**

The RPIC and/or the VO should complete and submit a flight report to the AD, with a copy to the SPM, within three to five business days of the flight. The flight report should discuss the mission and any relevant information about the operation of the SUAS. The flight report should also include the team members involved in the operation, date and times of flights, location of operation, operational airspace flown in, SUAS flight specifics (maximum altitude, maximum distance, weather conditions, cloud/fog clearance, wind speed, and visibility), type of SUAS used, identification number of SUAS, a brief description of the information gathered, and a description of any incidents involving injury to persons or damage to property during the operation of the SUAS. A copy of the flight report should be placed in the inspection casefile, if applicable. Each inspection entered into the OSHA information system (OIS), which involves the use of

an OSHA or other contracted SUAS, coded with the appropriate national office code N-01-DRONE.

## VI. Program Monitoring and Evaluation

The SPM should collect and evaluate the flight reports, and identify trends, best practices, lessons learned, training issues, planning issues, and any equipment/supply needs. This should be done even for SUAS operations conducted by a third-party vendor on behalf of OSHA. The SPM should report to the Regional Administrator on the status of the program annually.

## VII. Training

The key to continued safe operations is through maintaining a professional level of competency. The first step is establishing minimum qualifications for selecting potential operators and crew members, and the second step involves training those personnel. A Regional SUAS training plan must be developed by the SPM and receive approval from the Regional Administrator. This program must address the following subjects:

- **Initial Training.** VOs and RPICs must have completed initial training prior to participating as a member of a SUAS flight team. Initial training, at a minimum, must include:
  - Requirements of Part 107.
  - Requirements of General Operating and Flight Rules (14 CFR Part 91).
  - Knowledge of the rules and responsibilities described in this directive and the regional UAS Program.
  - Training Base Tasks (as described below).
  - Training should follow traditional Part 141 pilot school characteristics. Note that there is no current FAA requirement to apply Part 141 to SUAS training and qualification. For additional information about Part 141 pilot training, please see the FAA/Part 141 Pilot Training website at [https://www.faa.gov/licenses\\_certificates/airline\\_certification/pilotschools/](https://www.faa.gov/licenses_certificates/airline_certification/pilotschools/).
- **Initial Training for Safety Monitors.** Safety Monitors must have completed initial training prior to participating as a member of a SUAS flight team. Initial training for Safety Monitors, at a minimum, must include knowledge of the rules and responsibilities described in this directive and the regional SUAS Program.
- **Training Base Tasks**
  - *Training base tasks for the RPIC.* These tasks will be demonstrated to the SUAS coordinator/evaluator. Examples of training base tasks for the RPIC include, but are not limited to:
    - Understanding of take-off and emergency landing procedures, including recovering to a designated location.
    - Demonstrate the ability to take off the SUAS from the ground to a hover, perform directional flight, fly the SUAS in normal flight mode to an altitude determined by the coordinator/evaluator, conduct maneuvering flight, avoid

- obstacles designated by the coordinator/evaluator, and land the SUAS.
- Demonstrate knowledge and a thorough understanding of preflight inspection procedures, including identification of SUAS discrepancies that would render the aircraft unsafe for flight.
  - Demonstrate knowledge and competency regarding SUAS operations involving other crew members, including working effectively with a VO.
    - *Training base tasks for the VO.* Examples of training base tasks for the VO include, but are not limited to:
  - Understanding of take-off/landing considerations, weather conditions, hazards, and pre-designated or identified no-fly zones, as briefed to him/her by the RPIC.
  - Understanding of meteorological (weather) conditions as briefed to him/her by the RPIC.
  - Understanding, and demonstrate proficiency in assisting the RPIC controlling the SUAS, in visually tracking the SUAS.
  - Understanding of how to perform as a flight crew member, and brief-back details pertaining to their position as a VO (route of flight, emergencies, return-to-home recovery location, hazard avoidance, and mishap procedures) to the RPIC.
- Recurring Training.
    - All SUAS flight team members shall maintain proficiency in their operator/observer/safety monitoring abilities.
    - For RPICs and VOs, recurring training is not limited to actual operating/observer skills but includes knowledge of all pertinent UAS/aviation matters.
    - For RPICs, recurring training for operator skills will be conducted in accordance with the requirements of the FAA and this directive.
    - Other recurrent training for SUAS flight team members, including knowledge of the rules/responsibilities of this directive and the regional SUAS program, shall be conducted, at a minimum, annually.
    - Appropriate recurring training will be conducted any time inadequacies in an SUAS flight team member's skills or knowledge indicate that they may no longer have the requisite understanding or skill necessary to properly operate the SUAS equipment or perform their required tasks safely.
    - Training Base Tasks for RPIC and VOs (as described above).
    - The RPIC must demonstrate flight proficiency and currency, in accordance with the requirements of the FAA, for retention of their Remote Pilot Certificate with a SUAS rating.

## VIII. **Maintenance and Recordkeeping**

OSHA SUAS will be maintained according to each SUAS manufacturer's prescribed maintenance schedule, and maintenance must be performed after each operation. If the manufacturer does not have a prescribed program, the SPM will develop

one. Additionally, the RPIC or operator should conduct an inspection of each SUAS after every flight operation. The inspection includes, but is not limited to, normal maintenance procedures and the following:

- Airframe inspection and replacement of necessary components. Replaced components will be placed out of service.
- On-board and exterior electronic component inspection and replacement of necessary components. Replaced components will be placed out of service.
- Mandatory rotor blade (propeller) inspection and replacement as required by the manufacturer. Replaced rotor blades will be placed out of service and discarded/destroyed to prevent accidental re-use.
- Testing of all batteries (onboard and exterior) which includes: voltage, amperage testing, and replacement of necessary batteries. Failed batteries will be placed out of service.
- Software and firmware updates to the most current versions for all components and systems.

The SPM shall ensure that information pertaining to the operation of each SUAS and each flight operation conducted by the RPIC is maintained (in accordance with OSHA and any applicable FAA requirements). This information must be kept in hardcopy and/or electronic logbook format for future reference.

RPICs are responsible for maintaining information pertaining to flight operations they conduct. This information must include, at a minimum:

- Name and certificate number of the RPIC.
- SUAS name and registration number.
- Dates of flights.
- Times of flights, which also includes the duration of each flight.
- Location of flights, which also includes the total distance of each flight.
- Weather conditions during flights.
- Visibility condition during flights.
- National Airspace System (NAS) operated in.
- Waivers and/or approvals obtained by the FAA or airport operators.
- Individuals involved in the operation (e.g. SPM, VO, Safety Monitor, etc.).
- Day or night (with approved waiver) operation.
- Notes on any maintenance issues, equipment failures, or accidents.
- Other aircraft involved in the operation, if any.

The SPM and RPIC are responsible for ensuring that information pertaining to the operation of each SUAS operated within their region is kept and maintained according to OSHA and any applicable FAA requirements. Separate logbook records will be maintained for each SUAS in the regional fleet. This information will include, but is not limited to:

- Field use (missions) and flight time (hours).

- Maintenance performed during operations (pre & post).
- SUAS repairs and alterations.
- 20 hour maintenance inspection results.
- Use of each battery for each SUAS system.

## IX. Accident Reporting

The FAA requires notification of certain SUAS accidents. The applicable FAA regulation under 14 CFR § 107.9 requires that:

No later than 10 calendar days after an operation that meets the criteria of either paragraph (a) or (b) of this section, a RPIC must report to the FAA any operation of the SUAS involving at least:

- Serious injury to any person or any loss of consciousness; or
- Damage to any property, other than the SUAS, unless one of the following conditions is satisfied:
  - The cost of repair (including materials and labor) does not exceed \$500; or
  - The fair market value of the property does not exceed \$500 in the event of total loss.

These accident reports must be submitted through the FAA's DroneZone website at <https://faadronezone.faa.gov/#/>.

Note that SUAS accidents and incidents meeting certain criteria must also be reported to NTSB. See 49 CFR 830.5 and [NTSB SUAS Operator Advisory](#) for additional details and reporting requirements/timeframes.

The Regional Administrator must be notified immediately of any incidents involving injury to any person or damage to any property, even if the incident is not required to be reported to the FAA under Part 107. The Regional Administrator will report these events to the National Office. If an event is to be reported to the FAA or NTSB, the Regional Administrator and the National Office will be notified prior to any such notification to the FAA or NTSB.

Workers reporting accidents and injuries involving the use of SUAS aircraft, or other unsafe conditions or concerns involving SUAS aircraft, as well as workers who might sustain injuries because of a SUAS crash or safety concerns involving SUAS flight plans or paths may have whistleblower protections under one or more of the whistleblower statutes enforced by OSHA. Workers and employers should be aware of OSHA's resources and best practices concerning worker rights and employer responsibilities, available at <http://www.whistleblowers.gov>.

## Appendix B: Sample Regional Program Outline

# OSHA Small-Unmanned Aircraft Systems (SUAS) – Sample Regional Program Outline



**I FLY SAFE**

All drones are aircraft—even the ones at the toy store. So when I fly a drone I am a pilot. Before I fly I always go through my pre-flight check list. I regularly check the safety guidelines at [faa.gov/uas](http://faa.gov/uas)

**PRE-FLIGHT CHECKLIST**

- I fly below 400 feet
- I always fly within visual line of sight
- I'm aware of FAA airspace requirements: [faa.gov/uas/tr](http://faa.gov/uas/tr)
- I never fly over groups of people
- I never fly over stadiums and sports events
- I never fly within 5 miles of an airport without first contacting air traffic control and airport authorities
- I never fly near emergency response efforts such as fires
- I never fly near other aircraft
- I never fly under the influence

**FLY SMART, FLY SAFE, AND HAVE FUN!** [knowbeforeyoufly.org](http://knowbeforeyoufly.org)  
[faa.gov/uas](http://faa.gov/uas)

 **Federal Aviation Administration**



## **OSHA - Small Unmanned Aircraft Systems (SUAS) Sample Regional Program Outline**

- I. Introduction
  - Purpose and Limitations
- II. Definitions
  - Acronyms, Symbols, and Abbreviations
- III. Key Positions and Descriptions
  - Flight Crew / Team
  - Related Personnel
  - SUAS Equipment and Proper Selection
- IV. Key Personnel Duties and Requirements
  - Remote Pilot in Command (RPIC)
  - Visual Observer (VO)
  - Safety Monitor (SM)
  - Medical Factors
    - Physical
    - Mental
    - Over-The-Counter / Prescription Drugs
  - Third Party Contractors
- V. Training and Flight Evaluation
  - Instructors
  - Training Plans
    - Initial Training
    - Recurring Training
    - Training Base Tasks – RPIC
    - Training Base Tasks – VO
    - RPIC Flight proficiency and currency
- VI. SUAS Operations – Planning and Deployment
  - Mission Needs / Requirements
  - Deployment Request for SUAS Operations
  - SUAS Operations Conducted by Third Party Vendors
  - Pre-deployment Preparations

- Environmental Survey and Hazard Assessment
- Brief Affected Personnel
- Pre-flight Operations
  - Pre-flight planning
  - FAA Advisory Circular ([AC 90-48D](#))
- Weather
  - Existing Weather Conditions
  - Predicted Weather Conditions
  - Wind
    - Speed
    - Direction
- Communication – SUAS and Crew
  - Proper Crew Communication
  - Electronic Communication
  - SUAS Communication Equipment / Remote Control
  - Transmission Range and Environmental Factors
- SUAS Flight Operations / Operational Limitations
- Emergency Procedures
- Flight Area / Perimeter Management
- Employer / Property Owner Consent
- Post-flight Operations
  - In the Field
  - In the Office
- SUAS / Equipment Maintenance

## VII. Checklists

- Pre-Flight
- Flight Operations
- Post-Flight

## VIII. Inspections and Equipment Maintenance

- Pre-flight
- Post-flight



- IX. Incident Reporting
  - Criteria for Reporting
    - FAA
    - NTSB
  - Regional Administrator Notification
    - National Office Notification
  - OIS Coding
  - Preservation of Evidence
  - Whistleblower Protections
- X. Recordkeeping
  - Flight Reports
  - Annual Program Audit
  - Logbook – RPIC
  - Logbook – SUAS
  - Records Retention
- XI. Additional Information / Links
  - References
  - SUAS / Drone Resources – OSHA
  - SUAS / Drone Resources – External