



Drone Exploring: Career Spotlights

Mining — Post

Overview: This session takes a serious look at drone-based mining operations as a career, including the roles involved (mining drone surveyor, volumetric measurement specialist, slope stability monitoring technician), the certifications needed (FAA Part 107 plus mining safety training, such as MSHA in the United States), and realistic pay ranges. Explorers plan a mock stockpile volume survey and a slope stability inspection flight.

OBJECTIVES

- Understand the roles involved in drone-based mining surveying and safety inspection.
- Learn the certifications needed for this field: FAA Part 107 plus mining safety training (such as MSHA certification in the U.S.).
- Identify realistic pay ranges across entry-level and specialized mining drone roles.
- Practice planning a mock stockpile volume survey and slope stability inspection flight.

SUPPLIES

- Laptop and projector to show sample mining site volumetric survey or slope-monitoring imagery
- Printed handouts: Career Pathway — Mining Drone Surveyor and Mining Survey Planning Worksheet
- Whiteboard or flip chart and markers
- 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 certification requirements, real pay ranges, and real safety considerations rather than a hobbyist framing.
- Introduce MSHA (Mine Safety and Health Administration) training as a mining-specific safety certification often required in addition to FAA Part 107.
- Discuss why volumetric accuracy directly affects a mining company's finances (tracking valuable material) and why slope monitoring directly affects worker safety.
- Consider inviting a guest speaker who works in mining surveying or mine safety to share their career path. 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 would be the hardest part of measuring or inspecting a massive open-pit mine?"
- **Safety and Regulatory Moment: Part 107 and MSHA** (10–15 min)
 - Review the FAA Part 107 Remote Pilot Certificate: minimum age 16, required knowledge test.
 - Introduce MSHA (Mine Safety and Health Administration) training, often required in addition to Part 107 to work on active mining sites in the U.S.
 - Discuss why mining sites present unique hazards (unstable slopes, heavy equipment, blasting operations) that require extra safety awareness.
- **Mini-Lesson: Careers in Mining Drone Surveying** (15–20 min)
 - Roles: mining drone surveyor, volumetric measurement specialist, slope stability monitoring technician.
 - Typical pay: Mining drone survey roles average roughly \$23-\$32/hour; broader drone surveyor roles range \$66,000-\$145,000/year; highly specialized or remote mining drone contract work has been advertised at \$23-\$91/hour depending on scope.

- **Activity: Plan a Stockpile Volume Survey (20 min)**
 - Using the Mining Survey Planning Worksheet, small groups plan a mock stockpile survey: flight altitude, overlap percentage, and how volume would be calculated from the resulting data.
- **Activity: Plan a Slope Stability Inspection (15 min)**
 - Groups plan a mock slope inspection flight, noting what signs of instability (cracks, bulging, erosion) they'd look for.
- **Wrap-Up Discussion (10 min)**
 - Groups present their survey and inspection plans.
 - Discuss the concrete steps (certification, mining safety training, surveying skills) needed to pursue this as a career.

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 the safety training required specifically for mining sites?
- Which part of this role (volumetric surveying, slope monitoring) sounds most interesting to you?

Analysis Questions

- Why does accurate volumetric measurement matter financially for a mining company?
- How could a slope stability inspection prevent a serious safety incident?

Generalization Questions

- How is measuring something precisely for a business decision like other data-driven careers?
- What other careers combine technical surveying skill with a strong safety focus, like this one does?

Challenge: This week, research MSHA training requirements and identify what it takes to become certified to work on a mining site.

OPTIONAL EXTENSIONS

Guest Speaker: Invite someone who works in mining surveying or mine safety to share their career 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)); MSHA training program information; mining industry association resources on drone surveying.

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 — Mining Drone Surveyor

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A typical path into this career looks like this:

1. Interest and Hobby Flying

Learn basic drone operation and become comfortable with mapping and flight-planning apps.

2. FAA Part 107 Certification (Age 16+)

Pass the FAA knowledge test to legally fly for pay.

3. MSHA Safety Training

Complete mining-specific safety training required to work on active mining sites in the U.S.

4. Entry-Level Survey Work

Entry-level mining drone survey roles average roughly \$23-\$32/hour.

5. Specialized Roles

Broader drone surveyor roles range \$66,000-\$145,000/year; specialized or remote mining survey contract work can range \$23-\$91/hour.

Handout: Mining Survey Planning Worksheet

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Use this worksheet to plan your mock mining survey missions.

Planning Item	Your Plan	Notes and Risks
Flight altitude		
Image overlap percentage		
Volume calculation method		
Slope areas to inspect		
Safety hazards to watch for		