Department of the Interior
Lessons Learned

Subject: 3DR SOLO UAS ISSUES

Area of Concern: 3DR SOLO UAS Operations

Distribution: All Aviation Activities

Discussion: The Department's UAS program has grown significantly over the last year. Thanks to all of those reporting in SAFECOM, we've been able to identify some important issues involving the 3DR Solo UAS.

Controlled Flight Into Terrain (CFIT)

There have been several incidents where a DOI Remote Pilot has flown an aircraft into terrain or obstacles. It's paramount for operators to ensure their UAS is able to climb, cruise, and descend while maintaining clearance from obstacles. The following are some best practices to help mitigate this risk:

1. Conduct a thorough on-site assessment prior to flight planning in order to understand the hazards within the takeoff/landing area and mission/operating area.
2. Imagery installed in the GCS will maximize your situational awareness.
3. If possible, keep the UAS above the horizon, or exercise extreme caution when flying in areas with background clutter when looking at the aircraft.
4. Prior to conducting a mapping mission, fly the project area with the GoPro payload first, in order to increase your situational awareness and determine safe altitudes.
5. Don't be complacent. Several CFIT mishaps involved experienced remote pilots. Be disciplined and professional on every project and every flight.

Tower/Mission Planner/Solo Applications

Several SAFECOMs relate to anomalies when running multiple flight control applications. DOI Remote Pilots must comply with the following procedures in order to minimize the risk of unexpected aircraft behavior:

1. Use your checklist - ALWAYS
2. Ensure only one flight control application is open at a time.
3. Do not use GCS software unless you are trained in its use and the certification is noted on your OAS-30U card.

Compass Calibration and GPS Anomalies

There have also been several incidents involving compass errors and GPS anomalies. DOI Remote Pilots should use the following best practices to mitigate the risk of compass and GPS errors:

1. Calibrate the aircraft compass at each new site regardless of whether or not the system prompts you to do so.
2. Discontinue flight if GPS or compass anomalies persist.
3. Check NOTAMS prior to missions to ensure there are no GPS outages in your area of operations.
4. Terrain and vegetation must be taken into account during preflight planning.
5. Fly a reconnaissance mission before operational flights if GPS integrity is in doubt due to terrain and/or obstacles.

Unauthorized Payload Development

Other incidents involve pilots allowing unapproved payloads. Pilots are required to limit 3DR Solo payloads to those approved by DOI UAS fleet managers or after receiving explicit training from a UAS inspector, coach, or mentor. New payload development is best supported using the appropriate process.

Contact your bureau's unit, regional, state or national aviation office if you have any questions or concerns.

/s/ *Keith Raley*

Keith Raley
Chief, Aviation Safety, Training,
Program Evaluations, and
Quality Management