



Australian Government
Department of Defence
Capability Acquisition and
Sustainment Group



Air Force Considerations regarding Integration of large RPAS into Australian National Airspace



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RPAS in Australian Skies 2019
17 July 19



Purpose

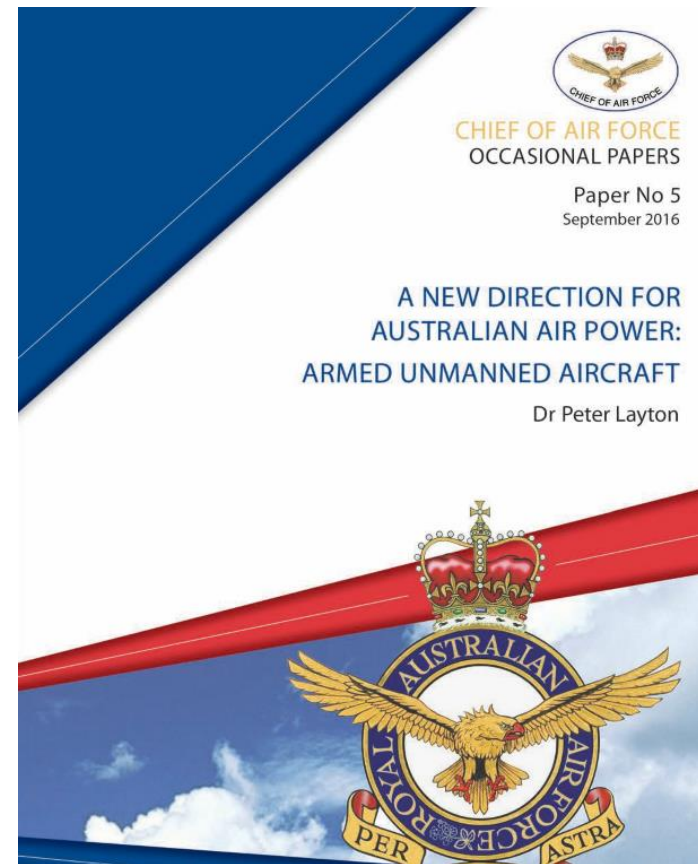
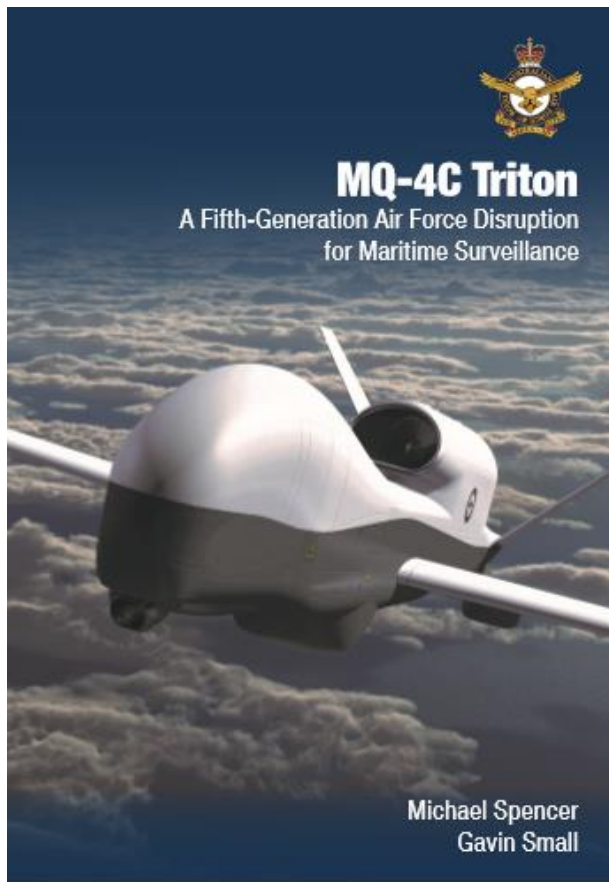
- Inform the AAUS community of CASG and Air Force considerations regarding large RPAS operations, in order to promote discussion and demonstrate our planning and consideration of issues to ensure safe of operation of large RPAS.

Scope

- Background of Air Force Acquisition projects
 - MQ-9, and
 - MQ-4C Triton
- Considerations for Air Force:
 - Limited RPAS BLOS Experience in Australia
 - Introduction of new DASR.UAS Regulations
 - Capability experience with Large Aircraft Operations
 - Capability differences for Remote operations
- Scope limited to Airworthiness and Airspace Integration of MQ-9 and MQ-4C only

Scope

- Further reading on MQ-4 and MQ-9 Capabilities.
(Source: <http://airpower.airforce.gov.au/>)



Background of Air Force Acquisition projects

- **AIR 7003 - MQ-9:**
 - Gate 1 – 2018
 - Gate 2 – 2021/22
 - ISD – Mid 2020s
 - IOC – Mid 2020s
 - **MQ-9A: Spec Type A**
 - **MQ-9B: Certified**
- **AIR 7000 PH1B - MQ-4C Triton**
 - 27 Mar 19 - Announced by Govt 2/6 Aircraft
 - ISD Mid 2023
 - All 6 by late 2025
 - **MQ-4C: Spec Type A**

“Airworthiness of a manned aircraft, but operated and performs like an RPAS”

“Airworthiness maintained ‘like’ a manned aircraft, but operated and performs like an RPAS”

Limited RPAS BLOS Experience in Australia

- No large BLOS, SATCOM controlled RPA in the ADF, or a comparable civilian operator
- However, although limited, we are developing operational knowledge rapidly:
 - Training MQ-9 operators with USAF since 2015
 - MQ-4C Triton embedded personnel since 2018
 - USN partnership for MQ-4C, and with the MQ-9 OEM
- Impact:
 - Ensuring the RPAS community are aligned (eg: terminology: ‘Ground risk’, ‘catastrophic loss’, ‘flight critical system’)
 - More work required to be ‘reasonably informed’ of risks for RPAS than manned aviation.
 - POs working closer with DASA and Stakeholders



Introduction of new DASR.UAS Regulations

- DASR.UAS relatively new.
- Type Certification of an RPAS has not been achieved by any Military or National Airworthiness Authority
- Large range of safety risk within Specific Type A Category
 - MQ-4C (~32,000lbs)
 - MQ-9A (11,700lbs)
 - Shadow 200 (3700lbs)
- Risk-based approach for a UASOP not appropriate for ICAO compliance requirements (eg: CNS/ATM)
- How to assure DASA and Defence Airworthiness Authority that ICAO requirements for the planned operations will be met ?

Capability experience of Large Aircraft Operations

Length:	26.92 ft
Wingspan	35.83 ft
Height:	8.5 ft
Gross Wt:	2,200 lbs
Max Speed:	117 kt TAS
Op. Ceiling:	15,100 ft
Max Range:	539 nm

Cessna 172



Length:	33.5 ft
Wingspan	39.83 ft
Height:	11.5 ft
Gross Wt:	10,000 lbs
Max Speed:	209.4 kt TAS
Op. Ceiling:	26,180 ft
Max Range:	723.9 nm

Cessna 402



Length:	155.25 ft
Wingspan	124.83 ft
Height:	44.5 ft
Gross Wt:	220,000 lbs
Max Speed:	493 kt TAS
Op. Ceiling:	42,000 ft
Max Range:	3,929 nm

B757-200



MQ-1 Predator



MQ-9 Reaper



MQ-4C Triton



Length:	27 ft
Wingspan	48.7 ft
Height:	6.9 ft
Gross Wt:	2,250 lbs
Max Speed:	117.3 kt TAS
Op. Ceiling:	25,000 ft
Max Range:	400 nm

Length:	36 ft
Wingspan	66 ft
Height:	11.8 ft
Gross Wt:	10,500 lbs
Max Speed:	220 kt TAS
Op. Ceiling:	42,250 ft
Max Range:	4,950 nm

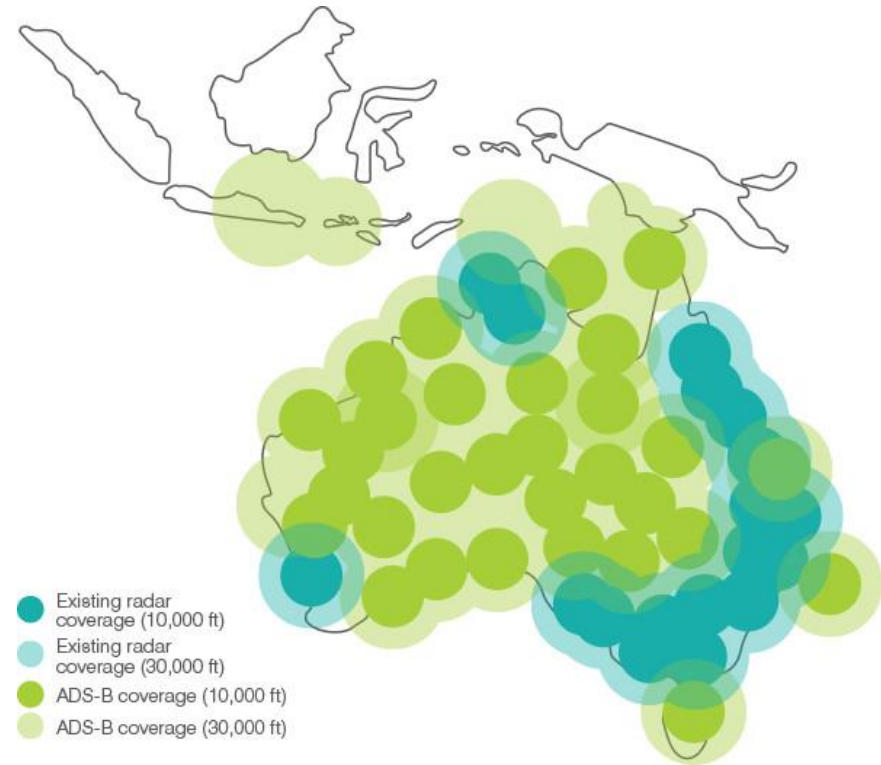
Length:	47.6 ft
Wingspan	130.9 ft
Height:	15.4 ft
Gross Wt:	32,500 lbs
Max Speed:	310 kt TAS
Op. Ceiling:	60,000 ft
Max Range:	10,000+ nm

Capability experience with Large Aircraft Operations

- **Operating:** International Air transit operations:
 - Flight planning tools
 - Training / Type Conversion
 - Defined ICAO Equipage requirements
- **Introduction to Service:** Phased approach to capability introduction
- **Initial & Continuing Airworthiness processes:**
 - Defence Long Range Operations (ETDO/ETOPS/EMOPS)
 - Aviation Safety Management Systems (incl AwBs)
 - Changes to Type Design / Configuration
 - Aircraft and Engine Structural Integrity Programs

Capability differences for Remote operations

- What's different for Air Force BLOS RPAS operations ?
 - SATCOM coverage for AUS region ?
 - Overflight of densely / sparsely populated areas ?
 - Environment differences – Contingencies with no surveillance radar
 - Operational limitations for no Detect and Avoid



<https://www.casa.gov.au/book-page/chapter-4-surveillance-and-ads-b>
Downloaded 10 Jul 2019



Questions ?

