# **Unmanned Aircraft Aviation Event Inspector Sheet**

# **For Reference and FAA Use Only**

The purpose of the Unmanned Aircraft Aviation Event Inspector Sheet is to assist FAA inspectors in an evaluation of requests for unmanned aircraft operations at aviation events. The inspector sheet is used to inquire, understand, identify, and mitigate, to the extent necessary the risks associated with unmanned aircraft operations during aviation events.

The information contained in this Unmanned Aircraft Aviation Event Inspector Sheet, while not a conclusive list, is a tool intended to establish collaboration between unmanned aircraft aviation event applicants and FAA inspectors to help FAA inspectors make site-specific risk-based decision for the integration of unmanned aircraft into aviation events by considering operational descriptions, risks associated with operations, performance-based mitigations and other relevant information submitted by an unmanned aviation event participants. This inspector reference tool is best used through collaboration with an event organizer.

Once the inquiry is completed and the operational details, risk, and performance-based mitigations or solutions establish that any risks associated with operations are mitigated to an acceptable level and operations can be safely conducted during an aviation event, a management official may then decide to authorize operations.

IMPORTANT: This tool is not intended to be used as a questionnaire to be given to an aviation event participant to fill out and returned. This process should be used in conjunction with the Unmanned Aircraft Aviation Event Checklist. Any change to this reference tool is not authorized.

**SECTION I:**

**EVENT INFORMATION:**

| **Event Name:** | Click here to enter text. |
| --- | --- |
| **Responsible Person:** | Click here to enter text. |
| **Responsible Person Permeant Address:** | Click here to enter text. |
| **Responsible Person Phone:** | Click here to enter text. |
| **Responsible Person Email:** | Click here to enter text. |

**WHERE WILL THE EVENT TAKE PLACE? LOCATION OR AIRPORT:**

| Click here to enter unlimited text. |
| --- |

**Is the location a Part 139 Certificated Airport?**

Click to select one.

| Click here to enter unlimited airport information and text. |
| --- |

**Is there any Emergency Response Plan for these events?**

Click to select one

**Are there any Ground Operations Plans for this event?**

Click to select one.

**WHAT ARE THE DATES AND TIMES OF THE EVENT?**

| **Each Date Start Time** | **Each Date Stop Time** |
| --- | --- |
| Click to enter a date and time. | Click to enter a date and time. |
| Click to enter a date and time. | Click to enter a date and time. |
| Click to enter a date and time. | Click to enter a date and time. |

**What types of unmanned aircraft demonstrations will take place during the event?**

[ ] Airshow [ ] Air Race[ ] Recreational [ ] Military

**Which 14 CFR Part(s) will unmanned operations take place?** **Select all that apply.**

[ ]  **§44809 (Recreational) (See AC-91-57B or as amended)**

[ ]  **Part 107 (Under 55 Pounds)**

[ ]  **Part 91 (Over 55 Pounds)**

**Will any of your unmanned aircraft operations take place over people?**

[ ]  **Yes** [ ]  **No**

**If yes, select which category(s) of unmanned aircraft are applicable.**

[ ]  **Category I (Risk)** [ ]  **Category II (Risk)** [ ]  **Category III (Risk)**

[ ]  **Category IV (Airworthiness Certificate)**

**If Category II or III operations, are there any Declarations of Compliance and Means of Compliance?**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**Has the event responsible person ever had a Certificate of Waiver application (FAA Form 7711-2) denied?**

Click to select one.

| Click here to enter unlimited text. |
| --- |

**Has the event responsible person ever had a Certificate of Waiver (FAA Form 7711-1) canceled or revoked?**

Click to select one.

| Click here to enter unlimited text. |
| --- |

**WHO WILL BE FLYING DURING THE EVENT?**

**Please list all pilots, ratings, and certificate numbers.**

| **Name** | **Rating** | **Certificate #** |
| --- | --- | --- |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |

**WILL THERE BE AN AIR BOSS DURING THE EVENT?**

Choose an item.

**If yes, please list all Air Bosses names and Letter of Authorization designations:**

| **Name** | **Designation** |
| --- | --- |
| Click here to enter text. | Choose an item. |
| Click here to enter text. | Choose an item. |

**UNMANNED AIRCRAFT MAKE, MODEL, AND REGISTRATION NUMBERS THAT WILL FLY DURING THE EVENT:**

| **Make** | **Model** | **Registration #** |
| --- | --- | --- |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |

**WAIVERS, AUTHORIZATIONS, AND EXEMPTION INFORMATION:**

**Do any unmanned aircraft have airworthiness certificates?**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**Do any unmanned aircraft have a special airworthiness certificate?**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**Are any individuals issued waivers from any regulations? Current waiver number?**

**Note: For help or specific question concerning a 14 CFR Part 107 waiver, contact the UAS Support Center at 844-FLY-MY-UA, or** **UAShelp@faa.gov** **and if you have it, include the waiver number in your request.**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**Are any individuals issued exemptions from any regulations?**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**Are any individuals issued ATO air show specific certificates of authorizations? Authorization number?**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**If military unmanned aircraft will be participating, is there a “Secretary of Defense Waiver?**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**Do any participants have operations manuals or training manuals?**

Choose an item.

| Click here to enter unlimited text. |
| --- |

**SECTION II:**

**GUIDING CONSIDERATIONS FOR UNMANNED AIRCRAFT INTEGRATION AT AVIATION EVENTS.**

The guiding considerations listed below are to be used as reference tools for an FAA inspector to consider when attempting to achieve insight and make site-specific, risk-based decisions regarding the integration of unmanned aircraft at aviation events.

A thorough understanding of the safety risk process for unmanned aircraft integration in aviation events requires FAA inspectors to consider and examine three major components in any concept of operations that includes; description of operations of unmanned aircraft scenarios at aviation events, risks associated with operations, and performance-based mitigations and solutions to risks.

For understanding risk levels and applying risk acceptance a see FAA order 8040.4B Appendix C, Safety Risk Definition Tables, and Risk Matrix.

Once completed by an FAA inspector, a successful safety risk assessment must establish that unmanned aircraft operations can be safely conducted during an aviation event in which a certificate of waiver / authorization may be issued.

**GUIDING CONSIDERATIONS:**

1. Consider methods to ensure all persons involved in the operation are free of any distractions that may prevent them from fulfilling their duties, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
2. Consider methods for the remote pilot to see and avoid other aircraft, avoid flying over people on the ground, and avoid ground-based structures and obstacles during event operations, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
3. Consider methods by which the remote pilot will be able to continuously know and determine the position, altitude, attitude, and movement of their unmanned aircraft and ensure the aircraft remains in the area of intended operation without exceeding the performance capabilities of the command and control link the risks associated with this task, and the performance-based mitigation or solutions to the risks.
4. Consider methods to assure all required persons participating in the operation have relevant knowledge of all aspects of operating an unmanned aircraft during an aviation event, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
5. Consider communication methods to be used by the Air Boss, Air Traffic Control, or responsible person in the event the operation needs to be terminated, as well as a method to notify Air Traffic Control when the operation begins and ends, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
6. Consider methods to ensure the active (i.e., ever-changing) area-of-operation is properly evaluated for potential hazards and the risks presented to non-participating persons and property by those hazards are controlled or eliminated, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
7. Consider the description of the area of operation utilizing latitude/ longitude, maps, street addresses, and/or identifiable landmarks including the distance from and direction to the nearest airport (e.g. 4.8 miles SE of XYZ Airport), the risks associated with operating near this location and the performance-based mitigation or solutions to the risks.
8. Consider methods to ensure that in the event of loss of date link or loss of C2 connectivity the unmanned aircraft is programmed to immediately implement fail-safe measures that will ensure no harm to humans or property, the risks associated with this task, and the performance-based mitigations or solutions to the risks.
9. Consider methods by which the remote pilot is alerted of a degraded unmanned aircraft system function, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
10. If multiple unmanned aircraft are flown, consider methods to resolve the failure of a single unmanned aircraft as well as multiple unmanned aircraft simultaneous failures, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
11. Consider methods to ensure a loss of control of the unmanned aircraft at higher speed poses no additional hazard or consider how any additional hazard to other aircraft, people, or property on the ground will be controlled or eliminated, the risks associated with this task, and the performance-based mitigation or solutions to the risks.
12. Consider information about unmanned aircraft operating conditions or operating limitations that if published, must be followed to safely operate at an aviation event, the risks associated with this task, and the performance-based mitigation or solutions to the risks.

**SECTION III:**

**PLEASE ADD ANY ADDITIONAL COMMENT NECESSARY.**

|  **OFFICE USE ONLY** |
| --- |

| **DATE:** | Click to enter a date. |
| --- | --- |
| **OFFICE:** | Click here to enter text. |
| **INSPECTOR:** | Click here to enter text. |
| **COMMENTS:** | Click here to enter unlimited text. |

**DEFINITIONS:**

The definitions listed below are provided to help an inspector understand specific terms when considering information provided by an unmanned aircraft aviation event participant providing voluntary answers and information to any collaboration inquire.

What is a Procedure?

A detailed description is meant to be followed for a consistent outcome.

What is a Description?

A complete and detailed commentary that is informative about a subject topic and its parts, in a manner that its underlying ideas and concepts and their linkage becomes clear and is capable of being understood.

What is a Method?

An established, logical, or systematic process or procedure that creates, establishes, confirms, or verifies that an action achieves, meets, or exceeds accepted practices, rules, regulations, and specific standards with accuracy and efficiency leading to the reduction, mitigation, or transfer of risk associated with that process or procedure. Simply stated, a process by which a task is completed: a way of doing something.

 What is a Process?

 A series of steps or events or a set of procedures, which produces a result or results.

What is Risk Management?

The identification, assessment, and prioritization of a condition that could foreseeably cause or contribute to harm followed by a coordinated application of resources to minimize, monitor, and control the probability, likelihood, severity, and impact of an unfortunate event.

What is a Performance-Based Means of Compliance or Equivalent Level of Safety?

Predetermined, acceptable procedures, techniques, instruments, processes, or solutions that can be substituted and implemented instead of regulatory obligations that when used during operations do not degrade, reduce, or compromise a level of safety prescribed by an original regulatory obligation.

What is Criterion / Criteria?

An accepted standard or practice is used in making a decision or judgment about something.

What is a Special Provision?

An addition or revision to a standard or supplemental specifications that enhances, complements, and Considers requirements not adequately Considered by other regulatory or contractual requirements or documents applicable to an individual project.

**MEANS OF COMPLIANCE:**

The list below provides examples of, but not the only examples of procedures, methods, techniques, instruments, processes, solutions, or strategies that a participant may present and consider to reduce or eliminate an unplanned event or reduce the possible risk to humans during an aviation event.

**DECLARATIONS OF COMPLIANCE AND MEANS OF COMPLIANCE FOR UNMANNED AIRCRAFT.**

For more information on Declarations of Compliance and means of compliance associated with operations over people, see the Operations of Small Unmanned Aircraft Systems over People final rule:

[Operations Over People Final Rule Hyperlink](https://www.faa.gov/news/media/attachments/OOP_Final%20Rule.pdf)

For more information on Remote Identification of Unmanned Aircraft, see the Remote Identification of Unmanned Aircraft final rule:

[Remote ID Final Rule Hyperlink](https://www.faa.gov/news/media/attachments/RemoteID_Final_Rule.pdf)

| * Aircraft Type Certified
* Defined area restricted to access (only certain individuals can access the location)
* Fail-Safe Flight termination system (No return to home) (Commanded to crash)
* Survey identifying the potential hazards located on the route of flight
* Visual Observers
* Hands-free duplex communication devices
* geo-fence
* Differential colored lighting
* Telemetry
* Day-light site survey and mapping
* Pre-operation crew briefing
* Restricted access operation location
* Tether
* sUA lighting is visible to other aircraft for at least 3 statute miles
* Area artificial illumination
* C2 on a non-ISM frequency
* Restricted access location
* Operations within Restricted Airspace
* Operations within a TFR
* sUA size, but no distance operated from RPIC and control manipulator, limits the ability to maintain LOS
* Training program
* Operational manual system
* SMS
* Maintenance program
* Design and or demonstrated sUAS reliability
* Redundant C2 links with GCS
* Aircraft Highly visible to other airspace participants
* System detects all other aircraft operating that could pose a collision hazard
* System maintains a distance of 250 feet vertically and 2000 feet horizontally from all aircraft
* sUA operations can detect persons and moving vehicles, and avoid overflying them
* sUAS notification provided to the RPIC of system degradations and malfunctions
* sUAS design has redundant systems and architecture
* sUA is highly visible (3sm) to other airspace users
* sUA size and weight do not pose a hazard to non-participating human beings and other airspace users
 | * System uses a secondary non-GPS based system to know it's location, and can accurately navigate for a significant period and distance
* sUA communicate positions with each other, and that communications path goes through the GCS
* sUA communicate positions with each other, and the communications path does not utilize a GCS
* sUAS operations provide for a buffer zone where a failure would result in an sUA excursion from the operations area or buffer zone
* secondary C2 and standby RPIC to hand over control of malfunctioning sUA to
* sUA size and weight and design do not pose an injury risk to human beings during sUA or sUAS malfunctions
* sUAS notification to remote PIC of sUA or sUAS malfunction or degradation
* No waivers issued for this section
* sUA size and weight do not pose an injury risk when impacting a human being
* sUA design features reduce the energy transferred to a human being in an impact, and the resulting energy transfer does not pose the risk of a serious injury to a human being
* sUA uses an energy-dissipating device to lower the kinetic energy transferred to a human during an impact with a human being, the resulting energy transfer does not pose a risk of a serious injury
* sUAS incorporates a parachute system meeting ASTM F3322-18
* sUA has design reliability equaling the failure rates outlined in 14 CFR Part 23
* Continuing sUA reliability program
* Operational manual system
* Non-ISM C2
* Strategic mitigations to avoid most overflight of human beings
* Flight termination system
* sUAS design has redundant systems and architecture
* sUAS software design assurances and version control
* sUAS operates within an area restricted to access by non-participating human beings
* Physical barriers preventing the sUAS from impacting a human being or others property in the event of a sUAS malfunction
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