What are possible dangers posed by drones to civil aviation?

Nowadays, this issue is real. Moreover, threat to the safety of commercial aircraft coming from drones is growing. Drones may operate in the areas where they are not expected, for example, at low altitudes around airports and interfere with planes taking off or landing. And there are lots of examples when drones were involved in near misses incidents in the vicinity of airports. This is because it's difficult to detect and identify drones from the cockpit of an aircraft or pilots may detect them when they are too close to each other. Drones may cause structural damage to the aircraft, get into the engines or crash into the windscreen. Such situations are really dangerous and could lead to loss of many lives. (But on the other hand, airports can have benefits from drones and use them to perform inspection activities or bird control).

- ***Could you explain the term "drone", please?***

A drone or UAV (unmanned aerial vehicle) is an aircraft without a pilot which is controlled (remotely) from the ground or from another aircraft. Or the vehicle is programmed and fully autonomous/independent.

- ***What are operating characteristics of drones: time airborne, flight range***?

There are a lot of different models with different features, shapes and size. Some of them may have a great flight capability. How long and how far they can fly (flight endurance and flight range) depends on the airspace, the user/operator and the line of sight. For example,

Short range models. They can fly up to 150 km and more than 11 hours.

Drones withy medium range. These drones can have a range of 650 km and they are commonly used in weather forecasting.

Drones with the longest radius. Drones from this group can fly up to 30.000 ft. above the sea level and they can stay in the air more than 36 hours. The main goal of these drones is to reach remote distances.

Military drones are able to cruise at extremely high altitudes ,they are able to hover/operate for long hours in the air and are controlled from a great distance. As for the drones used as a hobby, they have a short control distance and can fly for just a few minutes.

(Flight endurance/time airborne may last from a few minutes up to several days and flight range may vary from a very short distance up to 3000 m if to speak about military drones).

- ***How frequent are near miss situations between drones and aircraft?***

Drones are widely used these days but most drone operators are not certified pilots and they may be unfamiliar with aviation operations, procedures, requirements. Operators may exceed recommended maximum altitudes, use drones at nights and in IMC. Also drones, mainly, operate without collision avoidance systems, so, unfortunately, near miss incidents with drones are not rare (are quite often) and continue to increase.

- ***How often do pilots report about drones?***

Personally, I have never received such reports and I don't know the exact statistics but I believe that each time when pilots encounter drones while flying/in the sky or notice them in the vicinity of the aerodrome while on the ground they must/should/shall notify/inform ATC as soon as possible.

- ***What information is contained in pilots' reports about drones?***

The information should include time of observation, position, altitude, direction of travel, number and basic description of the drone (model, size/dimension, colour, special features/markings).

- ***Why do pilots inform ATC service about drones?***

An ATCO should know/have information of any flying vehicle in his sector, he should identify and control all the flights and provide safety.

- ***What are controller's actions in case of a drone in the zone?***

It's a requirement for controllers to record any drone activity and operational issues that it causes. The controller should inform the supervisor and notify/inform pilots of departing and arriving aircraft of the exact position of the drone(s), time of observation, colour, dimensions, moving direction and other pertinent/important information. The supervisor should contact the law enforcement (police and security services) immediately if a flight is unauthorized/illegal.

- **What measures can stop drones flying over airports?**

We have serious and strict set of rules and regulations which prohibit/ban to fly drones close to airports and near any manned aircraft. So it's unauthorized/illegal/against the law to fly a drone within 1 km of the airport or above 400 feet. Anyone who brakes (doesn't follow) the rules and puts others in danger must be severely fined even imprisoned.

- ***What measures can be taken to reduce the risk that drones pose to aircraft?***

It's very important to educate drone users/owners/operators about safety and responsibility. Then, all drones must be registered and have authorization/ permission to fly and remain in the line of sight and within 500m of the pilot. Besides, radio equipment used to control the drones shouldn't interfere with air traffic control systems.

- ***Why is it necessary to investigate incidents connected with drones?***

Any new threat in aviation needs to be/must be/shall be recognized, analyzed and understood. Actually, investigations are necessary to determine reasons for incidents. We need more data, only with more information we can really understand the threat from drones and will be able to find the ways to prevent incidents in the future and increase safety, in general.

- ***Have you ever had/heard of a situation connected with a drone?***

We have never had such situations in our control center, possibly it's because citizens in our region are responsible enough. But there have been several drone accidents reported over the years. A lot of these incidents happened because of pilot errors, mechanical failures or a combination of the two.