

## **Discover Policing Podcast Series**

**Title:** Drones in Law Enforcement

### **Interviewee**

- Captain Tim Martin, Program Manager for the Huntington Beach California Police Department's Unmanned Aerial Systems Team and Director of Unmanned Aerial Systems Training of the Los Angeles County Regional Training Center .

### **About**

During this podcast Captain Martin discusses the functions and use of drones by law enforcement and the success and challenges they face with this new tool.

## Audio Transcript

Interviewer: From the International Association of Chiefs of Police welcome to the Discover Policing Podcast I'm Ryan Daugirda.

Tim Martin: What's happening now is there are more and more waivers being granted for flight over people with aircraft with parachute systems and it's kind of a new trend that's going on right now and I think that's the future of all public safety aircraft, is that they're going to be integrated with parachute systems.

Tim Martin: I think there's...there's a huge future in developing ways to make our job safer. And, the whole idea is to keep officers out of harm's way.

Interviewer: This episode is funded by the U.S. Department of Justice's COPS Office and the department's full disclaimer notice is available at the end of the podcast and in the episode's show notes. The views, information, or opinions expressed during this podcast are solely those of the individuals involved and do not necessarily represent those of the IACP or the COPS Office. My guest today Captain Tim Martin is the Program Manager for the Huntington Beach California Police Department's unmanned aerial systems team and Director of unmanned aerial systems training of the Los Angeles County Regional Training Center. I hope you enjoy the conversation I have with Captain Tim Martin as we discuss the public safety community's adoption of unmanned aerial systems and how its redefining first responders in the 21<sup>st</sup> century. And now here is my interview with Captain Tim Martin, thanks for being on the podcast lets jump right into the first question.

Interviewer: Captain Martin, thanks for being on the podcast. Let's jump right into the first question. There's a lot of terms out there for what many people call drones. Including Unmanned Aerial Vehicles or UAVs, Remotely Piloted Aircraft or Vehicles, RPAs or RPVs, but UAS or sUAS for small Unmanned Aerial System (UAS) appears to be adopted by public safety, why is that?

Tim Martin: Correct, so the sUAS came in when...when the FAA finally defined what a small aircraft system was and it has to do with the weight of the aircraft. So yeah, the system is, the aerial platform could be a rotary wing aircraft. It could be a fixed wing aircraft. It could be a balloon if it's controlled remotely by a human pilot. So, it...it's not just we think of UASs in the way I think most people think of a rotary aircraft, a single rotor or the quad copter, which is what is commercially produced. But, there's a whole line of fixed-wing aircraft. There's the tethered options, all that stuff.

Interviewer: Are there specific reasons why public safety would choose one type of UAS over another?

Tim Martin: So, the missions that each one have are specific to the length of flight time, distance, and the mission itself. So, your quadcopters are limited to 20 to 30-minute battery time. You can do 3D mapping with it. Those are your more short-range specific missions with, um, cameras that can be controlled and operated by the user. So, your quadcopters are generally linked up to your remote, to the phone, where you can have a real-time downlink of what you're looking at. And, you're usually mission specific. You're flying to a certain location. You're videotaping, you're photographing something, or you're searching for something, uh, or you're delivering something. Your fixed-wing platforms tend to have much longer battery life. So, you can put that aircraft up, and it could go a long distance. You can autonomously fly a mission with a fixed-wing where you can go and map an entire, you know, ten-acre farm field in a matter of, you know, a half hour or so on one battery. And, it can be done autonomously to where you can set your mission prior to launching and it will fly the mission. It will return and land to where you tell it to. Generally your fixed-wing options do not have a downlink capability, so you're not able to watch or view your mission live. You download your mission after the fact in the computer. So, you're looking at the fixed-wings are used in search and rescue operations. They're used in, um, agricultural mapping. They're used in surveying, that kind of missions.

Interviewer: So...is there a significant difference between what public safety is using them for and how a hobbyist is using them?

Tim Martin: What public safety is using it for and what recreational are using it for is the same, kind of the same purpose. It's a flying camera. So, we're collecting data from the cameras, but what we're trying to do in public safety is take something that was really designed for a hobbyist or designed for a photojournalist or you have your photography element to it and adapt it to our mission sets, which none of these aircrafts were designed for public safety. So, we're trying to take an existing aircraft and make it work to our advantage. So, in that aspect it's greatly different. They're generally going up and they're flying and they're filming cinematography or, you know, recreation. The whole world of racer drones and FPV where you're using the goggles to fly, we don't want to be part of that because what they're doing to their aircrafts works for them, but it would never work for public safety.

Interviewer: So what do you see as the typical uses for UASs? Where do you see the most value in these?

Tim Martin: Basically it's a force multiplier. It's a time saver and what is being done right now in public safety depends on the agency and what their mission is. But, you're looking at flying, searching for suspects during a fleeing felon type situation where you can get that aircraft up fairly quickly. You can use the camera or the

thermal camera to assist the ground units in searching for a suspect. In more rural areas, they're using it with great success for lost and found, trying to find lost hikers and missing persons, search and rescue missions. We're using it for crime scene photography. We're using it for traffic collision and reconstruction and traffic collision documentations.

Interviewer: That's very interesting, would you be able to explain a little bit more about how it helps with collision reconstruction?

Tim Martin: So, we're taking it to, you know, traditionally the traffic collision mapping is what is the obvious use of a drone. But, what we're using it for is, we'll take a traffic accident intersection, for example, and we'll take each direction that the car has traveled. We'll go back a quarter mile, measure where the driver's head would have been in the driver's seat, fly at that altitude and fly the path of where the vehicle traveled. And, what we're doing is we're showing at a relative timeframe of when the accident occurred what the driver was seeing. Are there obstructions to the signal? Is there foliage covering signs? Is there construction impeding the roadway. Or was there no factors and it was a clear path? So, we're using the drones to further our investigations and city liability.

Interviewer: Are there any tactical situations that you've been using them?

Tim Martin: We're using it quite extensively and in tactical operations, where we'll fly over, watch for a tactical situation for our SWAT team. We do an extensive indoor flying and indoor training to where we'll send an aircraft inside of a building, a residence, to search it prior to a human stepping foot in that building to try to see what we're doing. We're using it, the capabilities of the lighting and the loudspeaker to interact with people. We've used it for missing persons. We've used it for barricaded suspects in vehicles, where we actually use the aircraft to communicate with them and talk them out of the car. We've used it for interacting with homeless subjects in rural areas where it would take an officer to hike down a good distance to get to that person, where we could just tell them, "Hey, come up to us," or, "Hey, you can't be here," type of deal. Those type of announcement things that law enforcement has traditionally used. We've used it for special events where we do overwatch over the USO, the fourth of July, those type of events, marathons. We use it for proactively responding to radio calls. So, we have two spots in our city where we can launch the aircrafts and fly missions to handle routine radio calls, cancel patrol units. That's something we started this year during the fourth of July.

Interviewer: So, we've been hearing a lot about the Chula Vista Police Department in your neck of the woods there in California, and how they received a waiver from the Federal Aviation Administration to fly UASs beyond the visual line of sight, why is that significant?

Tim Martin: Yeah, so, the Chula Vista program is certainly a pioneer in paving the way for all agencies to start doing that. I think that should be one of our primary uses of the aircraft if we're able to get to a call quick and get eyes on the crime as it's occurring or as our officers get there and assist in that, it certainly, will be, we know it's beneficial because agencies that have air support units that have helicopters, essentially you're acting as the same role. You're giving that aerial support. The ability to go beyond visual line of sight is one of our biggest challenges and one of the reasons why more agencies aren't working in a proactive, uh, response to calls for service. We are doing a similar version to what Chula Vista's doing. I know there are other agencies that are doing it also. But, we're limited to distance. We have to, we can only go out and when we do our operation plans, we go out prior to the event and we'll measure out how far you can go, and then we'll do that operation plan that you can't go beyond this distance because you'll lose visual line of sight. So we generally will fly always with a visual observer and that visual observer will act as that visual line of sight along with the pilot. We require the pilot to keep line of sight. So, any missions we do are within that line of sight distance and being elevated on top of our city hall or our parking structures gives us that ability to have that line of sight.

Interviewer: So what should an agency consider before starting a UAS program?

Tim Martin: So, really the first step in starting a program is there has to be a lot of research done. There's got to be the buy in from, obviously the chief of police and then it goes from there. It goes to the city manager, city council, and that starts with education. "This is what we want to do. This is where we want to go with the program. These are the benefits of the program."

Interviewer: How do you address privacy concerns of the community?

Tim Martin: Um, the ACLU came out with guidelines, uh, uh, to law enforcement, um, of what they want to see in...in these programs. And, when you read the guidelines from the ACLU, they're actually to our...to our advantage. They're actually really reasonable and if you follow those guidelines, the guidelines set by the IACP and the Presidential guidelines, if you follow those three guidelines when you go to start your program, then there shouldn't be any problems with that.

Interviewer: Oh excellent, we'll put a link to some of those resources in our show notes.

Tim Martin: I highly encourage anybody starting a program to take a draft policy and a procedure manual and go sit down with...with the local, you know, stakeholders, whoever is involved and say, "Look, these are the requirements whether that be with the ACLU themselves in your local office or your city council and say these are the guidelines. This is our policy. We are well within what they're...what they're asking for." What's nice about starting a program now, versus three or four years ago, everything already exists. You don't need to reinvent the wheel. You just go and say, "Hey, can I have these ten agency's policies and let's not go and deviate too much from what's been working and what's successful." Same with an operation manual. I will give out our operation manual. You may ask for it as a starting point. So, it's just public awareness. Meet with your public. Let them know what you're planning to do so they're not caught off guard. Most agencies in California use Lexipol and I'm sure that other agencies out there have standard policies.

Interviewer: Okay Tim, so I don't want to get too far down in the weeds, but it looks like in order for public safety to fly UASs you need either a Certificate of Authorization, or COA, from the FAA, or a Part 107 certification, which appears to be more common. Can you explain more about Part 107?

Tim Martin: Sure. So, Part 107, um, uh, covers a wide range of things, some that really apply to law enforcement, others that we'll never have to even worry about or want to get a waiver for. The first would be the size of the aircraft. So the weight requirement is the first and foremost. You can't fly at night, so the night restrictions are 30 minutes before sunrise and 30 minutes after sunset is pretty much your window. And then, you can fly throughout the day without restrictions. Flying no more than 400 feet in the air, which, I don't know why you would want to do that anyway. We have to coexist with manned aircraft and, you know, when you get past 200 feet there's really no logical reason to fly that high with the camera systems that come with these aircraft. Some of the more obscure ones would be, you have to have three-mile visibility, which really doesn't matter because you can't fly beyond vision line of sight anyway. Flying from a moving vehicle, you can't fly over people, which is a huge challenge and something that I think needs some better definition for law enforcement because, you know, unless the way it's written is unless they're a part of your operation, you can't fly over them. So, there's some other ones that don't, that would never apply to us, but those are currently what 107 restricts.

Interviewer: Now, I understand that air space is a pretty big deal depending on where agencies are located, and the FAA has a dedicated map on the web that details the off-limit areas and altitude restrictions for UASs.

Tim Martin: Airspace is by far one of the biggest challenges for a lot of places, and then sometimes it's not a challenge at all. If you fly within, like, Huntington Beach for example, we fly within two airspaces, John Wayne Airport is Class E airspace and then you have the Joint Forces Training Base at Los Alamitos. And, the Naval Weapons Station, which all have restricted airspace. So, an agency has to understand what is their airspace and how can they legally fly in it?

Interviewer: So how do you navigate in areas that may have airspace restrictions?

Tim Martin: So, if you have an operation in, let's say we have an operation in John Wayne airspace and we didn't have a waiver for it and it's a tactical operation. We could either call the tower directly and say, "Hey, can we fly in your airspace," or you can, through the FAA you can go online and apply for the emergency COA. We've actually tried for an emergency COA to fly it over people and they won't issue that.

Interviewer: Why is flying UASs over people such a big deal? It seems like flying in urban and even suburban areas, that can be pretty difficult to avoid.

Tim Martin: It's challenging because when these things lose power, when they lose a motor, when they collide with an object and they lose one of their motors, they don't fall straight out of the sky. You know, they do some rotations and they fly like crazy for a while and it's really challenging to know where it's going to land. But what's happening now is there are more and more waivers being granted for flight over people with aircraft with parachute systems and it's kind of a new trend that's going on right now and I think that's the future of all public safety aircraft, is that they're going to be integrated with parachute systems.

Interviewer: There have been a growing number of incidents involving hobbyists and even media UASs interfering with public safety operations, how big of a risk is this?

Tim Martin: Yeah, so that whole counter drone concept is one of the more challenging concepts for us. In the role of teaching for Los Angeles County Regional Training Center, we have a counter drone class and that's one of the hot topics, is how can we as a public agency, get these drones out of the sky that are interfering with emergency, that are interfering with aircraft, and the short answer is right now, federally, we can't. There is no law, with the exception to interfering with a firefighting operation. There's no criminal law that allows us to go after the operator, let alone force him to land his aircraft. A lot of cities are enacting city ordinances to prohibit the flight of an aircraft within their jurisdiction. But, the way that the law is written, it only allows cities to restrict the take-off and landing from their jurisdiction. So, if you fly in from one area that's nowhere near the city,

and you fly into the zone and you didn't take off and land from that city, we're back to square one. We've encountered, we've successfully prosecuted interfering cases with the drone. We had an officer involved shooting where the aircraft flew within 100 feet of our helicopter, our police helicopter and we were able to trace the aircraft back to and get the aircraft when it landed and then trace it back to the operator and we arrested him for that. So there are ways to do it. But the challenge is what is your threat, identifying what your threat is and if you have a store-bought aircraft from any one of the common manufacturers and you see what's what it is, you have a UAS with a camera on it. So, what's your threat? Your threat is they have a camera and the aircraft could hit one or two people if it fell out of the sky versus if we're working a special event and let's say, you know, downtown area or on a beach and there's a large crowd or a sports stadium, and you see a large agricultural drone flying towards your event with the sprayers or an aircraft coming with a large payload, well that's a whole different story. And so, part of the big education process is identifying your threat and what are you going to do about that once you get it? There's programs out there that will allow you to interfere with the aircraft, um, electronically. There's programs out there that will allow you to detect where the pilot is and where the aircraft is and then at least you can find, you know, and try to do that. But, they all come with caveats and, you know, if you have an electronic jamming device, it's great, but you can't use it. The FCC won't allow us to take an aircraft out of the sky. If you have an aircraft that will shoot a net at it and take it out of the sky, then the FAA says that they consider an unmanned aircraft the same as a manned aircraft and we can't interfere or shoot one out of the sky, if you will. So, our hands are tied right now until regulations stop. You know our big, our best way to do it is find a pilot. You know, luckily these batteries are 20 minutes and eventually it's going to come home. And, if you don't have something in place during those events to have a team to go out there and find the pilot, then, you know, you've got to prepare on that end of it. So, it's a challenge, for sure.

Interviewer: How are you handling, um, the nuisance calls from someone saying, "Hey, somebody's flying a drone over my backyard and my daughter's sunbathing out there!" or something. Are you getting...ah, seeing more of those calls?

Tim Martin: We get a lot. I...we...we get the complaints of, "My neighbor's flying his drone over my house," and...and civilly, there are ramifications if you have something like that, that's an invasion of privacy and we will do our best to respond to those calls. If we can find the pilot then we'll educate them. You know, "Hey, look, this is the concern." Most of the time they'll show us their video, you know, and they're filming something completely unrelated. I can't think of a time where we've ever contacted somebody. We get them down at the beach all the time and we'll get people flying during our special events and the airspace around our beach is like any coastal, you know, you have both rotor, you have helicopters



and airplanes that fly at low altitudes. And, it's a challenge to share the airspace. So, we will get the pilot. We'll identify him and we'll just ask them to land. And, nine times out of ten, they always land.

Interviewer: So, what's next? Where do you see this going? The use of unmanned aircraft as a public safety tool?

Tim Martin: Well, what I see is agencies and cities that don't have air support, this will become their air support and how you deploy it is the exciting part because your Chula Vista model of deploying an aircraft from a fixed location remotely beyond visual line of sight, I hope that's the future because that, obviously, opens the door to a lot of stuff. But there's also value in, we've developed a system where everybody that's on our team has their own aircraft, and they maintain that. They maintain the batteries. They have enough supplies to get by, and they take it out with them on patrol. And, when they see fit to use it, when there's a call for service or they think there's something that happens, they're up within a matter of a minute or so. So, our model is to deploy from the field and then if the big one hits and we have to pool our resources, they all bring their aircraft with them and then we have other aircraft that assists. So, that's another method of doing it. So, I think you'll see it more integrated into patrol operations. You'll see it more integrated into the fire service. Our program, one of the ways that we were able to be successful in launching our program is, I don't think our city was ready for a law enforcement only drone program, if you will. So, we went with a public safety UAS program and we incorporate our fire and our lifeguards. So, we fly missions for our fire department. We fly missions for our lifeguards. One of the things that we've been doing a lot of extensive testing on both here at Huntington Beach and with the LA County Regional Training Center is payload deliveries. And, I think payload deliveries have a huge place in law enforcement when it comes to everything we do. We're looking at delivering throw phones in tactical situations, delivering cell phones, delivering medical supplies, tourniquets. If you have a North Hollywood type scenario where you have officers that are pinned down for a length of time because the threat's still active and you can't get to them at least you can fly and you can either drop a bag to them or you deliver the aircraft itself. You know, it's a throwdown aircraft. You just fly the aircraft right to the guy with a tourniquet on top of it or a med bag attached to it and that one's out of commission. And then, you go to the next one and so, I think there's a huge future in developing ways to make our job safer. And, the whole idea is to keep officers out of harm's way and be able to reach out and touch somebody without having to do it. You can deliver for fire rescues and swift water rescues, they're using the aircraft to deploy, ropes to people that are on cars and stuck on roofs. And, they're using them to deploy flotation devices and there's a company with a device called the arm-lock. And, it's a flotation device that goes over the arm and then it inflates, and they're using it to pull people out of the ice, when they fall in the ice. Rather than have people

go up there, they'll deliver the arm-lock with the rope attached to it and they're pulling people out of the ice without putting other people in jeopardy.

Interviewer: Wow that sounds like an excellent use of the UAV technology. Well on that note, we'll leave it there. Thank you, Captain Tim Martin, for being on the podcast.

Interviewer: I want to thank Captain Tim Martin again, I also want to thank you for listening.

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