

Beyond the Pandemic: CANSO Operations and Safety Workshop

Remotely Piloted Aircraft Systems – The Ghanaian Story

Kofi Kpodji

Lusaka, Zambia – May 10, 2022

Introduction

1. The first RPAS Operation in **Ghana** dates as far back to 2006
 - Government of Ghana contracted for a Land survey project using drones covering over 15,000 square kilometers
2. Ghana is experiencing tremendous growth in RPAS operations.
3. According to IFATCA, RPAS operations is expected to grow exponentially and become one of the fastest growing sectors of the international economy.



Introduction (cont'd)

4. The question is no longer whether, but when and how the integration of RPAS into the non-segregated airspace in Ghana will take place.
5. Although Ghana is witnessing an exponential growth in RPAS operations, only six (6) RPAS operators and three (3) RPAS vendors have registered with the Ghana Civil Aviation Authority. Zipline GH Limited, is the leading and biggest operator in Ghana. Operators engage mainly in surveying, mapping, safety inspections, infrared mapping, aerial photography/videography, asset inspection, and recreational activities.



RPAS REGULATIONS

- 1. Ghana Civil Aviation (RPAS) Directives (GCAD Part 28) was published in 2018 to**
 - Ensure the safe operations and integration of RPAS into Ghana's airspace, and
 - Address the protection of persons and property from accidents and incidents involving RPAS
- 2. The Directive provides guidance on certification, training requirements, areas of operations, altitudes restrictions and other safety critical issues**



RPAS Certification

1. Ghana CAA provides

1. Certification and airworthiness approvals for large RPAS
2. Approvals and certification for maintenance programs
3. RPAS Operator's Certificate (ROC) to persons/organizations who wish to operate RPAS in Ghana
4. Such persons shall conduct its operations to uphold the conditions and limitations detailed in the operational specifications attached to the ROC.



RPAS Registration

1. No person may operate an RPAS without having been registered by the Authority.
2. The registration and marking of RPAS shall be in accordance with Part 4 of the Ghana Civil Aviation Flight Standards Directives.
3. Measurements of the registration marks shall be determined by the Authority considering the size of the RPAS.



RPAS Operations

1. These are the 6 major RPAS Operators who have registered and obtained approval from GCAA

| Operator | Type of Approval |
|---|--|
| Rocketmine Aerial Data Solutions | Surveying & Mapping , Safety Inspections, Infrared Imaging, Aerial Photography & Videography |
| SKT Aeroshutter | Asset Inspections, Surveying & Mapping , Aerial Photography & Videography, Beyond Visual Line of Sight (BVLOS) Operations |
| Zipline International | Carrying and discharging of medical supplies, Surveying & Mapping |
| Rudan Engineering | Surveying & Mapping |
| Axis Drone Surveys | Surveying & Mapping , Aerial Inspection Commercial Videography and Photography |
| Sahara Natural Resource Ltd. | Surveying & Mapping , Safety Inspections, Infrared Imaging, Aerial Photography & Videography |

RPAS Operations

1. All 6 registered RPAS Operators have one thing in common – **approval to conduct area surveying and mapping**
2. **RPAS operations are not restricted to a particular area – they can be anywhere in the country.**



Restrictions

1. According to regulations in Ghana, all RPA are not allowed to fly above four hundred feet (400ft) AGL without prior notification and approval by the Ghana Civil Aviation Authority.
2. Apart from restricting RPAS operations to very low-level (VLL) airspace, persons operating an RPAS are forbidden to engage in the following without prior approval from GCAA;
 - a) operate more than one RPA;
 - b) operate an RPAS for commercial purposes without an RPAS Operating Certificate (ROC) and a remote pilot license from GCAA
 - c) hold training for RPAS operations without an RPAS Training Organization Certificate



Restrictions

- d) fly an RPAS in restricted, prohibited, danger areas and Special Use Areas (SUA)
- e) operate an RPAS within a 10-kilometer radius from an airport in Ghana
- f) fly an RPAS at night
- g) operate an RPAS without a valid permit and evidence of registration of the RPAS issued by GCAA.



Restrictions

3. In addition to the restrictions in 5.4 above, the import, export, selling an RPAS or parts thereof without written approval from the GCAA is forbidden in Ghana.
4. RPAS operators in Ghana shall have a well-documented emergency procedures as specified in their implementing standards and comply with language proficiency requirements if RPAS operations will require communication with ATS.



Operational Challenges

1. Safety issues including **risk of collision** with other aircraft, **risk of loss of control** of the RPA, training, certification, liability and insurance are of major concern as we plan to integrate RPAS operations into the ATM environment.
2. The number of RPAS in the country and area of operations – places a tremendous burden on GCAA to maintain critical safety standards
3. GCAA has received reports of commercial RPAS operators who do not comply with rules and regulations in GCAD
4. There are only 3 authorized RPAS retailers. How do we check unauthorized imports of RPAS
5. There is no common altitude reference datum between RPAS and manned aircraft



Solutions – Steps towards RPAS integration

- 1. Prevent illegal entry of unapproved RPAS** - GCAA has partnered with Ghana Customs Service to prevent illegal smuggling of RPAS into the country. We have also embarked on educational and awareness programs to encourage all operators to register their RPAs
- 2. Conduct Safety Assessments** to understand the hazards and risks associated with RPAS operations. Additionally gaps between the **current ANS provision** and **future fully integrated operations** will be identified
- 3. Establish procedures.** The GCAA continues to establish procedures to integrate multiple RPAS into the Ghanaian Airspace System
- 4. Effective application of geo-fencing**



Solutions – Steps towards RPAS integration

5. **Enhance the means of conflict detection and separation with manned aircraft operations** – manned aircraft may enter very low-level airspace intentionally (landing/take-off) or unintentionally (emergency landing or forced landing due weather).

- A typical example is connecting a dual ADS-B receiver directly to the RPAS autopilot through the ground control station. In that way, ADS-B compliant aircraft within an estimated 50 km range will be detected directly by the RPAS's autopilot and the necessary avoiding action taking without any input from the RPAS pilot. When successful, this approach will require Ghana to make the carriage of ADS-B a requirement for manned aircraft.




Solutions – Steps towards RPAS integration

6. Application of detect-and-avoid (DAA) technologies
7. **TRAINING** of all stakeholders is paramount to implementing solutions!



Conclusion

1. The presence of a pilot on board an aircraft or not should be (largely) irrelevant from an ANSP perspective
 2. Ghana is committed to implementing the best practices that would be consistent with the ICAO aviation safety framework.
- 



QUESTIONS AND ANSWERS



THANK YOU

CANSO

SHAPING OUR FUTURE SKIES