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Conroe, Texas
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Using Unmanned Aerial Systems Within the Homeland: Security Game Changer?

Montgomery County is directly north of Houston and contiguous to Harris County. The County is diverse in both geography and population. The current census lists the population at over 471,000. It is approximately 1042 square miles in size with highly populated urban areas in the southern portion of the county (The Woodlands) to very rural areas in the north. Sam Houston National Forest, situated in the northwestern portion of the county encompasses 47,609 acres. Situated in the middle of the county is Lake Conroe, a large lake (21,000 acres), with a significant population surrounding it.

In 2005, the Montgomery County Sheriff's Office began to explore various avenues to enhance our operational effectiveness. One idea was to obtain air assets for public safety response needs. We envisioned having an air asset that was multi-purpose and could be utilized in a variety of critical incidents to improve our ability to respond. Initially we looked at small aircraft (i.e. Cessna's, etc.) as well as helicopters. We looked at both new and used aircraft and quickly realized we did not have sufficient funding to purchase nor maintain such an item. As an example, a "law enforcement" helicopter, with associated equipment, would require over \$2 million for the initial cost. We would be unable to fund full time personnel to operate and maintain the aircraft. A small, fixed wing aircraft would be less costly, around \$400,000, but we would still have the same staffing issues. In addition, we compared operational costs and determined the hourly cost alone would be prohibitive, based on our budget.

We are fortunate to be situated in an area with agencies (Houston PD, State Police, and DEA) that do have air assets and we have certainly called upon them to assist us in a variety of ways. It has been problematic; however, since these agencies also have budget constraints which limit their operational flight hours as well as their ability to respond. The problem has been further compounded by the need for these air assets to cover large areas or, because it may be a state or federal asset, it is deployed to other areas of the State or Country. They are, therefore, unavailable at times.

We continued to review opportunities over the next few years. One such opportunity was a pilot project through the Department of Justice. The program was offering certain types of "ultra-light" aircraft for testing by law enforcement. A letter was sent to the DOJ representative on two different occasions; however, no response was ever received.

In 2008, a call was received from the CEO of Vanguard Defense Industries (VDI) requesting a meeting to discuss the concept of a UAV for law enforcement. During our first meeting, a discussion was held regarding the practicality of using a UAV for law enforcement purposes. The platform being proposed was a small helicopter with a color video camera and Forward Looking Infrared (FLIR) capabilities. The aircraft could be launched quickly, provide an aerial view during a critical incident, and be economical to purchase and operate. We discussed at length the types of incidents we thought would be appropriate for its use. These included SWAT call outs, high risk warrants, man hunts, lost persons, and accident scene investigation (aerial photography). In meetings that followed, we expanded on its use to an overall public safety response instead of being geared strictly towards law enforcement. In addition to a law enforcement use, we envisioned fire departments and emergency management offices as agencies that would benefit from such an asset. We then added to the types of incidents it would be suitable for

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to include hazardous materials spills, fires, damage assessment, or traffic management observation due to hurricane evacuations.

While VDI was working on the manufacturing component, we began to research funding sources and eventually submitted a grant proposal through the Department of Homeland Security's Urban Areas Security Initiative (UASI) program in December, 2010. The UASI project goal, identified in the grant project was, "to enhance regional response capability." The grant was approved in June, 2011, and the delivery of the Shadowhawk was made in December, 2011. The total funding for the grant was \$220,000. This included a one year maintenance agreement and air crew training for two personnel. Within a few months the Sheriff's Office purchased an upgraded guidance system, as well as an LED lighting system, to better identify the aircraft.

In 2010, we also initiated our Certificate of Authorization (COA) application to the FAA. The web based application process was relatively simple to complete and many email exchanges and phone conversations took place with FAA personnel. It was clear to us that this was somewhat "uncharted waters" for them and we were warned on several occasions that it would be a lengthy process. Once the final application was submitted, it was a number of months before the application was approved. The initial COA was renewed in 2012.

To date, the Montgomery County Sheriff's Office has only had one opportunity to utilize the Shadowhawk for an operational mission; however, the FAA denied our request for an emergency COA, citing there had to exist a "loss of life or potential loss of life" before they would approve it. We certainly believed there to be a potential danger to the law enforcement officers who were going to conduct the mission. We opted to not press the issue at that point. To some critics, this would seem to be a waste of federal tax dollars. I would point out; however, public safety operations are not static or particularly consistent. This is especially true with "special missions." As an example, our SWAT unit responded 23 times in 2011 but has not been "called out" in 2012. The need is there; however, and will continue to be. Those types of incidents we identified as being ideal for the Shadowhawk are actual types of incidents we have experienced over and over again in the past. It is only a matter of "when" the next such incident will occur.

We continue to think of ways to deploy our UAV and one such example is utilizing a UAV to deliver a cellular phone or an emergency medical kit to a flood victim, stranded on the roof of a house. (Currently, the FAA prohibits this type of activity.) It would appear to be highly effective to send a UAV in to deploy a cellular phone, have a first responder explain to the victim what the procedures will be to be picked up by a helicopter or boat (excellent safety protocol) and then continue with the rescue operation or; be able to drop a first aid kit to a victim with a UAV in a timely manner so they can immediately address their basic first aid needs as opposed to forcing them to wait on medical help to be delivered by aircraft or boat (not very timely). In discussions we have had with the manufacturer of the Shadowhawk, it would be relatively easy to build the necessary platform for the Shadowhawk to "drop" supplies as stated. There are still, no doubt, scenarios we have not even dreamed of wherein the UAV could be used to benefit public safety.

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There has been a knee-jerk reaction to the use of UAV's by public safety agencies in the United States with national media outlets painting a dark picture of tens of thousands of "drones" being used daily to "spy" on citizens. We believe there is sufficient case law in place to establish, for the UAV community, the legal requirements and procedures for operation and also the necessary repercussions for those agencies who fail to comply with the legal mandates. UAV's operate just like their manned counterparts. Obviously, the primary difference is having a crew on the ground operating it as opposed to a crew operating the airborne aircraft. There has been case law developed over the years to deal with manned aircraft operations for public safety agencies. We believe these same laws would absolutely apply to UAV operations.

Governmental entities, as identified and approved by the FAA, must follow strict guidelines and protocols and are extensively scrutinized by the FAA hierarchy for improper operations. The problem exists in the rank and file FAA hierarchy having no real concept of the needs of public safety agencies. It is my perception they tend to look at the use of UAV's with myopic vision. This was fine for past years as new technology, in the FAA domain, was scarce. Now that UAV technology is here, the FAA does not have the experience in its application. FAA staffers do not have the law enforcement, fire, or emergency management background to be able to relate to the mission of these agencies. The sole purpose of the FAA is to monitor them from an aeronautical stand point only. Obviously, they are the experts in this environment; however, we believe they have no real understanding regarding the "critical mission" aspect of UAV operations. If UAV operations remain under the oversight and control of the FAA, as is currently the case, domestic UAV operations will continue to be severely hampered or limited to the point of being useless.

If it is necessary to require federal oversight of UAV operations within the United States, it would seem to be most appropriate that The Office of State and Local Law Enforcement within DHS would be the likely agency at the federal level to be tasked with this role. DHS would serve as a database, keeping track of the types of UAV's in use, agencies using them, types of missions the UAV is being flown, mission results, keeping track of case results (if used in response to a criminal offense –narcotics warrant/SWAT operation), etc. To this end, we would propose having DHS work as a liaison for local agencies that use UAV's. DHS could provide contact information, act as a resource and information tool, and as a monitoring/approving agency for public safety agency operations. Obviously, it is incumbent on such agencies to work through the COA approval process to allow the FAA the opportunity to scrutinize the aircraft, the associated operating systems, locations, etc. The FAA; however, does not need to go beyond that, other than the regular, routine review of agency flight operations to insure flight safety rules are being followed.

UAV systems for public safety agencies are extremely viable, effective, and economical means to enhance the public safety response to critical incidents. The use of drones by public safety agencies is, ultimately, about protecting and making safe the citizens we serve. Too much focus is being made on the impractical application of UAV's and not about its true design and purpose.