

# Unmanned Aircraft Systems at Events

By Jon Pollock



## Background and General Information:

There is no doubt that in 2016 we are living in a technological age. Technology has been an invaluable tool for society to advance in countless ways and in the last 20 years especially, we have seen almost inconceivable advancements made. One specific sector of technology that has become incredibly pertinent over the last five years is the use of Unmanned Aircraft Systems (UAS) or drones, as they are more commonly known. Drones are certainly a great tool for many different types of individuals and industries, however as their use becomes more pervasive, so do the issues surrounding them. This topic is especially important for event professionals to be educated on, as UAS use becomes more common recreationally for ordinary citizens at open-air events.

One of the difficult things about the UAS issue is that technology evolves so quickly it can be difficult for the legislation to keep up, this is one of the major challenges facing drone regulation. The governing body that determines the legislation for UAS usage is the Federal Aviation Administration (FAA), the national aviation authority of the United States, with powers to regulate all aspects of American civil aviation. These responsibilities include the construction and operation of airports, the regulation and management of air traffic for both civil and military aircraft, the certification of personnel and aircraft, and the protection of US assets during the launch or reentry of commercial space vehicles(1). The FAA defines a UAS as the unmanned aircraft (UA) and all of the associated support equipment, control station, data links, telemetry, communications and navigation equipment necessary to operate the unmanned aircraft. The UA is the flying portion of the system, flown by a pilot via a ground control system, or autonomously through use of an on-board computer, communication links and any additional equipment that is necessary for the UA to operate safely. The FAA issues an experimental airworthiness certificate for the entire system, not just the flying portion of the system(2).

An estimated 700,000 UAS were to be sold in the United States in 2015, according to the Consumer Technology Association(5). The first step in the regulation of drone usage was to enact a policy requiring drone users to register their UAS with the FAA. Users must register their drone giving the FAA the ability to track a UAS to its' owner or operator in the event of an accident or

incident. According to the FAA, more than 425,000 people have registered their drones since December 21, 2015(5). Any UAS weighing more than .55lbs (250g) must be registered with the FAA. In addition, the owner of the UAS must be 13 years of age or older and a U.S. citizen or permanent legal resident of the U.S. The FAA has created both an online and hard copy version of the registration to help streamline the process for the growing market of individuals using these devices.

The FAA has also produced a number of operational limitations for the use of drones to help regulate their use and maximize safety of flight.

1. UAS aircraft may only reach a maximum height of 400ft above ground level.
2. Operators must keep their UAS within their sightline (without the use of any vision aiding devices other than contact lenses/prescription glasses) during the flight.
  - a. A first-person view camera does not satisfy this requirement
3. UAS aircraft must be operated in a manner as not to interfere with manned aircraft.
4. When flown within 5 miles of an airport the operator must notify, in advance, the airport operator and control tower.
5. A maximum airspeed of 100mph (87 knots).
6. Minimum weather visibility of 3 miles from control station.
7. No operations are permitted in Class A airspace (18,000ft and above).
8. No person may act as operator for more than one unmanned aircraft at one time.
9. No careless or reckless flight operations.
10. A pre-flight inspection of the UAS by the operator is required.

The other challenge surrounding the use and regulation of UAS aircraft is the enforcement of enacted laws and policy. Federal regulations and statutes, like those regarding the use of UAS aircraft, can only be enforced by federal agents, of which the quantity does not support the ability to enforce in a widespread manner. This issue has caused many states and larger cities to enact their own legislation on UAS use so local and state law enforcement agents have the ability to enforce. According to the New York Times, more than 20 states approved drone laws this year, as have major cities like Chicago, Los Angeles and Miami. Many of these regulations placed tough restrictions on areas to fly and clamped down on the use of drones to spy on

neighbors. The intervention of the FAA has created frustration for many local lawmakers who feel the agency's drone rules do not go as far as many states and municipalities that are explicitly banning flights within cities and over homes, strengthening privacy protections and imposing steep criminal and financial penalties on violators(6). To combat this issue and provide consistency across the board, the FAA has provided documentation detailing guidance for UAS enforcement operations, and encouraged city and state governments to enact the FAA policy at a state level.

## Impact on Events:

All of the legislation and regulation on UAS use has become a necessity with the meteoric rise in drone use both commercially and recreationally by average citizens. For event professionals this is an especially pertinent topic as amateur "pilots" often see open-air events and sports games as an ideal place to fly their UAS. This can present a problematic situation for event organizers and law enforcement alike due to many of the enforcement complications discussed above. Here, at the Kentucky Derby Festival we have a unique perspective on drone and UAS use due to the many facets of our kick-off event, Thunder Over Louisville.

Thunder Over Louisville is a two-fold event featuring an air show with military and civilian aircraft, followed by the largest fireworks show in North America, with nearly 60 tons of fireworks illuminating the Louisville skyline. The single day event is attended annually by over 500,000 spectators and takes place on the largest annual open-air venue on the continent, bringing up a number of considerations regarding UAS use. Many of these considerations are not exclusive to Thunder Over Louisville and should be examined at open air events all over the world.

1. Unauthorized UAS entry to a venue can disrupt the event. Specifically in regards to Thunder Over Louisville with an air-show and fireworks both occupying the airspace above the venue.
2. The obvious potential for injury or death due to a crash or technical malfunction. These UAS aircraft can weigh up to 55 pounds and if one were to fall from its max height of 400 feet it could cause serious injury or death to a patron at an event.
3. The main viewing area for Thunder Over Louisville is Louisville's Waterfront Park, a public, city-operated venue. This means KDF officials can not restrict anyone from entering for any reason. It is also

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a challenge to regulate ingress and egress to the venue as it is open-air, without any perimeter fencing.

4. UAS aircraft are also able to circumvent ground based security to bring illegal or unapproved contraband into a venue undetected. This could create a safety and security issue for all attendees.
5. A UAS can be launched from land or water, causing concerns for Thunder Over Louisville as our venue is bordered by the Ohio River on the north. Policing a land-locked venue is difficult enough, but water gives UAS operators the ability to launch their aircraft from down the river, potentially affecting our air-show or fireworks display, without even setting foot near the venue.

All of the above issues are just a few of the myriad of concerns that come with UAS use. Taking these into account when planning an event is becoming more essential as stories continue to surface detailing incidents with UAS aircraft.

One such incident happened at the University of Kentucky in the fall of 2015. University of Kentucky Law Student Peyton Wilson crashed his UAS at the University of Kentucky's Commonwealth Stadium during a football game, and shortly after Wilson received a "terrifying" letter from the FAA notifying him of

legal ramifications. While flying his drone, Wilson flew to the center of the stadium, behind a scoreboard, to avoid four parachutists who were landing on the field. A campus police report says that the drone came within 25 feet of the parachutists, but Wilson contended

his footage showed that his drone was nowhere near the parachutists. Wilson then lost connection to and control of the drone. The drone had a preprogrammed return flight it would follow if it lost connection, however this feature malfunctioned and instead, the



drone flew toward the suite patio deck on the south side of the stadium and crashed into a glass wall of the patio area occupied by 10 people, according to court records. Wilson was charged with wanton endangerment and criminal trespassing (although Wilson himself did not enter the stadium, his drone crashed inside on private property), but was able to plead to a lesser charge and a small fine. Prior to this incident the University of Kentucky had no official regulations in place regarding the use of drones at events or in university facilities, but that has since changed(7). The university now requires individuals to apply for a permit through the university's event management office at least seven days prior to the requested event. In addition, operators must be able to show proof of general liability insurance that covers operation of the UAS(8). The University of Kentucky had to respond reactively to this situation and now has a plan in place to produce consistency in the future. As the rate of UAS incidents increases nationwide we will see more organizations be proactive in instituting guidelines and procedures to regulate the use of UAS aircraft and drones, before they experience an incident.

The FAA does have a policy in place to cover sporting events, stadiums and major events, however it is not yet an all-encompassing event policy and requires an exhaustive application process. Section 91.145 deals with the "Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events". The FAA will issue a Notice to Airmen (NOTAM) designating an area of airspace in which a temporary flight restriction (TFR) applies when it is determined that a TFR is necessary to protect persons or property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft in the vicinity of an aerial demonstration or major sporting event(9). Having a policy in place, and educating individuals on said policy, can go a long way towards helping deter unpermitted or illegal UAS use.

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The best advice for event professionals to heed in regards to this issue is to be proactive. Never wait until you have a problem to decide how you will deal with it.

### The Future of UAS Use at Events:

The topic of drone use at events is still very new and will continue to evolve as technology improves. The best advice for event professionals to heed in regards to this issue is to be proactive. Never wait until you have a problem to decide how you will deal with it. It is essential to have plans in place for every type of situation, even if you think, "it can't happen here". What this means for event producers is to put a policy in place and educate your spectators, attendees and participants. Create signage and post regulations so everyone has the ability to access the information and educate themselves. Event organizers should also work in concert with local law enforcement and Flight Standards District Offices (FSDO) to ensure cohesion in education and enforcement. For more information on this topic you can visit the Federal Aviation Administration's website at [www.FAA.gov](http://www.FAA.gov) and stay up to date with the latest policies and procedures.

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