

# Landing Page

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## **Welcome to the FAA's Air Carrier Operational Considerations for Unmanned Aircraft Systems (UAS): Market Survey**

Thank you for your interest in the Air Carrier Operational Considerations for Unmanned Aircraft Systems: Market Survey. Your participation is completely voluntary and greatly appreciated. Participants will be compensated \$50.00 for time completing the questionnaire.

Please note the following requirements for eligibility to participate.

- You must work for an organization or crew that operates or plans to operate UAS; or
- You must be affiliated with an educational institution that provides UAS training

If you meet either of these requirements and would like to participate, please click next to read the informed consent and begin participation.

## **Participation Eligibility**

Which of these statements best applies to you?

- I work with an organization or crew that operates, or plans to operate, unmanned aircraft systems (UAS)/drones
- I am affiliated with an educational institution that provides UAS/drone training
- None of the above

# Informed Consent

## Informed Consent to Participate in Research Study

Air Carrier Operational Considerations for Unmanned Aircraft Systems: Market Survey

Principal Investigator (PI): Kevin W Williams, Ph. D., Office of Aerospace Medicine, Human Factors Flight Deck Laboratory (AAM-510)

Co-investigator: Thomas E. Nesthus, Ph. D., Office of Aerospace Medicine, Human Factors Flight Deck Laboratory (AAM-510)

Sponsor: FAA Flight Standards Service – Air Carrier Training Systems and Voluntary Safety Program Branch (AFS-280)

## Invitation to Participate in Research Study

Dr. Kevin W. Williams and Dr. Thomas E. Nesthus, Research Psychologists in Aviation Safety, invite you to participate in a research study about crew requirements, knowledge and skill requirements, and duty/rest requirements for Unmanned Aircraft System (UAS) pilots. This study involves participating in an online survey and, if you choose to participate, you will complete the survey on a computer/device of your choosing. The findings of the study will assist the Federal Aviation Administration in the development of pilot requirements, crew requirements, and duty/rest requirements for UAS operators. There will be an estimated 160 participants. You have been selected as a possible participant in this study because you either (a) work with an organization or crew that operates, or plans to operate, UAS or (b) are affiliated with an educational institution that provides UAS training. If you do not meet these criteria, you may not participate in this survey. Questions are included in the survey to exclude participants who do not meet these criteria. Further, voluntary participation in this survey implies you have read, understand, and provide consent to participate in the following survey.

This study is sponsored by the FAA Air Transportation Division (AFS-200), which has no financial interest in the outcome of this study. This survey is being conducted by Dr. Williams and Dr. Nesthus, of the Aerospace Human Factors Research Division at the Civil Aerospace Medical Institute in Oklahoma City, Oklahoma. The Aerospace Human Factors Research Division and investigators do not have any financial interest in the outcome of the study.

## Compensation

Participants who complete the survey will be compensated \$50.00 for participation in the study.

Payment will be made through a third-party contractor, Neese Personnel. As a reminder, ***the entire survey must be completed*** to receive compensation.

## Description of Participant Involvement

If you agree to participate in this study, your involvement will last approximately 45 minutes. During this time, you will be asked to respond to various questions about your experiences with, and your organization's requirements for, UAS operations. These questions will require you to click on

response options or to type your answers into a text box. Participation in this survey is voluntary. Further, even if you choose to participate, you are not required to answer every question and you may stop participating at any time without penalty.

### **Potential Benefits**

There are no direct benefits from participating in this study, but you will be compensated for your time as noted in **Compensation** previously. Although you may not directly benefit from being in this study, others may benefit because your answers will be used to help us better understand currently used or planned crew and staffing practices for operating UAS outside the scope of CFR 14 Part 107. The information gained through industry representatives will help the FAA to standardize the issuance of UAS air carrier operating certificates and duty/rest requirements.

### **Risks and Discomforts**

There are no risks associated with this study because the data collection is anonymous.

### **Alternative Procedures or Courses of Treatment**

Participation in this study is completely voluntary and you may choose to not participate at all. If you do not choose to participate, you will not be penalized or lose benefits or services unrelated to the research. Refusal to participate or to continue to participate will not harm or influence your FAA certificates.

### **Participant's Rights**

The Institutional Review Board responsible for human subject research at the Civil Aerospace Medical Institute has reviewed this research project and found it to be acceptable, according to applicable state and federal regulations designed to protect the rights and welfare of subjects in research.

### **Confidentiality**

Your responses will be kept private to the extent provided by law. Your responses go directly to a contractor for removal of any personally identifiable information, before the FAA has access to the dataset. Your research records that are reviewed, stored and analyzed at the Civil Aerospace Medical Institute will be kept on FAA servers/computers at the Aerospace Human Factors Research Division, 6500 South MacArthur, Oklahoma City, Oklahoma 73169. To ensure your confidentiality, any personally identifying information collected via the survey will be removed from the data before it is provided to the FAA's primary investigators. In the data records, you will be assigned a random, unique identifier to maintain your anonymity. Data provided to the FAA will be reported in aggregate and no individual responses will be provided. Data are stored on a computer that is encrypted, password-protected, and safeguarded against hacking by special software. The data from the study will not be made available to other researchers for related studies. For compensation purposes, your name and address will be collected at the end of the survey through a third-party contractor, **Neese Personnel**. This information will not in any way be linked to your survey responses and will be solely used for providing compensation.

We will keep your participation in this research study confidential to the extent permitted by law. However, it is possible that certain people or groups may inspect and copy records pertaining to

this study. Examples groups include the Federal Aviation Administration's Office of Aerospace Medicine Institutional Review Board. This is a committee that reviews and approves research studies for the protection of Human Subjects. Some of these records for review could contain personal information that identifies you. Reasonable efforts will be made to keep your personal information contained in the research record private and confidential. But, absolute confidentiality cannot be guaranteed.

In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared and results will be reported in aggregate.

### **Participation and Withdrawal**

To participate in this study, you must (a) work for an organization or crew that operates or plans to operate UAS or (b) are affiliated with an educational institution that provides UAS training. If you do not meet these criteria, you may not participate in this study. Your participation is completely voluntary and it is your choice to participate. You may decline to participate or withdraw your participation from the study at any time. The choice to decline or withdraw from the study will not cause any penalty or loss of any benefit to which you are entitled.

### **Contact Information**

If you have questions about the study, please ask them before agreeing to participate in this survey. You can ask any questions that you have about this study at any time.

For questions, concerns or complaints about this study, please contact the principal investigator, (Dr. Kevin W. Williams at 405-954-6843 or [kevin.williams@faa.gov](mailto:kevin.williams@faa.gov)) or research staff at 405-954-1594 or 9-AMC-SurveySupport@faa.gov.

If you feel that you have been treated unfairly, or you have questions regarding your rights as a research participant, you may contact Dr. Thomas Chidester, of the Civil Aerospace Medical Institute Institutional Review Boards (a group of people who review the research to protect your rights) at 405-954-1003

### **Signature and Consent to be in the research study**

Note: Click [here](#) for an Adobe Acrobat copy of the informed consent terms and conditions, which you can print and/or save to your computer (opens in a new window).

Please note that this **survey should be completed in one sitting**. You will not be able to save and come back to the survey once you start.

Please indicate whether you consent to participate by selecting the appropriate response below.

I understand that as a Federal Aviation Administration (FAA) or Department of Transportation (DOT) employee participating in the study during my normal duty hours and with permission from my supervisor, I will not be compensated additionally beyond what I am already receiving from my employer.

- I consent to participate
- I do not consent to participate

You indicated that you do not want to participate in the this research questionnaire.

To decline participation, select Exit Questionnaire. If you would like to participate in the Questionnaire, select Return to Informed Consent and click 'Next.'

- Exit Questionnaire
- Return to Informed Consent

## **Demo**

Thank you for agreeing to participate in this study. Please type your first name, last name, and email in the boxes below. The information you provide will not be associated with your survey responses. This information is being collected in case we need to contact you about issues with your survey compensation.

First Name

Last Name

Email

Currently, what is your primary job role? (**Required**)

- Pilot/Operator (control the drone)
- Engineer (build, maintain equipment)
- Cargo Operator (load packages, people for transport)
- Sensor Operator (control equipment on the drone)
- Instructor (teaches about drones, regulations, best practices, etc.)
- Manager or Supervisor
- Other (please describe)

In brief, please describe your job role:

In brief, please describe the main responsibilities of your job:

How many years of experience do you have with your current role(s)?

Years

The organization that I work for is, or plans to be, a: (**Mark all that apply**) (**Required**)

- Drone service operator (uses drones to make money)
- School or training program (teaches students about drones)
- Manufacturer of drones (e.g. drone hardware, control station equipment, software)
- Works with drones, but none of the above (please describe)

In what capacity does your organization work with drones?



Please select the industry or sector that best describes the current or planned drone operations of your organization:  
(**Mark all that apply**) (**Required**)

- Military or Military Contractor
- Infrastructure (e.g., energy, roads, oil and gas, and construction)
- Agriculture
- Shipping or Package Delivery
- Passenger Transport (Air Taxi)
- Emergency Response (e.g., local law enforcement, disaster and accident)
- Entertainment and Media (e.g., film-making, pictures)
- Real Estate
- Academic/Scientific Research
- Education
- Other (please describe)

Other industry or sector, please describe:

Does your organization currently, or have plans to, conduct UAS air carrier delivery operations? (**Required**)

Yes

- No
- Don't Know

Does your organization have plans to conduct UAS air taxi services (carriage of people for hire)? (**Required**)

- Yes
- No
- Don't Know

Are you currently trained, licensed, or certified to fly a drone?

- Yes
- No
- Don't Know

Which of these certificates do you hold? (**Mark all that apply**)

- 14 CFR Part 107 certificate (i.e., remote pilot certificate)
- 14 CFR Part 61 certificate (i.e., manned pilot certificate)
- Instrument rating
- Military-qualified (RPA) pilot

- Non U.S. (foreign) license
- I fly drones as a hobby
- Other (please describe)
- I do not hold a certificate

Other certificates, please describe:

Which of these certificates are required for your job?  
(**Mark all that apply**)

- 14 CFR Part 107 certificate (i.e., remote pilot certificate)
- 14 CFR Part 61 certificate (i.e., manned pilot certificate)
- Instrument rating
- Military-qualified (RPA) pilot
- Non U.S. (foreign) license
- Other (please describe)

Other certificates, please describe:

Do you hold a Trusted Operator certificate from AUVSI?

- Yes, as a pilot
- Yes, as an instructor
- No, I hold a certificate(s) from another organization
- No
- N/A or Don't Know

What certificate(s) do you hold from another organization?  
Please describe.

What is your estimate of the number of certified UAS/drone pilots employed by the organization where you work?

Number of pilots

On an **average day**, how many UAS/drone flights (operations) does your organization fly?

Number of flights

On an **average day**, how many drones does your organization fly **at the same time** (across all locations where your organization flies)?

Number of drones

Given current resources, what is the **maximum** number of drones your organization can fly at the same time?

Number of drones

For the **typical** operation at your organization, what is the **maximum** number of drones a **single pilot flies at the same time**?

Number of drones

What is the **minimum** number of crewmembers needed for a flight operation according to your organization's policies?

Crewmember(s)

Please list the crewmembers needed for a flight operation according to your organization's policy.

How many total crewmembers are directly involved during **a normal** drone operation?

Crewmember(s)

## UAS Equipment

What is the **maximum** takeoff weight of the drones you are involved with *in pounds*?

lbs.

What kind of drones are you operating? (**Mark all that apply**)

- Fixed wing
- Single rotor wing
- Multi-rotor wing (If this option is selected please enter the number of rotors directly below)

- Transition (vertical to horizontal)
- Other (please describe)

Other, please describe:

What level of automation most accurately describes the autonomous nature of the drones you operate?

- Pilot manually controls the drone, which may include manipulating the actual flight controls
- Minimal automation (e.g., pilot programs the flight plan, performs takeoffs and landings)
- Pilot monitors flights and only intervenes when an abnormal event or emergency occurs)
- Extensive automation, no human intervention from takeoff to landing

What automated functions are available and required on your aircraft?

	Available		Required	
	Yes	No	Yes	No
Takeoff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flight Path (waypoints)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hover or Holding Pattern	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	Available		Required	
	Yes	No	Yes	No
Obstruction Avoidance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traffic Collision Avoidance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lost Link Procedure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Return Home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Landing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please describe)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other available automation (please describe)

Other required automation (please describe)

## Crew & Staffing 1

Does your organization permit the transfer of controls or responsibilities from one pilot to another while a drone is in flight?

- Yes
- No
- Don't Know

Please describe the procedure (e.g., physical exchange of controls, electronic switch to different set of controls, etc.)

What do you anticipate to be the **minimum** number of crewmembers needed for air carrier flight operation according to your organization's policies?

Crewmember(s)

Please provide the job title of each crewmember position in the air carrier operation.

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## **Air Carrier 1**

**Will there be someone** to assist passenger(s) with getting into the aircraft?

- Yes
- No
- Don't Know

**Will there be someone** to assist passenger(s) with their safety harness/seat belt?

- Yes
- No
- Don't Know

**Will someone** provide a passenger(s) safety briefing before the flight?

- Yes
- No
- Don't Know

**Will there be someone** available on the ground to communicate with passenger(s) during the flight?

- Yes
- No
- Don't Know

**Will there be someone** to assist passenger(s) out of the aircraft?

- Yes
- No
- Don't Know

What **will be** the **maximum** number of passengers per trip?

Passengers

**Will** passengers be able to bring baggage?

- Yes
- No

**Will anticipated flight plans** follow established and mapped flight plans (e.g., published routes and procedures, company-derived flight plans)?

- Yes
- No
- Sometimes, please describe

Other, please describe if anticipated flight plans follow established and mapped flight plans?

What is the **anticipated average** in-flight time in a flight plan for your air carrier delivery operations?

Hours

Minutes

What is the **anticipated average** in-flight time in a flight plan for your air taxi services?

Hours

Minutes

What is the **anticipated maximum** in-flight time in a flight plan for your air carrier delivery operations?

Hours

Minutes

What is the **anticipated maximum** in-flight time in a flight plan for your air taxi services?

Hours

Minutes

What is the **average** weight of the cargo you carry on a flight *in pounds*?

lbs.

What is the **maximum** weight of the cargo you carry on a flight *in pounds*?

lbs.

What is the **anticipated average** weight of the cargo you carry on a flight *in pounds*?

lbs.

What is the **anticipated maximum** weight of the cargo you carry on a flight *in pounds*?

lbs.

How many **pickup** stops do you **make** on a flight before returning back to your base location?

Stops

How many **pickup** stops do you **anticipate** making on a flight before returning back to your base location?



Stops

How many **delivery** stops do you **make** on a flight before returning back to your base location?

Stops

How many **delivery** stops do you **anticipate** making on a flight before returning back to your base location?

Stops

Which of the following items will be available to the passenger(s) during the flight? (**Mark all that apply**)

- Emergency call button
- Sick bags
- Fire extinguisher
- Oxygen masks (protection against smoke or odors in cabin)
- Air bags
- Passenger-initiated land immediately button or switch

None of the above

Should the aircraft be equipped with an aircraft parachute?

- Yes
- No
- Don't Know

Will unaccompanied minors (children under age 18) be allowed?

- Yes
- No
- Don't Know

Will passengers be able to open the door during flight?

- Yes
- No
- Don't Know

Will passengers be able to open a window?

- Yes
- No
- Don't Know

If someone will be available to communicate with during the flight, would that communication be:

- Voice communication only
- Voice and video communication
- Other (please describe)

Other, please describe:

If communication is available, how will that communication be initiated?

- Open mike with ground personnel
- Press a button to request opening communication channel

- Push to talk button
- Other (please describe)

Other, please describe:

Will there be an indication of flight progress available to the passenger?

- Yes
- No
- Don't Know

Within the next few years (between now and the year 2025), what level of automation should be allowed for these types of flight operations?

- Waypoint flight should be totally automated with no ability for human intervention required
- Waypoint flight with potential remote pilot intervention by a remote monitoring only one aircraft

- Waypoint flight with potential remote pilot intervention by a pilot monitoring multiple aircraft
- Aircraft flight plan and flight path should always be under direct control of a remote pilot
- Other (please describe)

Other, please describe:

Beyond the next few years (after the year 2025), what level of automation should be allowed for these types of flight operations?

- Waypoint flight should be totally automated with no ability for human intervention required
- Waypoint flight with potential intervention by a remote pilot monitoring only one aircraft
- Waypoint flight with potential intervention by a remote pilot monitoring multiple aircraft
- Aircraft should always be under direct control of a pilot
- Other (please describe)

Other, please describe:

If remote pilot control is possible, what should be the lowest level of flight control automation available to the remote pilot?

- Waypoint (remote pilot can create, delete and edit waypoints during the flight)
- Vector (remote pilot can establish new target headings and altitudes during the flight)
- Flight surface (remote pilot has direct control of flight surfaces during the flight)

If a remote pilot is monitoring multiple aircraft, how many aircraft should be monitored (**maximum**)?

Aircraft

Should the aircraft be equipped with a fire suppression system?

- Yes
- No
- Don't Know

## **Staffing & Crew Selection**

Does your organization have established selection criteria for hiring drone crewmembers?

- Yes
- No
- No experience to say

For your current position, were you required to complete any organization-specific testing before you were hired?

- Yes
- No

If 'Yes', what kind of testing is required? (**Mark all that apply**)

- Knowledge Test
- Interview
- Skill Test
- Aptitude Test
- Personality Test
- Medical Screening
- Other (please describe)

Other testing required, please describe:

## **Instructor, Qualifications**

What are your organization's requirements to become an instructor?



Does your organization hold any certifications or authorizations for training drone pilots and/or operators?

- Yes (please describe)
- No

What kind of certificates or authorizations does your organization hold?

## Instructor Training

What certifications or degrees do you offer to those who complete your training? (**Mark all that apply**)

- Two-year degree from a college or university
- Four-year degree from a college or university

- AUVSI TOP certification
- Topic-specific certification
- Remote Pilot certificate (Part 107 compliant)
- We do not offer any recognized certification to those who complete the training

What type of operations do you provide training for?  
(**Mark all that apply**)

- Military
- Infrastructure Inspection
- Agriculture
- Shipping or Cargo Delivery
- Passenger Transport
- Emergency Response
- Entertainment and Media
- Real Estate
- Oil and Gas
- Academic/Scientific Research
- Education
- Surveillance
- Other (please describe)

Other, please describe:

Are your drone pilot education and training materials currently submitted to, or reviewed by, the FAA?

- Yes
- No
- No experience to say

Are your drone pilot education and training materials currently submitted to, or reviewed by, another government agency (not the FAA)?

- Yes
- No
- No experience to say

Please indicate which government agency reviews your training materials.

Are your drone pilot education and training materials currently submitted to, or reviewed by, a non-government agency?

- Yes
- No
- No experience to say

Please indicate which non-government agency reviews your training materials.

Do you provide training for night operations (i.e., flights that begin or end after civil twilight)?

- Yes
- No
- NA/Don't know

What type of automation techniques are taught during the training program? (**Mark all that apply**)

- Pilot manually controls the drone, which may include manipulating the actual flight controls, minimal automation
- Pilot programs the flight plan, performs takeoffs and landings
- Pilot monitors flights and only intervenes when an abnormal event or emergency occurs
- Complete autonomy, no human intervention from takeoff to landing

What types of drones do you provide training on? (**Mark all that apply**)

- Fixed wing
- Single rotor wing
- Multi-rotor wing (if this option is selected please enter the number of rotors directly below)

- Transition (vertical to horizontal)
- Other (please describe)

Other drone type (please describe):

What types of training do you offer? (**Mark all that apply**)

- Classroom training
- Computer-based/online training
- Supervised hands-on flight training
- Simulation training (please describe)

Simulation training (please describe):

## **Training Certification**

What are the minimum requirements necessary for drone pilots at your organization? (**Mark all that apply**)

- Remote pilot certificate
- Manned pilot certificate (e.g., commercial, private, sport)

- Organization-specific training
- Site-specific training
- Manufacturer training
- Other training or experience (please describe)
- N/A or Don't Know

Other training or experience, please describe:

What are the minimum requirements necessary for instructors to operate drones at your organization? (**Mark all that apply**)

- Remote pilot certificate
- Manned pilot certificate (e.g., commercial, private, sport)
- Organization-specific training
- Site-specific training
- Manufacturer training
- Other training (please describe)
- N/A or Don't Know

Other, please describe:

Does your organization require a minimum number of training flight hours at hire?

- Yes
- No
- Don't Know

If Yes, what number of flight hours is required?

Hours

## **Training Required**

**What training topics have you received training on?**



	<b>I have</b> received training for flying <b>drones</b> on this topic	<b>I have</b> received training for flying <b>manned</b> <b>aircraft</b> on this topic	I have <b>not</b> received training on this topic	No experience to say
Applicable Federal Aviation Regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accident reporting requirement of the National Transportation Safety Board	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of applicable portions of the Aeronautical Information Manual (AIM) and FAA Advisory Circulars (AC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of aeronautical charts for navigation under Visual Flight Rules (VFR) using pilotage, dead reckoning, and navigation systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radio communication procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recognition of critical weather situations from the ground and in flight and the procurement and use of aeronautical weather reports and forecasts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b><u>I have</u></b> received training for flying <b><u>drones</u></b> on this topic	<b><u>I have</u></b> received training for flying <b><u>manned</u></b> <b><u>aircraft</u></b> on this topic	I have <b><u>not</u></b> received training on this topic	No experience to say
Safe and efficient operation of the aircraft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effects of density altitude on aircraft takeoff and climb performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weight and balance computations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Principles of aerodynamics, aircraft engines, and systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stall awareness and recovery techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## What training topics have you received training on?

	<b><u>I have</u></b> received training for flying <b><u>drones</u></b> on this topic	<b><u>I have</u></b> received training for flying <b><u>manned</u></b> <b><u>aircraft</u></b> on this topic	I have <b><u>not</u></b> received training on this topic	No experience to say
Preflight preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preflight procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airport operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>I have</b> received training for flying <b>drones</b> on this topic	<b>I have</b> received training for flying <b>manned</b> <b>aircraft</b> on this topic	I have <b>not</b> received training on this topic	No experience to say
Takeoff, landings, and go-arounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performance maneuvers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ground reference maneuvers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slow flight and (aerodynamic) stalls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Basic instrument maneuvers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Night operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Post-flight procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Does your organization train and test drone pilots in the following specific areas?

Yes

No

No experience to say

Yes

No

No experience to say

A requirement to remain clear of and give way to manned aircraft at all times.

Distance limitations from other aircraft covering takeoff, landing and in-flight phases, obstruction clearance limitations, and airspeed limitations.

Prohibition on unauthorized flight beyond visual line of sight of the UAS pilot, and a means to detect-and-avoid other aircraft.

A requirement to plan a route of flight that avoids public use airports and approach and departure corridors, unless prior authorization is obtained, and alternatives if a flight cannot be completed as planned.

Yes

No

No experience to say

A requirement for remote pilots to communicate with and obtain any necessary authorization from air traffic control or the controlling agency for each flight in controlled airspace.

A requirement that any visual observers, be trained by the operator and briefed on the operation by the pilot in command before each flight.

Procedures to cease flight when hazardous conditions arise, or communications or control become degraded, without causing danger to other persons.

Standards and procedures covering the carriage of hazardous materials

Security procedures and security risks assessments.

What type of training does your organization require (**Mark all that apply**)?

- Computer-based/online training course
- Classroom operations training
- Classroom drone training
- Simulation drone training
- Field training using the drone
- Supervised on-the-job training (i.e., supervised operating experience)
- Recurrent training (repeated periodically)
- Other training (please describe)

Other required training, please describe:

Your organization requires **computer-based/online** training course. Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How long is the **computer-based/online** training course?

Hours

Minutes

Your organization requires **classroom operations** training.  
Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How long is the **classroom operations** training?

Hours

Minutes

Your organization requires **classroom drone** training. Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How long is the **classroom drone** training?

Hours

Minutes

Your organization requires **simulation** drone training. Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How long is the **simulation** drone training?



Hours

Minutes

Your organization requires **field** training using the drone. Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How long is the **field** training using the drone?

Hours

Minutes

Your organization requires **supervised on-the-job** training. Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How long is the **supervised on-the-job** training?

Hours

Minutes

Your organization requires **recurrent** training. Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How often is **recurrent** training required?

How long is the **recurrent** training?

Your organization requires Other required training, please describe:. Is this training:

- Provided by your organization
- Provided by a 3rd party training provider
- N/A or Don't Know

How long is the Other required training, please describe:?

What type of drone/UAS training have you completed, outside of your organization's requirements?

	Yes	No	Don't know
Computer-based/online training course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Yes	No	Don't know
Classroom operations training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Classroom drone training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Simulation drone training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Field training using the drone (i.e., in-person flight training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervised on-the-job training (i.e., supervised operating experience)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other training (please describe)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other type of training provided outside of your organization, please describe:

The training you completed outside of your organization's requirements was provided by:  
**(Mark all that apply)**

Provided by your organization

Provided by a 3rd party training provider

Computer-based/online training course

Classroom operations training

Classroom drone training

Simulation drone training

Field training using the drone (i.e., in-person flight training)

Supervised on-the-job training (i.e., supervised operating experience)

Other training (please describe)

Other training, provided by your organization, please describe:

Other training, provided by a 3rd party, please describe:

Please describe why your organization does not require training.

If your organization requires training when integrating a new drone, how long is the new training?

What type of **simulation** training device is used?

- Computer-based simulation
- Virtual reality
- Augmented reality
- Fixed-base training device (aircraft/ground control station replica/mock-up)
- None
- Don't know
- Other (please describe)

Other **simulation** training, please describe:

Is initial training provided within 14 days of hiring a new employee?

- Yes
- No
- No experience to say









	Not important	Somewhat important	Important	More important	Extremely important	Don't know
15. Long-term memory	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Mental rotation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Pattern recognition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Reaction time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Verbal comprehension and expression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Written comprehension and expression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Visual tracking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following list presents a set of knowledge items that are relevant to drone pilots/operators. For these items, we would like you to identify which knowledge items you have received training on as well as how important that knowledge is to the job of drone pilots/operators. You will be asked to indicate which of these knowledge items are needed for drone pilots/operators.

Have you received training on this **knowledge** area?

How important is this **knowledge** for drc on the job?













	Do your trainees receive training on this <b>knowledge</b> area?			How important is this <b>knowledge</b> for your trainee				
	Yes	No	Don't know	Not important	Somewhat important	Important	More important	Extrem import
13. Drone loading (e.g., weight and balance)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Drone performance (e.g., understanding operational data)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Aviation principles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Fatigue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



The following list presents a set of **skills**. For these items, indicate if your trainees receive training on that skill and how important that skill is for them as a drone operator/pilot.

	Do your trainees receive training in this <b>skill</b> area?			How important is this <b>skill</b> for your trainees'?				
	Yes	No	Don't know	Not important	Somewhat important	Important	More important	Extremely important



	Do your trainees receive training in this <b>skill</b> area?			How important is this <b>skill</b> for your trainees'?				
	Yes	No	Don't know	Not important	Somewhat important	Important	More important	Extremely important
13. Leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Takeoff and landing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Situational awareness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Time management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Instrument monitoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Risk assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Navigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Are there any other drone training topic areas (i.e. knowledge or skills) that you have received training on for your current UAS job role?

- Yes
- No

Other drone training topic areas, please describe:

Are there any other drone training topic areas (i.e. knowledge or skills) that your students have received training on for their UAS job role?

- Yes
- No

Other drone training topic areas, please describe:

Can you think of anything that would help make drone training better as an instructor or as a trainee?

Overall, how effectively has your training prepared you to complete the duties required of your position?

Not effective at all	2	3	4	5	6	Extremely effective
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What kind of additional job aids might be useful for your position?

## **Fatigue & Fitness for Duty**

Did any crewmembers in your organization participate in any continuous operations overnight in the last year?

- Yes
- No
- No experience to say

How many hours does your organization consider to be normal minimum rest periods?

Hours

Minutes

Does your organization have a policy that workers must take responsibility for their own fitness of duty?

- Yes
- No
- No experience to say

Does your organization have a policy that workers are required to arrive for work sufficiently well-rested to be able

to safely and reliably perform their work responsibilities throughout their scheduled duty period?

- Yes
- No
- No experience to say

Does your organization provide training on fatigue awareness and fatigue management?

- Yes
- No
- No experience to say

Please describe what measures you use to assess fitness for duty for your employees.

Does your organization have a process in place for identifying fatigue hazards in drone operations?

- Yes
- No
- No experience to say

If yes, please describe the process for identifying fatigue hazards.

Does your organization have a procedure for documenting fatigue hazards as they are identified?

- Yes
- No
- No experience to say

If yes, please describe the process for documenting fatigue hazards.



Does your organization collect data about fatigue risks from employees?

- Yes
- No
- No experience to say

If yes, please describe what data is collected from employees.

## **Fatigue**

During a single operation how long does a crew member stay on station?

Hours

Minutes

How long is a crew member required to stay on station before taking a break?

Hours

Minutes

What is the **maximum** length of time a crewmember should be required to stay on station?

Hours

Minutes

After how much time on duty does operator fatigue become risky?

Hours

Minutes

Why do you believe operator fatigue becomes risky after this amount of time?

On **average**, how many hours did you work each week excluding overtime in the last 3 months?

Hours

Minutes

How often do you travel for work?

Never



	Regular day off	Early morning shift starts before 0800	Day shift starts between 0800 & 0959	Mid-day shift starts between 1000 & 1259	Afternoon shift starts between 1300 & 1959	Midnight shift starts between 2000 & 0100
Thursday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saturday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past month, what is the **maximum** consecutive number of shifts of any kind you have worked without a day off?

Consecutive shifts

How many days off in succession do you normally have?

Days

How are your days off currently organized?

- Permanent days off that are the same every week
- Rotating days off
- Other (please describe)

Other, please describe:

Do you feel your time on position between breaks is:

- Extremely short
- Short, but acceptable
- Adequate time
- Long, but acceptable
- Extremely long

Do you feel that the time you get on break is:

- Extremely short
- Short, but acceptable

- Adequate time
- Long, but acceptable
- Extremely long

Have any of your employees had any operational deviations (e.g. accidental rule violation, accidental crash, or flyaway situations) in the last year?

- Yes (due to a lack of knowledge)
- Yes (due to a lack of training)
- Yes (due to fatigue/sleepiness)
- No
- Prefer not to Answer

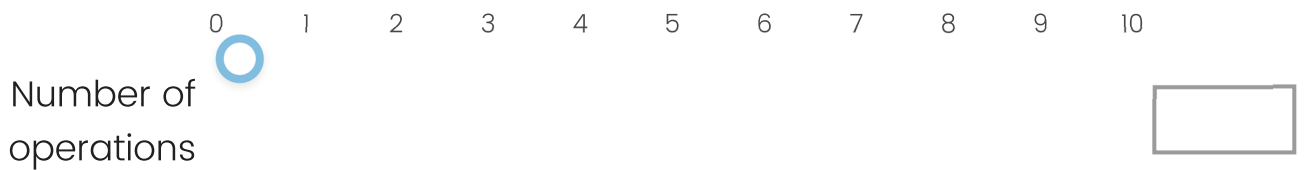
Have you had any operational deviations (e.g. accidental rule violation, accidental crash, or flyaway situations) in the last year?

- Yes (due to a lack of knowledge)
- Yes (due to a lack of training)
- Yes (due to fatigue/sleepiness)
- No
- Prefer not to Answer

How many drones are you responsible for each operation?



How many operations are you responsible for each day?



How many flight plans are you responsible for planning each day?





What was the **average** number of duty days you worked...  
In a 7-day week?

1

2

3

4

5

6

7

What was the **average** number of duty days you worked...  
Consecutively in a 7-day week?

1

2

3

4

5

6

7

What is the typical **start time** of your flights/operations?

24 hr clock

What is the typical **end time** of your flight/operations?

24 hr clock

How many times in the **last month** did you work seven consecutive duty days without 24 hours of rest?

Number of times

Have you experienced fatigue while on duty?

- Yes
- No

Which of the following factors do you think contributed to your fatigue while on duty? (**Mark all that apply**)

- Workload
- Work pace
- Work schedule
- Family demands
- Physical health
- Other (please describe)

Other, please describe:

Indicate your level of agreement with the following statement:

*Crewmember fatigue is a common occurrence.*

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

Indicate your level of agreement with the following statement:

*Crewmember fatigue represents a safety concern.*

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

**Completed Survey Message**

Thank you for completing the [UAS Market Survey 1](#). Do not close out of the survey without clicking next. Neese Personnel, will request information needed to process your payment, including the name of this study - [UAS Market Survey 1](#).

Once you click the [Next](#) button below, your survey responses will be recorded and your survey will no longer be accessible.

You will then be directed to the Neese Personnel webpage (see image below) to provide your information for payment. The webpage is a secure site - your information will be protected.

The image shows a web form titled "Application for FAA Participant Study" from WUFOO. The form includes a disclaimer about equal employment opportunities. It contains several input fields: "Name" (split into "First" and "Last"), "Address" (split into "Street Address" and "Address Line 2"), "City", "State / Province / Region", "Postal / Zip Code", and "Country" (with a dropdown menu currently showing "United States"). There is also a "Primary Contact Phone Number" field with a format of "xxx-xxx-xxxx" and an "Email Address" field. At the bottom, there is a dropdown menu labeled "Study and Type" which is highlighted in yellow, and a "Submit" button also highlighted in yellow.

To receive payment for this survey, you must enter [UAS Market Survey 1](#) in the 'Study and Type' field.

Before you submit your information to Neese Personnel, please verify your information is correct, then select [Submit](#) to complete the payment process.

Please note that this information will be used only to process your payment and will not be linked to your survey responses.

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