



OCT 2021

Greetings experimental aircraft enthusiasts!

Our chapter has decided to start up the newsletter again. When I produced the newsletter for years some time ago, it was an arduous task: getting program information from someone, getting president's notes, treasury reports, article content, etc. Worse: we had well over 100 members and a high percentage of these were older without email accounts and wanted printed newsletters actually mailed to them via USPS. That meant printing 8-10 page newsletters for 80 (if I recall correctly) members, print address labels, folding and taping the newsletter together, stamping, and labeling. Many hours per month.

Well, our chapter is smaller in numbers now, and more technically advanced, so we decided to get newsletters out in digital form (PDF) to share project updates, member profiles, interesting articles, and tools and projects for sale on a more free form release cycle. As in, when we have content :)

So please think about writing up a few notes and snapping a few pictures of your experimental aircraft project, even if you think some of us have seen it before. Send these, or articles you think others might be interested in, to mitchfaatz@gmail.com.

And thanks to Mark Bateson for hearing our intentions in the last chapter meeting, and being the first to step up with an interesting article! Thanks Mark!

- Mitch

An Insight into Aerial Photography

by Mark Bateson

Introduction: I don't claim to be an expert, but I can comfortably say that I'm experienced in the art of aerial photography, shooting both stills and video. The purpose of this article is to pass along some insight and lessons learned over the last 20 years or more.

Background: My first aerial shots were captured with handheld cameras from helicopters, but I really got serious about aerial photography while developing camera payloads for Radio Controlled (RC) aircraft. In the 2003 to 2007 timeframe these RC aircraft



morphed into semi-autonomous Unmanned Aerial Vehicles (UAVs) fixed wing and helicopter platforms primarily designed for use by Public Safety agencies. In 2015 I began flight training and brought some of this tech along with me to study my approaches, my landings, help improve consistency, and I achieved my Private Pilots License (PPL) in 2016. In 2017 we purchased our Cessna 172-M and my aerial photography is now accomplished flying the Cessna.

Getting started: In this article I will describe the equipment I'm using but I will not be covering all the various cameras on the market. There is a wealth of information on the Internet or from the AOPA describing the various sport cameras, their strengths, their weaknesses and FAA compliance.

My advice for someone new to this is to, "start simple" and work it backwards. What I mean by "working it backwards" is to first understand your goals and your budget before investing too much time and money. Be aware that if your intention is shooting photos for private or non-compensation use, your PPL is fine but if your intent is shooting aerial photography for profit, you will need a Commercial Pilots License.

Along with aerial photography comes an added layer of workload, potential frustration, and potential fun with hours spent sorting through photos or post processing video.

Equipment: My goal is to shoot video and photo for personal use and share the fun of flying with family and friends. With my work in RC and UAVs I was using a variety of small "board cameras" recording video on micro-DVR equipment and transmitting/recording video to a base station. When the first GoPro came on the market it was the camera I had been waiting for. I stuck with the GoPro as it evolved to the second, third, and fourth versions. The cameras are great for their target "sport" market but for aerial work the automatic exposure and super wide angle lens with fisheye distortion can be problematic.

The older GoPro doesn't allow access to ISO or shutter speed settings so something I learned along

time ago was that a Neutral Density (ND) filter will "trick" the camera into using a long shutter. Soon ND filters became readily available and for full size aircraft use, you see them marketed now as "prop filters" to blur the prop in video or still images.

The super wide angle lens continued to be a nagging problem. As a result software developers created tools to un-warp the image or video in post production. These tools are very effective but I was always taught that "if you want to shoot a great photo, get it right the first time".



Recognizing a market to address this issue a company in San Diego called "Peau Productions" started developing and marketing different lenses for the GoPro and other sport cameras. The first lenses were a "do-it-yourself" kind of thing and over time, Peau Productions started selling modified GoPro cameras with their lenses pre-installed, focused, and ready for use. Today I'm flying with a Peau Productions 22mm f2.4 lens GoPro Hero4 Black, and often use a GoPro Hero3 Black with stock lens. With both cameras I'm using the GoPro "piggyback" battery option to extended battery life.

My preferred camera mounting locations are the Cessna wing struts or wing tie-down rings. Camera tie-down ring mounts being used are from FlightFlix and I often use a machined mount from WingItMounts. For shooting video, FlightFlix sells the Rock Steady Vibe-X isolation mount to help reduce vibration and I've found this to work well.

For interior shots I have a GoPro mounting clip on the ceiling console and either direct mount the camera or often fly with a camera mounted to an

EVO SS 3-axis stabilized gimbal. By using the stabilized gimbal the camera will move independently from the aircraft to deliver some amazing video or still images.



GoPro Hero 3 Black, ND filter, EVO 3-Axis Stabilized Gimbal

Post-processing is done using a MAC, with 12TB of storage and growing. Video editing is accomplished with Apple's Final Cut Pro and for still images, Apple's Aperture photo processing software.

Stills vs Video: In the beginning I always shot video and when I wanted a still image, I would do a screen capture or export a single frame from my video editing software. Video files are very large, and unless you're sharing video on YouTube or another social media site, they are time consuming and hard to share. I also found that unless something spectacular was captured in video, most people enjoyed still images much more. Today, unless I need a video clip for a specific reason I'm always shooting still images.



GoPro Hero 4 Black, Peau Production Lens w/VibeX mount

Shooting video or stills should never create a distraction from flying. As the old saying goes, "out of sight, out of mind" and most often, my cameras are mounted outside the cabin set to continuously shoot a photo once every two seconds. During my final "walk around" before take-off I start the cameras and forget about them. I do not have wireless camera controls or camera video displays in the cockpit. I will admit to mentally "framing a shot" as I fly and in some ways I think it has helped improve my flying especially when I'm shooting video.

Camera angles: Experiment with different camera angles and you might surprise yourself with the results. My most common mounting position is from the wing tie-down ring on either wing looking forward, looking at an angle to the rear, or looking straight out the wing.



GoPro Hero 4 Black, Peau Production Lens w/VibeX mount

For special projects I sometimes have the camera looking straight down, or when I want to checkup on my landings, looking at the main landing gear. Inside the cabin my cameras are typically mounted from the center console in the ceiling looking forward, or I've used suction cup mounts inside my pilot door window looking across the panel and out the front/passenger side.

Frustration and disappointment: Nothing is more disappointing than returning from a 2 hour flight with ideal lighting knowing you

must have captured some amazing photos only to find out the camera stopped recording video or shooting photos 10 minutes after takeoff. Just as bad, you forgot to start the camera or after landing find out a bug splattered the camera lens, hoping it didn't happen before capturing those incredible photos. But it happens.

The GoPro cameras can overheat and shutdown, the piggyback battery doesn't always work, the memory cards can be touchy causing the cameras to stop, battery life can often be unpredictable, and there's a long list of possible reasons why. The good news is that 95% of the time these cameras are very reliable and deliver amazing results.

Summary: Before spending a lot of money I suggest thinking through your goals, your budget, and start simple to see if this is something you enjoy.

Consider mounting a camera inside the aircraft first to get a feel for the amount of "computer time" you'll experience reviewing and processing video/photos. Experiment with different camera angles and if this proves to be something you really enjoy, make the investment in a high quality exterior mount and start shooting photos/videos outside the plane.

The most critical thing is to never let the cameras create a distraction from your flying. After pre-flight and during that last "walk-around", start the cameras and forget about them until landing. Most importantly, have fun.

Enjoy your flying, Mark

Products and Resources

mentioned in "An Insight into Aerial Photography"

FlightFlix: <https://flightflix.net/>

WingItMount: <https://www.aircraftspruce.com/catalog/avpages/wingitmount.php>

Peau Productions: <https://peauproductions.com>

EVO SS Gimbal: <https://evogimbals.com>

AOPA Camera Course: <https://www.aopa.org/news-and-media/all-news/2021/october/pilot/cam-course>

FlightFlix FAA Information guide: <https://flightflix.net/faa-camera-mount-guide/>

Submit any articles, or "For Sale", "Free", or "Wanted" items (aviation related!)
to mitchfaatz@gmail.com

FOR SALE, FREE, or WANTED

For Sale: Mini 500 Helicopter Project. Non-flying, great project to return to flying condition or for parts. Contact Brent Smith for more details. Prices TBD. miniimp@att.net (916) 708-3372

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"While my wife was visiting her mother, I added some wall art above the fireplace"