Avoiding Drones

No one has hit one. Yet. Here are clear guidelines for safer airport ops.

By Pamela Brown

It was just one year ago that the FAA, prompted by the rapid increase of individual ownership of drones or Unmanned Aircraft Systems (UAS) and the subsequent increase in "close call" incident reports by pilots, commissioned a task force to provide the public with operating guidelines for their newly acquired unmanned aircraft system.

As a result of that task force, the FAA mandated the registration of all newly purchased drones and required retroactive registration of drones already in use. In addition, drone operators must now keep the UAS below 400 feet AGL and beyond five SM from airports. The FAA also did a media blitz to make anyone considering purchasing a drone (and those who already had one) aware of the new regulations and consequences of ignoring the law.

While the new rules have educated some as to the proper use of drones and the dangers of improper use, alarming close-call incidents between drones and aircrafts continue to occur. The most recent near-miss occurred on Nov. 16. Take a look at the news bulletin from The Sun of London: "Major air disaster narrowly averted over London after drone nearly collides with passenger plane near the Shard. The commercial aircraft was an Airbus 320, with 165 passengers on board. It was making a final approach to Heathrow over central London when the near miss occurred. The Airbus was just a couple hundred yards from a 95-story skyscraper when the pilot noticed a black drone, 20 inches across hovering over the plane's left wing."

According to reports, the pilot and crew held their breath as they watched the drone hover, hoping it wouldn't veer suddenly in the wrong direction.

Was that black drone registered? Was the operator aware that the drone was not allowed in that airspace? We don't know. But we do know that even with the new drone regulations, education and enforcement, drones continue to be a lurking danger in the skies.

It's not surprising when you consider the rapid growth of drone ownership, which has quadrupled in the last year, rising from one million to more than four million drone users. It's projected that by 2020, 16 million drones will fill the skies, and that's just in the United States. The sheer number of drones in use makes it statistically impossible to expect that the safety record will remain accident- or tragedy-free for much longer.

That's why the Permanent Editorial Board of the Aviators Model Code of Conduct Initiative has created a flyer
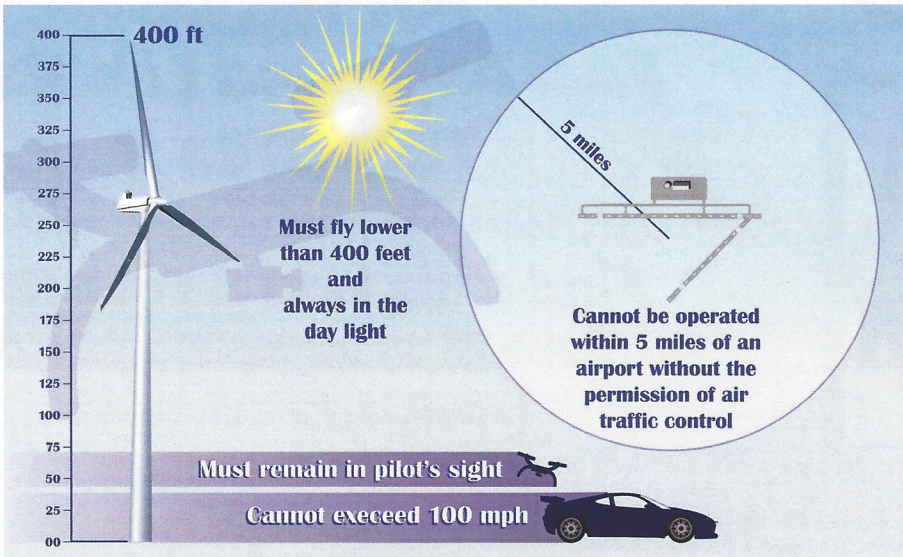
and brochure on drone-safety awareness and operational suggestions for manned aircraft pilots. "Flight Safety in the Drone Age" acknowledges that drones are here to stay and, while drone operators who ignore the rules or who are unaware of the rules are responsible for the way in which they use a drone, it is the aircraft pilot who bears the ultimate responsibility for the safety of his crew and passengers in this new era of crowded skies.

The brochure offers the following suggestions for pilots who wish to educate themselves about drone avoidance safety guidance:

• Recognize that most drone operators are not certificated pilots and may not understand or adhere to aviation operations and safety requirements;

• Recognize that most small drones operate without systems that provide a level of safety equivalent to manned aircraft in terms of collision avoidance capability and reliability;

• Become familiar with drone regulations, and to distinguish the flight profiles, characteristics, and operations of manned aircraft from those of drones;

• Recognize that drones may be operated in unexpected or unauthorized ways, including at night, in instrument meteorological conditions, in controlled or uncontrolled airspace, at unauthorized altitudes, and beyond visual line-of-sight of the operator, possibly impeding effective collision avoidance;

• Consider that many drone operators are preoccupied with maneuvering for pho-

tography or other applications, which may compromise situational awareness;

• Anticipate that some (larger, typically public) drones may require "chase aircraft" while in controlled airspace — possibly making departure and arrival procedures, traffic pattern altitudes, and handling nonstandard;

• Review and understand the limitations of even the most effective visual scanning techniques; and

• Train to respond to possible collisions and other emergencies arising from conflict between manned aircraft and drones.

WHILE IN FLIGHT, PILOTS SHOULD:

• Increase their awareness of drone hazards where incursions are most likely: during flight below 500 feet AGL, during climb-outs and descents on terminal segments of flight, while flying faster, lower — where see-and-avoid margins are reduced by the increased speed, near areas of high public interest — such as fires, festivals, parades, attractions, parks and popular photographic and vista points;

• Query ATC and/or Flight Service regarding drone operations in the airport environment;

• Use available aircraft lighting to increase your visibility to drone operators;

• When in a climb, consider a cruise climb which maximizes visibility;

• Listen attentively, including on 121.5

MHz, for radio reports of drone sightings/activities, make periodic transmissions, and answer inquiries concerning drone operations;

• Recognize that risk of collision is exacerbated by distractions during high-workload phases of flight;

• If aggressive maneuvers are necessary to avoid collision, consider the acute vulnerability that can result (to windshields, jet intakes, or rotor systems);

• Anticipate that fires, public gatherings, points-of-interest and newsworthy events are likely to attract drone operations and avoid operating in their vicinity;

• Maintain greater separation from drones than might otherwise appear necessary and be prepared for the unknown;

• Fly predictably so drone operators can better avoid you

POST-FLIGHT OPERATIONS:

• Understand that reporting hazardous drone operations and near-miss incidents will not only assist in education and possible enforcement actions against errant drone operators, but will help build the database required to promote the safe integration of manned and unmanned aircraft operations; and

• Become familiar with and file (or request that ATC file) applicable reports, including: Near Mid-Air Collision and the Aviation Safety Reporting System General Form. The full brochure is available at SecureAv.com/drones, which includes a guidance brochure, technical paper and safety poster. The "jet" version of the poster is here: SecureAv.com/DroneZone-PosterJet.pdf .

In this new era of increasing dangers to flight, General Aviation is being challenged to re-think existing guidelines and invent new safety measures. In England, safety experts are deliberately flying drones into commercial airliners to see what the results will be. Pilots have expressed growing concerns that drones, which contain heavy lithium batteries, could shatter a plane's windshield.

While all drone users should be educated in drone safety, the pilot must always remember the first rule of drone-avoidance safety: Never assume the drone operator knows how to operate the drone safely and, if he or she does, never assume the rules will be followed. **TBM**