

Flight Crew Training & Education

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Learning Objectives

1. Understand why an in-house training program matters
2. Learn about Part 91 training requirements
3. Get recommendations on how to create an in-house training program



Exercise

What does training look like in your agency for other equipment?

Let's take 10 minutes to write down:

1. An example of training you think is **comprehensive**
2. An example of training you think is **minimal**
3. What your drone program training is today

Quantity, type, testing requirements, instructor qualification, studying, proficiency requirements..



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How does your drone program training compare to other equipment training?



Why does training matter?

- Safety
- Trust
- Effectiveness
- Professionalism
- What else?

Why does training matter?



In crewed aviation, ~80% of accidents are related to human error.



Skydio customers experience ~3 incidents per month due to human error

Discussion:

NTSB Accident #CEN21LA224



Objective

To provide an example of how to structure an in-house training program using aviation instruction concepts.



FAA Requirements

Part 91 Operations

- Self - Certification
- COW / COA requirements

Part 107 Operations

VLOS

- Remote Pilot Certificate

BVLOS (under Part 107 waiver)

- Remote Pilot Certificate
- COW / COA requirements



Can anyone tell me what the Part 91 BVLOS COWs require for training?

Part 91 BVLOS waiver requirements

Responsible Person must ensure flight crew has:

- Knowledge to safely operate in the NAS
- Is informed of the Waiver
- Is informed and familiar with Part 91 regulations
- Is trained on night visual illusions



Is the Remote Pilot Certificate required?

It depends!

Operating under Part 91? No

Operating under Part 107? Yes

A blue bucket is being filled with water from a stream pouring into it. The bucket sits on a large, shallow, circular basin filled with water. In the background, a city skyline with several tall buildings is visible under a clear sky. The scene is bathed in a warm, golden light, suggesting sunrise or sunset. The overall tone is professional and aspirational.

**Knowledge
&
Skills**

**Fill the
bucket to
create
proficient
operators.**

A vertical image on the left side of the slide. It shows a silver metal bucket being filled with water from a source above. Water is splashing into the bucket. In the background, a city skyline is visible, with the Empire State Building being prominent. The scene is set during the day with some haze.

FAA Requirement

Agency Responsibility

Ongoing Sustainment & Currency

Agency Initial Training

OEM / Vendor Training

**Remote Pilot
Certificate**

Part 107

Part 91

What does initial training look like?

01

Remote Pilot Certificate Acquisition

(optional for Part 91)

02

In-House Ground School

1. Regulations
2. BVLOS waiver
3. Airspace
4. Weather
5. Aeronautical Decision Making
6. Standard Operating Procedures

Estimate 2-3 days to cover this material.

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Flight School

1. Vendor training (basic flight)
2. Scenario-based training
3. Stage Check / Capstone

Repeat the sequence for different types of drones / configurations

Training Considerations

Where are you going to train?

- Consider creating a “Training and Testing” location so that you aren’t training and practicing on new software features over your community. Deploy a Dock here!
- One of the fundamental principles of aviation risk management is “accept no unnecessary risk”.

Who are your instructors?

- Designate your most experienced, motivated operators to become instructors.
- This can be a “chicken and egg” situation, so lean on external resources.

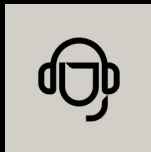
Training Considerations

Essential Roles?



Command / Leadership

- Standardization
- Record Keeping
- Fleet Maintenance
- Cloud Managing



Instructor Operator

- Head Trainers
- Currency
- Recertification
- Coarse Development



Pilots / Officers

- Proficiency
- Self study
- Current on NTOs
- Maintain 107

Proficiency and Currency

Flight Activities Categories (FAC)

- FAC levels will be used to designate the pilot's proficiency requirement.
 - **FAC Level 1** (Active Pilots) - 25 Launch & Land every 30 days
 - **FAC Level 2** (Leadership) - 15 Launch & Land every 60 days

Currency / Proficiency

- Day / Night Flights hours
- Quarterly exams
 - System Limitations / AO / COA
- Sim Hours / Live Flight hours

A training course outline
example and ground
school slide decks are
available!



Training Course Outline

Course Matrix Times

Module	Lesson		Lesson Time (hours)		Role	
	#	Topic	Flight Time	Ground Time	Tactical Operator	Remote Operator
I	1	Regulations	0	2.0	Yes	Yes
	2	Waiver [REFERENCE #]	0	2.0	Yes	Yes
	3	Airspace	0	2.0	Yes	Yes
	4	Weather	0	1.0	Yes	Yes
	5	Operator Drone Operations	0	2.0	Yes	Yes
	6	Aeronautical Decision Making	0	1.0	Yes	Yes
II	8	Intro to Skydio X10 Local Operations	1.0	0.5	Yes	No
	9	Skydio X10 Local Ops SBT - Tactics 1	1.0	0.5	Yes	No
	10	Skydio X10 Local Ops SBT – Tactics 2	1.0	0.5	Yes	No
	11	Skydio X10 Local Ops Stage Check	1.0	0.5	Yes	No
III	12	Intro to Skydio X10 Remote Ops	1.0	0.5	No	Yes
	13	Skydio X10 Remote Ops SBT - Tactics 1	1.0	0.5	No	Yes
	14	Skydio X10 Remote Ops SBT - Tactics 2	1.0	0.5	No	Yes
	15	Skydio Remote Ops Stage Check	1.0	0.5	No	Yes

Ground School Slide Decks

14 CFR Part 91

General operating rules

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§ 91.3 – Responsibility and Authority of PIC

- (a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.
- (b) In an in-flight emergency requiring immediate action, the pilot in command may deviate from any rule of this part to the extent required to meet that emergency.
- (c) Each pilot in command who deviates from a rule shall, upon the request of the Administrator, send a written report of that deviation to the Administrator.



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§ 91.13 – Careless or reckless operation

- No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.



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Aviation Safety Reporting Program

- The Aviation Safety Reporting System is managed by NASA and captures voluntary submitted aviation safety incidents and situations from aviation stakeholders.
- These reports are used to identify deficiencies in the NAS, support policy formulation, and strength aviation safety research.
- <https://asrs.arc.nasa.gov/report/caveat.html?formType=UAS>
- § 91.25 - The Administrator of the FAA will not submitted reports in any enforcement action except information concerning accidents or criminal offenses which are wholly excluded from the Program.



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§ 91.103 Preflight action

- Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.

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§ 91.111 Operating Near Other Aircraft

- No person may operate an aircraft so close to another aircraft as to create a collision hazard.

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Sustainment and Currency

Skydio DFR Command Operator Course



Scenario 4 | Search & Rescue (SAR)

Objective: Provide Search & Rescue over a large area.

Considerations

- Weather
- Terrain will dictate search pattern / range
- Sensor adjusting based on Temperature
- Details of POI (Clothing / Age)
 - Body temp with clothing vs w/o
- Good search patterns allow for battery effectiveness

Scenarios (choose one)

- Missing persons / kidnapping (vehicle)
- State fair
- Hiking Trails (Shaded Areas, under tree canopy)

Goals (Trainer to guide the student through the scenario and assist when needed)