

Civilian/Military Integration - AFGHANISTAN

The Afghan RPAS Success Story



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Objectives and Scope



- **RAAF Heron RPA Overview**
- **Civil / Military Integration in AFG**



Heron Overview



27,136 hours in AFGHANISTAN (2010-2014)



UNCLASSIFIED

Heron RPA Overview



Dimensions	Length 28ft Wingspan 54ft Height 7ft
Ceiling	30,000ft
Airspeed	65-120kts
Weight	1,150kg
Fuel Capacity	620L / 400L norm
Range / Endurance	250km / 20+hrs
Sensors	EO/IR w laser pointer SAR, EW, UHF/VHF, SSR (M3C)

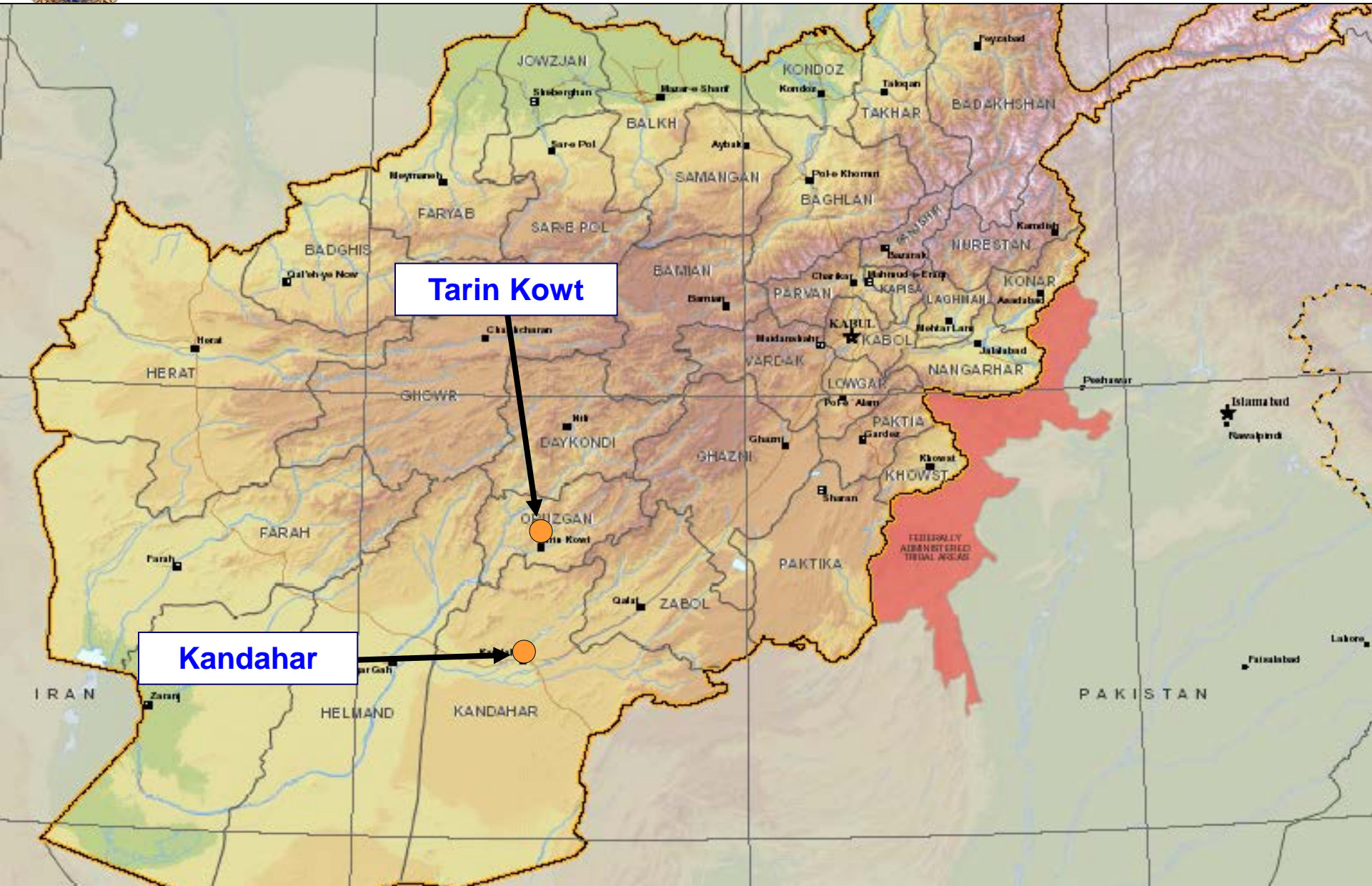


Heron Overview



- **Automatic Take-off and Landing System (ATOL):**
 - **DGPS**
 - **Approach and Dep**
 - **Taxi Mode (Pilot)**
 - **3000+ Take-Offs and Landings in Kandahar**

- **Return Home (RH) System:**
 - **Pre-programmed route and holding point loaded into aircraft**
 - **If link is lost, aircraft will RH and hold until pre-determined fuel amount and automatically conduct approach and landing**
 - **No termination capability**

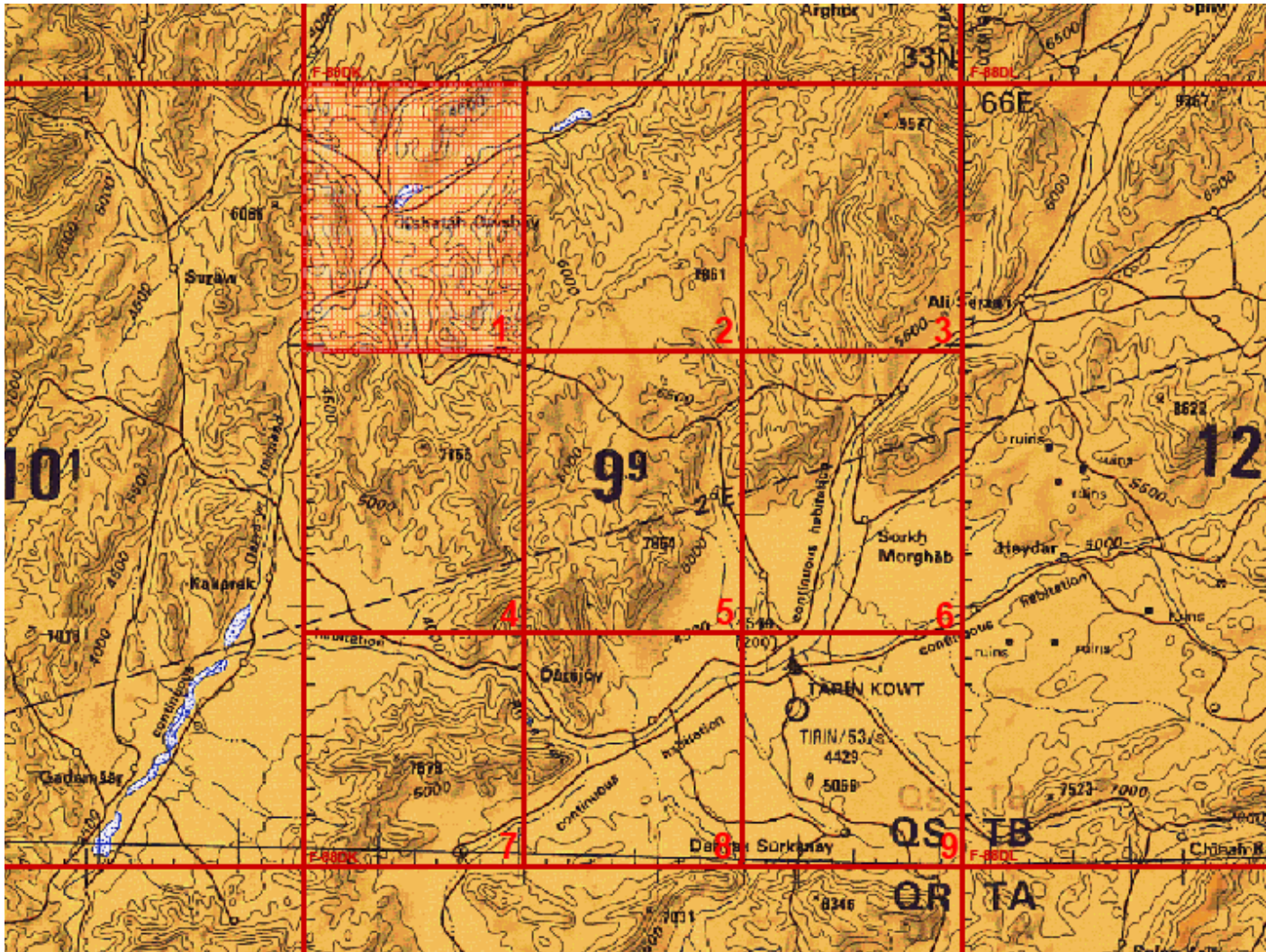


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Kandahar



Airspace as keypads





Situate the appreciation!



- **Kandahar Airport**
 - **Single runway**
 - **3000m**
 - **370 permanent aircraft (UAV, Rotary, fixed)**
 - **150 with 'transit rights'**
 - **Peaked at 800 'moves' per day (5600 p/w)**
 - **33 take off / land per hour (including helo moves)**
 - **Heron RPA (1-tonne) to Antonov 124 (450-tonne)**
 - ***Civilian airliners* and military aviation**



Military / Civilian Integration



Terminal Area

- **Busiest single runway operations in the world**
- **Standard IFR radio procedures**
 - **Ground**
 - **Tower**
 - **Departures (30NM)**
- **Standard taxi / line-up and take-off**
- **Slowest RPA in Theatre (probably)**
- **Slow climb (60kts), faster descent (110kts)**
- **Radar control**
- **SSR**
- **Low priority (called ahead if critical mission timings)**
- **Chop to airspace owner and gain clearance to enter prior to 30TAC KAF**



Military / Civilian Integration



Enroute

- **FULL INTEGRATION**
- **Ground control radar environment**
- **All comm's via 'chat' system**
- **Track via keypads to requested airspace**
- **Assigned working keypads**
- **Maintain 'hard alt' below refuelers**



Military / Civilian Integration



- **Established**
 - **FULL INTEGRATION**
 - **Assigned keypad(s)**
 - **Multiple users in same keypads**
 - **1000' separation RPA to manned aircraft**
 - **500' separation RPA to RPA**
 - **2NM lateral separation**
 - **1nm stand-off to boundary (self imposed)**
 - **Typically MQ-9 Reaper 500' below, MC-12 1000' above, same keypad – up to 10 aircraft in the 'stack' (*excluding* Helos below control alt)**



Military / Civilian Integration



RTA

- **Track via keypads to 35TAC KAF**
- **Gain clearance to enter (35TAC on 010 Radial squawking....) from KAF Approach**
- **110kts descent and pilot positioning to 3/5/7NM final (where able)**
- **Positive radar vectors to finals if busy**
- **Establish on a glide slope and engage landing**



What did we learn?



- **Trust the automation**
- **Extremely reliable and accurate Nav System**
- **Software lacks engineering integrity (main issue for civilian integration in Australia)**
- **27000+ hours statistically insignificant for engineers**
- **Procedural and uncontrolled airspace is our greatest challenge**



Questions?

