

# Part 91 UAS **DAA** Waiver Checklist

Intended for:

**Public Safety Organizations, operating as a Public Aircraft, using electronic detection and avoidance (DAA) systems as their primary collision avoidance mitigation**

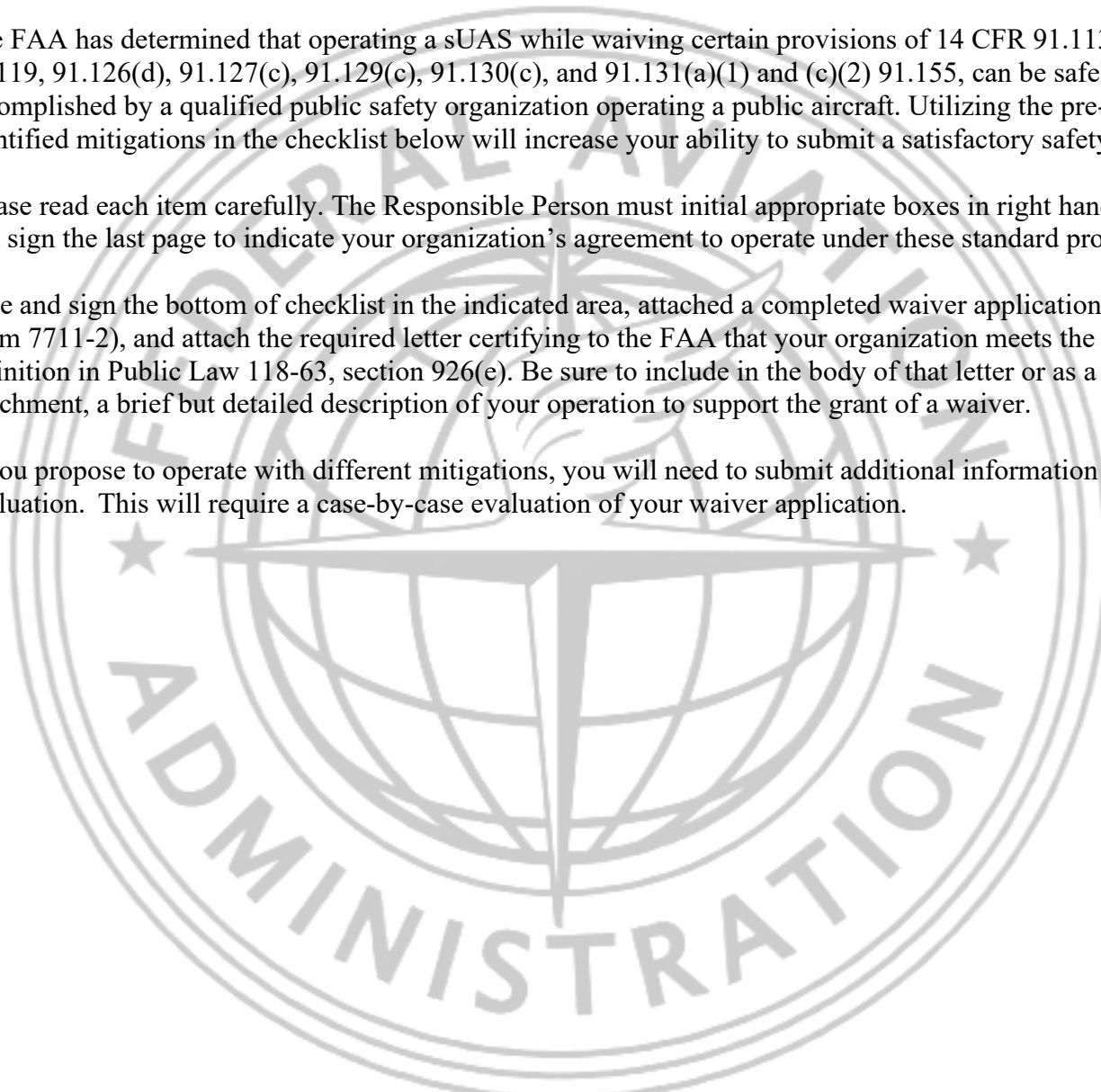
These ops are often called ‘Drone as First Responder (DFR)’ or ‘Drone-in-a-Box (DIB)’, but are operations that require a waiver to 91.113 and other regulations, and which rely on electronic detection systems as a safety mitigation. This is not intended for applicants conducting operations using obstruction shielding as a primary mitigation. Those applicants should use the 91.113 BVLOS -200 foot shielded ops checklist.

The FAA has determined that operating a sUAS while waiving certain provisions of 14 CFR 91.113, 91.119, 91.126(d), 91.127(c), 91.129(c), 91.130(c), and 91.131(a)(1) and (c)(2) 91.155, can be safely accomplished by a qualified public safety organization operating a public aircraft. Utilizing the pre-identified mitigations in the checklist below will increase your ability to submit a satisfactory safety case.

Please read each item carefully. The Responsible Person must initial appropriate boxes in right hand column and sign the last page to indicate your organization’s agreement to operate under these standard provisions.

Date and sign the bottom of checklist in the indicated area, attached a completed waiver application (FAA Form 7711-2), and attach the required letter certifying to the FAA that your organization meets the legal definition in Public Law 118-63, section 926(e). Be sure to include in the body of that letter or as a separate attachment, a brief but detailed description of your operation to support the grant of a waiver.

If you propose to operate with different mitigations, you will need to submit additional information for evaluation. This will require a case-by-case evaluation of your waiver application.



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For Public Safety Organizations Operating Public Aircraft**

Item #	Provision	Notes/Other	Initials
1	The attached waiver application (FAA Form 7711-2) is from a Public Safety Organization (PSO), operating a <b>small UAS as a Public Aircraft under 14 CFR part 91</b> . To obtain this expedited waiver, we are petitioning for a waiver to 14 CFR 91.113, 91.119, 91.126(d), 91.127(c), 91.129(c), 91.130(c), and 91.131(a)(1) and (c)(2), and 91.155.	This waiver relies on electronic detection and avoidance systems as a primary mitigation for collision avoidance. This is a 'technology' based waiver relying on electronic detect-and-avoid systems such as radar, acoustic, or visual detection systems.  <b>Note: If the PAO/PSO wants to conduct BVLOS operations more than 200 feet above the ground or further than 50 feet from an object at any point during the flight, acceptable technology will be required to mitigate the risk. Use this checklist for those operations.</b>	
2	The person applying for this waiver certifies to the FAA that they represent a Public Safety Organization (PSO) as defined in Public Law 118-63, Section 926(e) and are operating a public aircraft as defined in 49 USC 40102(a)(41).	<b>Note: Not every Public Safety Organization meets the statutory definition of a Public Aircraft Operation. Operating for a commercial purpose, such as seeking reimbursement for operations from another agency, nullifies Public Aircraft Operations. Applicants are cautioned to seek competent legal counsel to determine their eligibility for public aircraft status. See 49 USC 40102(a)(41) and 40125 for statutory language.</b>	
3	A complete description of the proposed operation (or Con Ops) and justification that establishes the operation can safely be conducted under the terms of a certificate of waiver is included as a separate attachment with this waiver application.	Explain what your organization does as a public aircraft, what operations the organization uses drones for, and under what circumstances you might need to operate BVLOS, or Over People, or Over Moving Vehicles (when and why).  <b>Include this description and justification either in the body of the letter required above, or as a separate attachment.</b>	
4	The Responsible Person of this organization accepts direct responsibility for safety of operations conducted under this Waiver and will ensure the Remote Pilot in Command (RPIC), manipulator of the controls, and visual observer(s) (VO) comply with all provisions of this Waiver.	The Responsible Person is typically the Chief, Assistant Chief, Chief Pilot, or other senior level person who will be accountable to the FAA for compliance with the Flight Regulations.	

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5	The person applying for this waiver acknowledges that airspace authorizations for controlled above the UAS Facility Map (UASFM) grid height, or inside special use airspace (see 91.127 thru 91.145) requires a separate airspace authorization issued by FAA or DoD Air Traffic Control.	Airspace authorizations are required for controlled airspace (unless operating below facility maps altitudes) and special use airspace are obtained separately from the 91.113 waiver. These requests can be granted with a Special Governmental Interest (SGI) temporary, emergency authorization, or by a Certificate of Authorization (COA) issued by the Air Traffic Organization on a FAA form 7711.	
6	<p>The sUA will be equipped with anti-collision lighting to increase the conspicuity of the sUA to 1 statute mile for daytime operations and 3 statute miles for civil twilight and/or night operations. The intensity of the anti-collision lighting may be reduced if, because of operating conditions, it would be in the interest of safety to do so.</p> <ol style="list-style-type: none"> <li>In order to comply with Title 14 CFR § 91.209, the aircraft must have position lighting that enables determination of location altitude, attitude, and direction of flight.</li> <li>Prior to conducting operations that are the subject of the COW, the remote PIC and VO (if used) must be trained to recognize and overcome visual illusions caused by darkness and understand physiological conditions which may degrade night vision. This training must be documented and must be presented for inspection upon request from the Administrator or an authorized representative.</li> </ol>	<p>This is usually an aftermarket add-on product. Position lights are NOT anticollision lights. Red or White are the only acceptable colors for an anti-collision light. The anti-collision light must always be on during flight.</p> <p><b>Note: "Lights out" operations are not permitted due to the unacceptable risk to manned aircraft.</b></p>	
7	The sUA will be equipped with Standard Remote ID unless otherwise authorized by the FAA in writing.	Standard Remote ID is a requirement to operate not in VLOS of the RPIC. See 89.115 (2)(ii).	

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8	<p>The sUA will be Part 107 subpart D Category 1, 2, 3, or 4 compliant and listed on the FAA accepted Declaration of Compliance for operations over people page, <a href="https://uasdoc.faa.gov/listDocs">https://uasdoc.faa.gov/listDocs</a> or:</p> <ul style="list-style-type: none"> <li>a. An sUA weighing up to and including 0.88 pounds at takeoff equipped and operated with a mechanism to shield or prevent rotating components (i.e., prop guards or prop brake mechanism) from causing lacerations to human skin; or</li> <li>b. An sUA weighing more than 0.88 pounds at takeoff equipped with a Parachute Recovery System (PRS) that conforms to the ASTM F3322-18 (or newer) standard and operated in accordance with the manufacturer's operator manual equipped and operated with a mechanism to shield or prevent rotating components (i.e., prop guards or prop brake mechanism) from causing lacerations to human skin. The PRS manufacturer's operator manual must be accessible to the remote PIC at all times during the operation. A digital copy of this manual is acceptable; or</li> <li>c. For those operations where it is necessary to operate over a human being in order to safeguard human life, in these situations the remote PIC must not operate any lower or in proximity to human beings or moving vehicles necessary to accomplish the operation and must not operate over people for any duration of time longer than it is necessary to safeguard that human life;</li> </ul>	<p>The Special Governmental Interest (SGI) process is available for emergencies when it is not possible to comply with the regulations. This process enables a temporary, emergency waiver issued by the FAA Systems Operation Support Center.</p> <p>Operators are cautioned that every "call out" is not a life-safety emergency. Operations over open-air assemblies of people are typically not life-safety emergencies either, for example.</p>	
9	<p>The maximum speed of the sUA shall not exceed 87 knots (100 miles/ hour).</p>		



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10	The maximum takeoff weight of the sUA and all attachments (such as prop guards, Parachute Recovery System (PRS), remote ID module, camera, anti-collision light, and/or payload) must be less than 55 pounds.		
11	The Remote Pilot will use a detection system to identify aircraft that are transmitting on ADS-B out (978 MHz and 1090 MHz).  ADS-B out transmissions will be received or obtained through a sensor/receiver owned, operated, or controlled by the Operator, onboard the UA itself, or an FAA approved UTM third party data service provider.		
12	The RPIC shall have situational awareness of air traffic in the vicinity of the operation, and be in compliance with §91.111.	§91.111 is not waived, so it is imperative that the Responsible Person and the RPIC understand the sUA must still give way and not pose a collision hazard to manned aircraft at all times during the flight.	
13	Prior to each flight, time permitting, a checklist will be completed by the RPIC to identify potential ground and air hazards that are within 1 statute mile of the intended operating area or route of flight. The checklist will: <ul style="list-style-type: none"> <li>a. Be briefed to VO(s) (if VOs are used), and person(s) flying the drone, and</li> <li>b. Identify the following items, at a minimum: <ol style="list-style-type: none"> <li>1) Areas or routes of low-level helicopter and airplane operations, such as helipads, grass airstrips, airports, military operations areas below 500 feet above ground level (AGL), tour operator flights, and farmland suitable for agricultural aircraft operations,</li> <li>2) Location(s) of expected pedestrian and/or vehicular traffic, and</li> <li>3) Highest obstacle or obstruction that may be encountered.</li> </ol> </li> </ul>	A visual observer is not required to operate under this waiver. However, operators are encouraged to use one or more VOs to assist the RPIC with important aviation tasks such as airspace clearance, obstacle avoidance, assisting in the avoidance of persons on the ground, and overall situational awareness.	

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14	<p>During Visual Line of Sight Operations:</p> <ul style="list-style-type: none"> <li>a. With vision that is unaided by any device other than corrective lenses, the remote pilot in command and the person manipulating the flight control of the small unmanned aircraft system, must be able to see the unmanned aircraft throughout the entire flight, and</li> <li>b. During a VLOS operation, the UA will be operated up to 400 feet (AGL), or UASFM grid height altitude, whichever is lower.</li> </ul>		
15	<p>During Beyond Visual Line of Sight (BVLOS) Operations:</p> <ul style="list-style-type: none"> <li>a. The UA will remain at or below 400 feet above the ground, or</li> <li>b. Within 50 feet of an obstruction in Class G Airspace,</li> <li>c. At or below the UASFM altitudes in Class B, C, D or E (Surface Area) airspace, and</li> <li>d. If the sUA is operated into areas where the effectivity or coverage of the DAA system is compromised, the maximum altitude will not exceed 200 feet AGL.</li> </ul>	<p>For purposes of this waiver, “obstruction” means any physical object, man-made or natural, that would stop or impede the flight of the sUA if physical contact is made.</p> <p>NOTE: A complete submission of information about the Detection system, the concept of operation, procedures to be utilized is required, and must address (See optional CMD-DAA form):</p> <p>For example, the waiver analyst will likely want to know the:</p> <ul style="list-style-type: none"> <li>a. General description (CONOP) of the BVLOS operation (who, what, when, where, how, and why),</li> <li>b. Make/model and number of supported UA and Ground Control Stations used in this operation,</li> <li>c. Make/model and number of detection sensors and description of what kind of system it is (radar, acoustic, visual or a combination thereof), components and any other information that informs the FAA about the risk associated with that system and mitigations to those risks,</li> <li>d. Description of the DAA system limitations or restrictions that limit UAS operations,</li> <li>e. Description of the typical operating altitude and max altitudes of the UA during operations (remember to consider the Minimum Deployment Altitude of the PRS, if required),</li> <li>f. Map showing physical location of sensors, coverage area of sensors, ground or airborne, the location of Remote PIC, the planned operational area, and locations of any heliports in the vicinity,</li> </ul>	

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	(Item #15 cont.)	<p>g. List the procedures to be followed in the event of lost signal or a flyaway,</p> <p>h. Description and map of the airspace in the coverage area, and, if applicable, whether it lies within the Mode C Veil of a Class B airport,</p> <p>i. List and describe telemetry information provided to the Remote PIC, and</p> <p>j. Describe the aircraft avoidance strategy. <b>Describe how, when, and how far away from the UA the system alerts the Remote PIC of potential conflicts,</b> and what actions will be taken by the Remote PIC and/or the system when a collision risk increases to a point where action needs to be taken to avoid risk of collision. Describe how the system detects and alerts both cooperative and non-cooperative (aircraft not transmitting ADS-B are called 'non-cooperative') aircraft in the vicinity of the coverage area, and what the system will do when it detects an aircraft nearby.</p>	
16	The Detect and Avoid (DAA) system(s) specified in the CONOP, and the waiver application will be active and under observation by the remote PIC or Electronic Observer, as applicable, during all operations. Information about this system will be provided under a separate document to this checklist, submitted with the waiver application.	For purposes of this waiver, an 'electronic observer' is a human being, collocated with the Remote PIC, who assists the Remote PIC with situational awareness and systems monitoring.	
17	<p>The minimum flight visibility, as observed from the location of the control station will be no less than 3 statute miles. In addition, the minimum distance of the sUA from clouds will be no less than:</p> <p>a. 500 feet below the cloud; and</p> <p>b. 2,000 feet horizontally from the cloud.</p>	<p>For purposes of this waiver, flight visibility means the average slant distance from the control station at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.</p> <p>SGI waivers can be issued by the FAA SOSC for operations in weather below minimums.</p>	

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18	<p>Prior to takeoff, the sUAS will be programmed to execute a pre-programmed return-to-home (RTH) command if the signal is lost. The RTH altitude will avoid any obstructions along the RTH route and;</p> <ol style="list-style-type: none"> <li>The UA must remain at or below 400 feet above the ground, or</li> <li>within 50 feet of an obstruction in Class G Airspace, and</li> <li>at or below the UASFM altitudes in Class B, C, D or E (Surface Area) airspace.</li> </ol>	For purposes of this waiver, "obstruction" means any physical object, man-made or natural, that would stop or impede the flight of the sUA if physical contact is made.	
19	<p>In the event of an emergency/fly-away toward an area or airport where the PIC has determined the UA may create a hazard to aviation, the PIC will immediately contact the ATC facility having jurisdiction for the airspace;</p> <p>The PIC will provide the following information:</p> <ol style="list-style-type: none"> <li>Nature of emergency,</li> <li>Last known UA position, altitude, and direction of flight, and</li> <li>Maximum remaining flight time.</li> </ol>		
20	<p>The operator, by the most expeditious means available, will report all aircraft accidents, incidents, or occurrences to the National Transportation Safety Board (NTSB) in accordance with 49 CFR 830; and</p> <p>The Operator will report to the Federal Aviation Administration (FAA) via email, at <a href="mailto:9-AVS-AFS-750-91.113Waivers@faa.gov">9-AVS-AFS-750-91.113Waivers@faa.gov</a>, the following:</p> <ol style="list-style-type: none"> <li>Each event where a UA was operated less than 500 feet vertically and/or horizontally from an aircraft with at least one person onboard. Include the closest point of approach between the two aircraft in straight line distance, horizontal distance, and vertical distances, and</li> <li>The date and description of any event in which the UA experiences a loss of control.</li> </ol>		



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Public Aircraft Operator		Responsible Person
Name:		Name:
Address 1:		Signature:
Address 2:		Title:
City:		Date:
State/Territory:		Phone Number:
Zip Code:		Email Address:
Webpage:		Office number:

