ICAO

Second Remotely Piloted Aircraft System (RPAS) Symposium

United Nations RPAS Experience Setting the Stage

By
UN Aviation Safety Section
Ovais Ahmed

United Nations RPAS – Type of Operations
Key Highlights

Operations
- VLOS
- BVLOS
- VFR & IFR (International)

Environment
- Non-segregated airspace
- Shared aerodromes

Operators
- Commercial
- Military

United Nations - Classification of RPAS

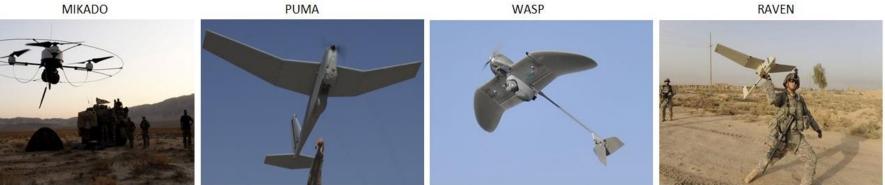| Class	Category	Normal Employment	Normal Operating Altitude	Normal Mission Radius	Primary Supported Commander	Example Platform
CLASS I < 150 kg	MICRO <2 kg	Tactical Platoon, Section, Individual (single operator)	Up to 200 ft AGL	5 km (LOS)	Platoon, Section	Black Widow Mikado SpyArrow
	MINI 2-20 kg	Tactical Sub-unit (manual launch)	Up to 3K ft AGL	25 km (LOS)	Company, Squadron	Scan Eagle Skylark Raven
	SMALL >20 kg	Tactical Unit (employs launch system)	Up to 5K ft AGL	50 km (LOS)	Battalion, Regiment, Brigade	Luna Hermes 90 Skylark II
CLASS II 150 kg - 600 kg	TACTICAL	Tactical Formation	Up to 10,000 ft AGL	200 km (LOS)	Brigade	Hermes 450 Seeker 400 Shadow 600
CLASS III > 600 kg	Strike/ Combat	Strategic/National	Up to 65,000 ft MSL	Unlimited (BLOS)	Theatre COM	Predator B Predator C
	HALE	Strategic/National	Up to 65,000 ft MSL	Unlimited (BLOS)	Theatre COM	Global Hawk
	MALE	Operational/Theatre	Up to 45,000 ft MSL	Unlimited (BLOS)	JTF COM	Predator A Heron Hermes 900

United Nations - RPAS Fleet

RPA – UN – Remotely Piloted Aircraft Systems		
Fleet #	**Type**	**Location**
7	SPERWER	Central African Republic
3	HERMES 900	Mali
3	SHADOW	Mali
4	PUMA	Mali
4	WASP	Mali
6	RAVE	Mali
10	LUNA	Mali
4	ALADIN	Mali
9	MIKADO	Mali
3	HERON 1	Mali
5	FALCO	Democraftic Republic of Congo
1	RESPONDER	Democraftic Republic of Congo

47 - MILITARY RPAS

7 - CIVILIAN RPAS

3 - PRO-BONO MOU RPAS

1 - UN OWNED RPAS

58 RPAS IN UN OPERATIONS

United Nations – RPAS (unarmed)

FALCO

ALADIM

SHADOW-200

SPERWER

MIKADO

PUMA

WASP

RAVEN

HERMES 900

HERON 1

RPAS Tasks

Peace Keeping (Day and Night)

- Provide Force Protection (FP) through 'top cover'' for UN activity
- Provide a deterrent effect to armed groups
- Trigger for military operations
- Provide persistent coverage of ongoing incidents, as a product for subsequent analysis, interpretation and evaluation
- Monitor border area movement and activity
- Monitor armed / terror groups
- Identify and monitor illegal mining activities
- Post-incident assessment or battle damage assessment (BDA)
- Information collection

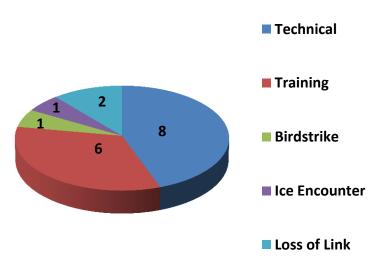## Humanitarian (Day and Night)

- Monitor Disaster Areas; flood, earthquake, lava eruptions
- Monitor population movements
- Identify/ Monitor illegal Activities
- SAR Operations
- IDP/ Refugee movements
- Geo Surveys
- Logistical surveys/ recce
- Facilities security support
- Logistics (future)
- Any other

Challenges

- Lack of Standards
- Oversight by regulators
- Information / data Collection
  - Security and cyber security
  - Confidentiality and storage
- Integration and Airspace Management – Unsegregated operations
- Infrastructure requirements
- Training – license, experience
- High accident rate vs UN reputation

United Nations RPAS - Accidents / Serious Incidents

28-Jul-14	Accident	Minor Damage - Tire failure- Technical
8-Sep-14	Serious Incident	No damage - GCS power failure - Technical
20-Oct-14	Accident	Destroyed, CFIT - Training, Experience
10-Mar-15	Serious Incident	Minor damage - Hard landing - Training, Experience
16-Dec-15	Accident	Destroyed - Loss of control - Display off - Training, Experience
4-Feb-16	Accident	Minor Damage - Engine flame-out - Technical
29-Apr-16	Accident	Substantial Damage - Runway excursion - Training, Experience
1-Jul-16	Accident	Destroyed - Parachute system - Technical
13-Jul-16	Accident	Minor Damage - Engine flame-out - Technical
12-Sep-16	Accident	Destroyed - Hand launch - Training, Eperience
5-Jul-17	Accident	Destroyed - Lost engine power - Technical
6-Jul-17	Accident	Destroyed - Lost Link - Technical
26-Jul-17	Accident	Destroyed - Exceed maneouvre speed - Training, Experience

- Technical — 8
- Training — 6
- Birdstrike — 1
- Ice Encounter — 1
- Loss of Link — 2

United Nations Criteria For Remote Pilots

Remote Pilot (Civilian)
As per ICAO Doc. 10019, Chapter 8

In addition:
- Proof of Theoretical Knowledge and Competence Certification
- Proof of Manned/Unmanned Experience - 500 hrs as Pilot-in-Command (PIC)
- Instrument Flying - Valid IFR
- Proof of Ratings - Remote Pilot Qualification by approved training organization (ATO) in RPAS environment, (on type 100 hrs minimum).
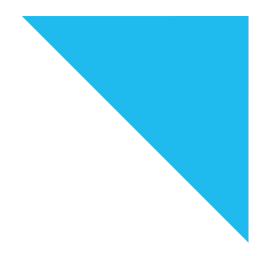- License - Valid Commercial Pilot License (CPL/SE)

Remote Pilot (Military)

- National Military Pilot License (MPL) for the RPA type.

Mitigating Actions from Lessons Learnt

- Development of draft UN regulatory framework – ICAO Doc 10019

- Focus on :
  - ✓ Robust acquisition process, SMS tool kit
  - ✓ Verification of operator training, license, qualification and experience
  - ✓ Airspace management and coordination
  - ✓ Lost link procedures

Questions ?

THANK YOU

SMS Tool Kit for RPAS Acquisitions

Aviation Safety Assessment Components & Score
Bidder Name& Solicitation Number: Date:

I

Component	Elements	Conformity	Element Score	Component Score
1. Safety Management System (SMS)	1.1 Safety Management	Y / N	2	
	1.2 Safety Policy	Y / N	2	
	1.3 Non-Punitive Safety Reporting Policy	Y / N	1	
	1.4 Roles, Responsibilities	Y / N	2	
	1.5 Safety Communication	Y / N	4	
	1.6 Safety Planning, Objectives and Goals	Y / N	1	
	1.7 Performance Measurement	Y / N	1	
	1.8 Management Review	Y / N	2	
			Total →	15
2. Documentation	2.1 Identification and Maintenance of Applicable Regulations	Y / N	4	
	2.2 SMS Documentation	Y / N	2	
	2.3 Records Management	Y / N	5	
			Total →	11
3. Safety Oversight	3.1 Reactive Processes	Y / N	4	
	3.2 Proactive Processes	Y / N	1	
	3.3 Investigation and Analysis	Y / N	4	
	3.4 Risk Management	Y / N	5	
			Total →	14
4. SMS Training	4.1 Training, Awareness and Competence	Y / N	5	
			Total →	5