



Drone Exploring: Career Spotlights

Search and Rescue — Post

Overview: This session takes a serious look at drones in search and rescue (SAR) as a career and volunteer path, including the agencies that use them (fire departments, sheriff's offices, emergency management, volunteer SAR teams), the certifications involved (FAA Part 107 plus thermal imaging and thermography training), search pattern strategy, and realistic pay and volunteer pathways. Explorers plan a mock SAR mission, choosing a search pattern and interpreting thermal camera data.

OBJECTIVES

- Understand the agencies and roles involved in drone-assisted search and rescue.
- Learn the certifications needed: FAA Part 107 plus thermal imaging and thermography training.
- Compare search pattern strategies (grid, expanding square, sector search) and when each is used.
- Practice planning a mock SAR mission, including choosing a search pattern and interpreting thermal camera data.

SUPPLIES

- Laptop and projector to show sample thermal-camera SAR footage
- Printed handouts: Career Pathway — SAR Drone Operator and Mission Planning Worksheet
- Whiteboard or flip chart and markers
- Optional: sample thermal images (printed or on-screen) showing a heat signature in terrain
- Optional: printed or digital copy of FAA's free Part 107 study guide (faa.gov/uas)

ADVISOR NOTES

- This session is career-focused: Use real agency examples, real certification requirements, and real pay or volunteer expectations rather than a hobbyist framing.
- Many SAR drone operators start as volunteers with a local fire department, sheriff's office, or Civil Air Patrol before moving into paid public-safety or contract roles.
- Encourage Explorers who are 16 or older and interested to look at the FAA Part 107 study guide as a concrete next step after this session.
- Consider inviting a guest speaker who works in emergency services, public-safety drone operations, or a volunteer SAR team. See Optional Extensions.
- If no guest speaker is available, Advisors can run the entire session using this outline, the Career Pathway handout, and the resource links below.

SESSION OUTLINE

- **Welcome and Icebreaker** (10 min)
 - Ask: "What do you think is the hardest part of finding someone lost in the wilderness or a disaster area?"
- **Safety and Regulatory Moment: Certifications for SAR Operations** (10–15 min)
 - Review the FAA Part 107 Remote Pilot Certificate: minimum age 16, required knowledge test.
 - Explain thermal imaging and thermography certification and why it matters for reading heat-signature data accurately.
 - Discuss FAA public-safety waivers and authorizations that allow expanded operations (like night flights) for emergency responders.
- **Mini-Lesson: The Business and Practice of Drone SAR** (15–20 min)
 - Agencies and roles: fire departments, sheriff's offices, emergency management, Civil Air Patrol, and volunteer SAR teams.

- Search pattern strategies: grid search (thorough, methodical), expanding square (starts from a known point), and sector search (divides an area into pie-shaped zones).
 - Typical pay and pathways: Many SAR drone roles are volunteer-based; paid public-safety and contract thermography work can range roughly \$57,000-\$95,000/year, with per-job thermal inspection work ranging \$500-\$2,000+.
- **Activity: Choose a Search Pattern** (15–20 min)
 - Present small groups with different mock scenarios (open field, dense forest, large lake) and have them choose and justify a search pattern for each.
 - **Activity: Read the Thermal Data** (15–20 min)
 - Using sample thermal images, groups identify likely heat signatures and discuss how they'd communicate a location to ground teams.
 - Use the Mission Planning Worksheet to document the mock mission's pattern, coordinates, and next steps.
 - **Wrap-Up Discussion** (10 min)
 - Groups present their mission plans.
 - Discuss the concrete steps (certification, volunteering, agency contact) needed to get involved in this field.

REFLECTION SECTION

Advisor Note: Some sample questions are below. They are designed to help the participants apply what they have learned to their own interests. You are welcome to use these questions or develop your own.

Focusing Questions

- What surprised you about how search patterns are chosen for different terrain?
- Which part of a SAR mission (flying, reading thermal data, coordinating with ground teams) sounds most interesting to you?

Analysis Questions

- Why does thermal imaging require its own certification beyond Part 107?
- How might choosing the wrong search pattern slow down a real rescue?

Generalization Questions

- How is choosing the right strategy for a search like solving other real-world problems?
- What other careers combine emergency response with technical skill, like this one does?

Challenge: This week, research one local fire department, sheriff's office, or volunteer SAR team and find out whether they use drones and how someone could get involved.

OPTIONAL EXTENSIONS

Guest Speaker: Invite someone who works in emergency services, public-safety drone operations, or a volunteer SAR team to share their career or volunteer path and take questions, in person or by video call.

Advisor-Led Option: If no guest speaker is available, Advisors can run the full session using this outline, the Career Pathway handout, and the resource links below. No outside expert is required.

Resource Links: FAA Part 107 overview ([faa.gov/uas/commercial_operators](https://www.faa.gov/uas/commercial_operators)); FAA public-safety UAS resources; local fire department or sheriff's office volunteer or Explorer program information.

Extension Project: Explorers who are 16 or older can begin studying for the actual Part 107 knowledge test using the FAA's free study guide.

Handout: Career Pathway — SAR Drone Operator

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A typical path into this field looks like this:

1. Interest and Hobby Flying

Learn basic drone operation and become comfortable with manual flight and navigation.

2. FAA Part 107 Certification (Age 16+)

Pass the FAA knowledge test to legally fly for pay or in an official public-safety role.

3. Volunteer Experience

Join a local fire department, sheriff's office, Civil Air Patrol, or volunteer SAR team to gain real mission experience.

4. Thermal Imaging and Thermography Certification

Add certification in reading and interpreting thermal camera data for search operations.

5. Paid Public-Safety or Contract Roles

Paid roles in public-safety agencies or contract thermography can range roughly \$57,000-\$95,000/year, with per-job thermal inspection work ranging \$500-\$2,000+.

Handout: Mission Planning Worksheet

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Use this worksheet to plan your mock search and rescue mission.

Planning Item	Your Plan	Notes and. Risks
Search area and terrain type		
Search pattern chosen (grid, expanding square, sector)		
Thermal signature location		
Communication plan with ground team		
Estimated mission time		