



SUAS TRAINING PROPOSAL POLICE DEPARTMENT

2018

Program Summary

As a Police Department looking to build out its sUAS (drone) program for its day-to-day operations, it is likely that the use-case will be focused on implementing the program to assist with Overwatch, Search and Rescue (SaR), Accident Scene Reconstruction (ASR) and Forensic/CSI Capture. The key to setting up a successful sUAS program is three-fold:

- (1) Standup the program with updates to the current PD's policy and procedures (P&P)
- (2) Creating an internal sUAS flight operations manual
- (3) Practical training to ensure the safe and effective implementation of this technology and management of data acquired.

The information presented in this document focuses primarily on the **practical training component** (Item #3) as additional information is required for a customized quote for consulting services. The consulting portion is estimated to be ~\$4,000-\$10,000 to fully standup an sUAS program. That may decrease or increase based on what specifics would need to be included.

The training is suggested to be contracted in full but we can tailor it to your specific needs and/or budgetary limitations. An overview/summary of the suggested training directly below and the pages that follow detail each segment of training (from page 2 onward). This program proposal from SMG includes training and ½ a day consulting services onsite to determine the depth required to develop Policy, Procedures and Operations manuals for a more accurate consulting quotation should that be of interest.

TRAINING OVERVIEW:

1. **107 Training** (1.5-days)
2. **Identifying & Mitigating Risk in UAV/sUAS Operations** (½ -day)
3. **Introduction to Practical UAV Flight (Proficiency Training)** (1 -day)
4. **Advanced UAV Flight (ASR Training)** (2- day)
5. **Night UAV Flight** (1 -day)
6. **Pix4D Software Training** (1 or 2-day)

SMG CONSULTING SERVICES:

- Policy & Procedure Manual Updated
- UAV/sUAS Operations Manual
 - Stand-up of all programs, policies, procedures, and operational requirements
 - Compliancy (CJIS, etc)
 - Logbook Recording
 - Data management
- Maintenance Program
 - In-house v.s. External
 - Re-current training/evaluation
 - Instructor/Examiner
(Train the trainer certification)

Training Process Overview

STEP ONE: 107 CERTIFICATION TRAINING

Beginning August 29, 2016, the FAA requires a 14 CFR Part 107 certification to commercially fly an sUAS (Small Unmanned Aerial System). To get this certification, non-pilots achieve a 70% score on a written exam. The FAA certification test consists of 60 multiple choice questions, which contains aeronautical information to pass this test. The SMG training program details the entire process, from application to the knowledge portions of the test, and how to apply for and maintain an Airmen's certification.



The course can be delivered in-person or online. This 2-day session includes all testing material, aeronautical concepts, and lessons to enable attendees to gain an intimate understanding of all aspects of safe, effective, and legal sUAS flight. Each student will receive a sample preparation test that can be tracked and a listing of local FAA approved Knowledge Testing centers to officially write the 107 certification test.

Format

Description – Two Day Training Session	Training Time
Classroom Training – In-Person or Online Webinar with live instructor	6 hours
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Total Session	12 hours (2 days)

Includes

- Practice/Sample testing and study booklet

STEP TWO: IDENTIFYING & MITIGATING RISK IN UAV OPERATION

Understanding risk is the first step in reducing accidents while operating a UAV. Mitigation of risk carries across all aspects of any UAV project, including operational hazards, safety, efficiency, and overall insurance cost reduction. Protecting your investment in equipment and personnel along with protecting your client is key to success. Using internationally recognized standards and recommended practices from International Civil Aviation Organization, International Standards Organization, Occupational Health & Safety, and global UAV best



sUAS TRAINING PROPOSAL 2018

practices, this session will detail mechanisms, practices, and tools to help identify and minimize risk points in any sort of UAV operation whether corporate, enterprise, infrastructure, or agency.

This session details how to identify and mitigate risk in UAV operation and is taught by experienced UAV instructors trained by SGS HART Aviation in risk mitigation, a leading provider of aviation auditing services around the globe, providing confidence in the safe and efficient delivery of aviation operations.

Format

Description – Half Day Training Session	Training Time
Classroom Training – In-Person or Online Webinar with live instructor	4 hours
Total Session	4 hours

Includes

- Certificate of Completion of Risk Mitigation Course

STEP THREE: PRACTICAL FLIGHT TRAINING

Small Unmanned Aerial Systems (sUAS or Drones) are a staple in the toolkit of many public safety agencies and with good reason; they are used not only to capture video and photos from situations, but to collect data that can be used for further analysis. Why? This new technology is cost effective, reduces risk, and is often able to access places that are generally inaccessible. Learning how to fly the UAVs effectively and efficiently is key to a successful UAS program implementation.

Day 1 Flight Practical Training (Proficiency Training)

This in-field training session is designed as an introduction to flying UAVs. Attendees will have a detailed walk-thru of the H520 and its software menus (1/2 day in class room) and for the 2nd half of the day, attendees will go into the field to learn the basics of UAV flight from pre-flight planning, on-site walk-thru, communication with other UAV team members, and actual flying time. SMG instructors will share best UAV flight practices, practice techniques, and address any questions or concerns from the attendees. The goal: ensure that each attendee leaves with the information and the practice drills needed to continue to improve UAV skills.



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Training includes:

- H520 familiarization
- Overview of pre-planning checklist/requirements
- Overview of UAV flight restrictions/requirements
- Manual instruction on UAV flight techniques on craft of choice:
 - Introduction to the remote and familiarity with its functionality
 - FLIGHT TECHNIQUES:
 - Hover; Straight Line (Forward/Reverse);
 - Introduction to Panning
 - Introduction to Flybys (Pushes/Reveals/Dolly)

Format

Description - One Day Training Session	Training Time
Classroom Training on aircraft	2 hours
Practical In-Field Training	4 - 5 hours
Total Session	6 - 7 hours

Includes

- 1 Certificate of Completion for Proficiency Flight Training
- 1 Day Flight Manual + H520 Manual with tips & tricks

Advanced UAV Flight and Data Management (2-day)

This in-field training session is designed as a continuation of the introduction to the H520 flight session. Attendees will continue to hone their H520 flight skills allowing them to fly technically in preparation for applied UAV flight. Over the course of two days, SMG instructors will continue to share best UAV flight practices and additional practice techniques. The goal: to have additional flight time with an instructor to correct ensure that each attendee leaves with the information and the practice drills needed to continue to improve UAV skills.

Day One (1 hour in class; 6 hours in field):

- Review of proficiency training; Q&A
- Discussion of relevant UAV Accessories that are of benefit to safe/effective flight
- FLIGHT TECHNIQUES:
 - Review of Hover; Straight Line (Forward/Reverse);
 - Review of Flybys (Pushes/Reveals/Dolly)
 - Gimbal Use/Manipulation
 - In-Depth training on Panning
 - Manual Orbits (Inside/Outside)
 - Tracking

SUAS TRAINING PROPOSAL 2018

- Precision Flying:
 - Flythrus, Proximity Flying, Low altitude



Day Two (3 hours in class, 3 hours in field):

Mission Capable (Applied) UAV Flight

Once all students are feeling confident with the H520, the training session will dive deeper into work-case scenarios. This training session will take attendees into the work-field and use their new UAV flight skills in their day-to-day processes. This focuses on specific needs in bringing UAV into the operational workflow. For example, accident Scene Reconstruction (ASR), programming / automation of flight, and post-processing images/output of rendered scenes.

Theoretical (In-Class) – ½ day (~3 hours)

- Organization specific UAV Policy & Operations Overview
- Reviewing 107/COA/COW Requirements
- Understanding airspace and how to call in a DROTAM or set up a COA/COW
- How to define each project's objectives and planning your UAV use
- Mission Planning
- Automated Flight / Mapping (if applicable)
- Managing your data (images/video/memory cards)
- Processing the data (if applicable)

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Practical (In-Field/Worksite Specific) – ½ day (~3 hours)

- Review the UAV project objective
- Apply pre-planning checklist/requirements
- Communication of UAV flight restrictions/requirements
- Mission Planning (if applicable)
- Fly the mission (manual or automated)
- Equipment & Media management in the field
- Manage the data for processing

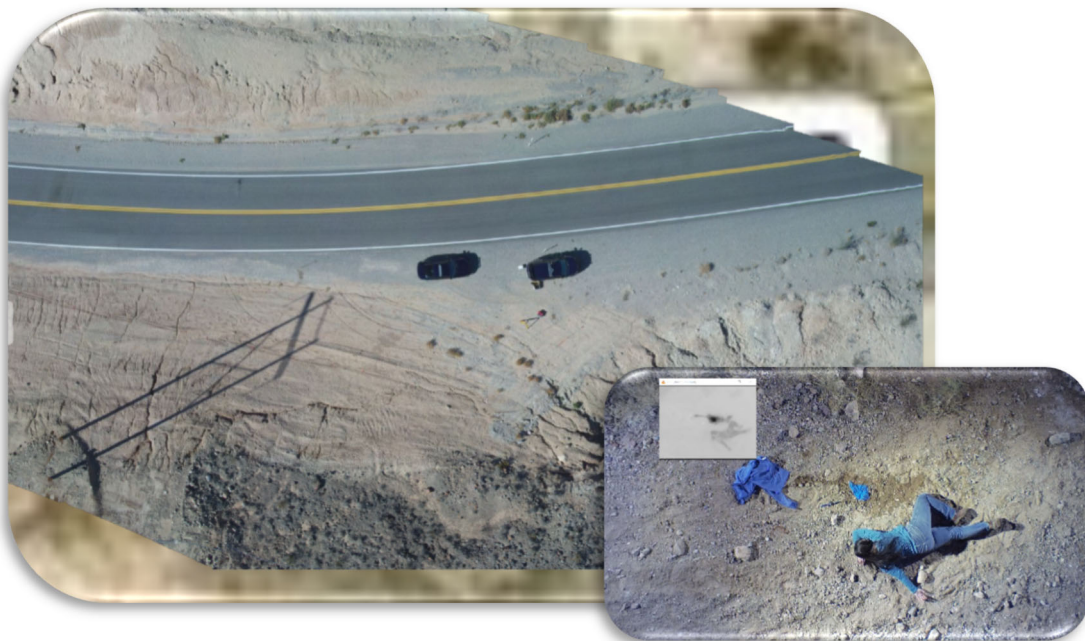


Format

Description – One Day Training Session	Training Time
Day One - Classroom Discussion Overview of Day	1 – 2 hours
Day One - Practical In-Field Training Mission Specific (Applied Flight)	5 - 6 hours
Day Two - Review / Debrief – Classroom (P&P & UAS Operations overview, mission planning & execution)	2 – 3 hours
Day Two - Practical In-Field Training (includes 3 hours specific to workflow processes)	3 hours
Total Session	11 - 14 hours

Includes

- 1 Certificate of Completion for Advanced / Applied Flight Training



SUGGESTED Additional Training

NIGHT FLIGHT TRAINING

This one-of-a-kind training session will provide information that will allow pilots to understand the safety issues and physical challenges presented when flying UAVs at night. This course will ensure a best-practice process to sidestep these challenges, while properly assessing and managing the risks associated with night flight (as waived per Part 107.29). You'll also learn the foundation of applying for a COW/COA for night flight from an experienced night-flight pilot. We will also discuss acclimating your eye for night flight. We will also cover the use of lights to illuminate our subjects and how to avoid "light contamination" in our eyes.



After a comprehensive classroom theory session (approximately 2 to 2.5 hours), we will then head out to a pre-agreed upon location for the practical component of this night flight training. Our instructors will present different types of visual illusions that commonly occur at night. In this practical hands-on class, we will discuss visual illusions as well as best practices for night flying. We will cover Autokinesis and Night Landing Illusions and how to avoid them.

Format

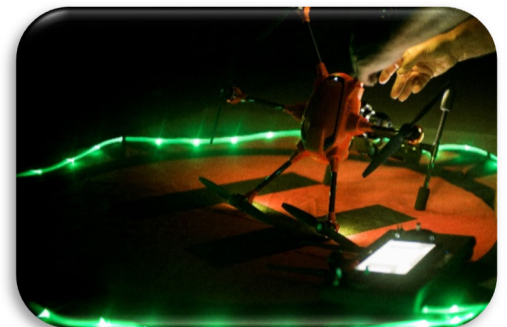
Session Description – One Day Training Session	Training Time
Classroom Training & Testing	2 - 2.5 hours
Practical In-Field Training*	3 - 4 hours
Total Session	5 - 6.5 hours



Includes

- 1 Certificate of night flight training, which can be used to expedite FAA waiver
- 1 Red light flashlight
- 1 Night Flight Manual

*Includes SMG's UAVs outfitted with FAA required lighting.





OPTIONAL: PIX4D TRAINING – MAPPING & MODELING SOFTWARE TRAINING

Manage orthographic and 3D tasks internally for terrain modelling, large scale mapping, area planning, pre-event scan, and accident reconstruction. Pix4D software meshes images into measurable, accurate maps and models.

ONE-DAY WORKSHOP

Our one-day workshop will train to your organization's specific mapping needs and will include an overview of the entire data workflow (from production in the field to processing in the office). The session will focus on all key highlights of the Pix4D software to create accurate reconstructions with the data you have collected. Included in the one-day session:

- Introduction to the theory/science of photogrammetry
- Aerial mapping: best practices
- Georeferencing, project accuracy, and ground control: best practices
- Hardware recommendations
- Lab exercises focusing on the data process workflow

Format

Description – One Day Training* Session	Training Time
Classroom training on Pix4D software	6 hours
Classroom Training for Data Management	1 hour
Total Session	7 hours

TWO-DAY WORKSHOP

We also offer a two-day day workshop designed to do a deep-dive into the processes and functions of the Pix4D software solution. The session is a continuation of day one and will allow participants to absorb more of the options / tool sets offered by the program. The two-day workshop will focus on how to ensure repeatable data capture workflow; orthomosaic, digital surface, 3D modeling, and data management for forensic requirements.

Format

Description – Two Day Intensive Training Session	Training Time
Classroom training on Pix4D software	13 hours
Classroom Training for Data Management	1 hour
Total Session	14 hours

sUAS TRAINING PROPOSAL 2018

OTHER TRAINING SESSIONS AVAILABLE

Session Description	Training Time
Integrating UAV into the Corporate/Commercial Environment	2 hours
Best Practices for UAV Cinematography	4 hours
Filters & Accessories for UAVs	2 hours
Automated Flight: Best Practices for UAV Autonomous Flight - Level I	4 hours
Automated Flight: Best Practices for UAV Autonomous Flight - Level II	4 hours
Fleet Management: Maintenance	3 hours
Fleet Management: Logging	3 hours
Applying for Waivers, COA/COW	1 hour
UAV Post-Production	4 hours
Best Practices for Real Estate Photography and Videography Level I & II	4 hours
Dronalism - Drones for Journalists	4 hours
Introduction to Photogrammetry	4 hours
Introduction to IR Thermography	4 hours
Applied UAV/Drone Use: sUAS for LEO & Public Safety	Customized to need
Applied UAV/Drone Use: sUAS for Fire, Search & Rescue	
Applied UAV/Drone Use: sUAS for Vertical Inspection	
UAV Data Management	
Advanced IR Thermography	
360 Panoramic Acquisition	
VR Acquisition	
Advanced LiDAR & Photogrammetry	
Currency Training	
Instructor Examiner Training	



Introduction to Sundance Media Group

Based in Las Vegas, Nevada and West Jordan, Utah, Sundance Media Group (SMG), has been producing training for trade events for nearly 20 years. Instructors from SMG have taught, presented workshops, and have participated in panels worldwide. Over the years, SMG's area of focus has been audio, video and software applications for production and post-production. Douglas Spotted Eagle, the original founder of SMG, has long history of aviation, from the adrenaline-filled world of fast-action videography in skydiving to commercial application of drone/UAV

use which is why SMG's latest evolution and vision is to incorporate its years of experience for best-practices training into the world of UAV use.

SMG has been flying high in the world of UAV/Drone capture, analysis and post-production for the past 6 years. Our UAV training philosophy, no matter the vertical, concentrates on creating a culture of safety and risk management. Our instructors have an intimate knowledge of the FAA FARs and FSIMs and our vision is to train new UAV pilots to become efficient, effective, and safe pilots using UAVs as tools in the field. As a consultant within the UAV industry, SMG offers training and speaking engagements on a variety of UAV topics. Our goal, is to facilitate new UAV pilots into this burgeoning industry and ensure that best-practices are engrained within their organization.

BIOS OF UAV INSTRUCTORS



Douglas Spotted Eagle

Douglas has a long history in aviation; he is one of two FAI International Judges in the USA, a USPA National Judge, with ratings as a USPA Instructor/Examiner, and one of a few Safety and Training Advisors at Large in North America, in addition to sport pilot ratings. With over 350 hours of flight time, over 6,000 skydives, and having completed numerous aerial cinematography projects, Douglas has an intimate knowledge of the FAA FARs and FSIMs. Douglas is an FMC instructor with 18 years of experience teaching Sony, Apple, Adobe, and production hardware and software practices. Skydiving, flying, video, and music are Douglas' passions.



James Spear

James is the Senior sUAS pilot and trainer for the Civil Air Patrol and is currently helping with developing a nationwide training curriculum for sUAS operations. James is also a Civil Air Patrol rated Mission Observer, Aerial Photographer and Ground Team Leader instructor in Nevada. James is an FAA Part 107 certified pilot and is currently working on achieving a private pilot, glider rating, with the ultimate goal of a Rotor CFI rating. When he is not assisting with CAP, he can be found operating all types of sUAS in many challenging environments for recreation and testing.

SMG INSTRUCTORS



(Kevin) Brady Reisch

Brady moved to Las Vegas to pursue a career in architectural drafting and quickly incorporated aerial photography into the architecture firm and discovered his passion for sUAS (drones). In order to combine his love for videography, cinematography, and sUAS, Prone to Drone was brought to life. As the owner/operator of Prone to Drone, Brady is an sUAS field service provider and proudly holds a class B-authorization for the Las Vegas strip; a distinction in its own right as it's one of only a hand full currently issued.



Daniel "Scott" Marek

Daniel "Scott" Marek is a visionary with UAVs within the public safety sector. Scott advocated the use of UAVs within law enforcement in 2015 and can proudly claim ownership on the first UAS program for first responders in the state of Nevada. Scott continues to seek new time-saving-ways to apply UAS technologies into public safety scenarios, including, but not limited to accident scene reconstruction, search and rescue, and overwatch scenarios. Scott keeps his finger on the pulse of UAS technology, working closely with manufactures in the development of hardware and software specific to first responder needs. He is actively assisting other agencies to train first responders as UAV pilots and consults on how best to standup UAS programs.



Brian Blount

A native Nevadan, Brian is a director of a Fortune 500 company with over 20 years of I.T. experience. As a Major in the Nevada Civil Air Patrol and director of emergency services for the Nevada Wing of the Civil Air Patrol, Brian has extensive search and research experience. As an FAA certified UAS Remote Pilot and FAA certified Private Pilot SEL, Brian's passion for photography has taken flight! He now focuses his spare time on offering his UAV experience to Sundance Media Group as an instructor and field service provider. His areas of expertise are practical flight training, real estate, and mapping/surveying for construction.



Jennifer Pidgen

As majority owner and COO of Sundance Media Group (SMG), Jennifer is dedicated to developing the sUAS/UAV training programs and strategic industry partnerships. A marketing guru with over 20 years of marketing experience within the consumer electronics and photo/ video channels, Jennifer also manages large-scale training events and vendor/sponsor relationships. No stranger to logistical and analytical reporting, Jennifer manages all sUAS/UAV logistics and overall SMG operations, including applying for SMG's ISO certification. Bearing a degree in finance/accounting, Jennifer also holds a USPA regional wingsuit and speed skydiving judge rating. Jennifer's diverse background in science, math, and marketing are a remarkable combination within the sUAS industry as her education, experience, entrepreneurship, and passions are put to good work. Ultimately, her expertise is inspiring conversation and cultivating mutually-beneficial partnerships; each with a focus towards building a successful and safe sUAS/UAV community. She is a creator of opportunities within the industry.