



NAVY UAS UNIT

Maritime Tactical UAS Program

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OIC NUASU
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- **Navy UAS Unit (NUASU)**

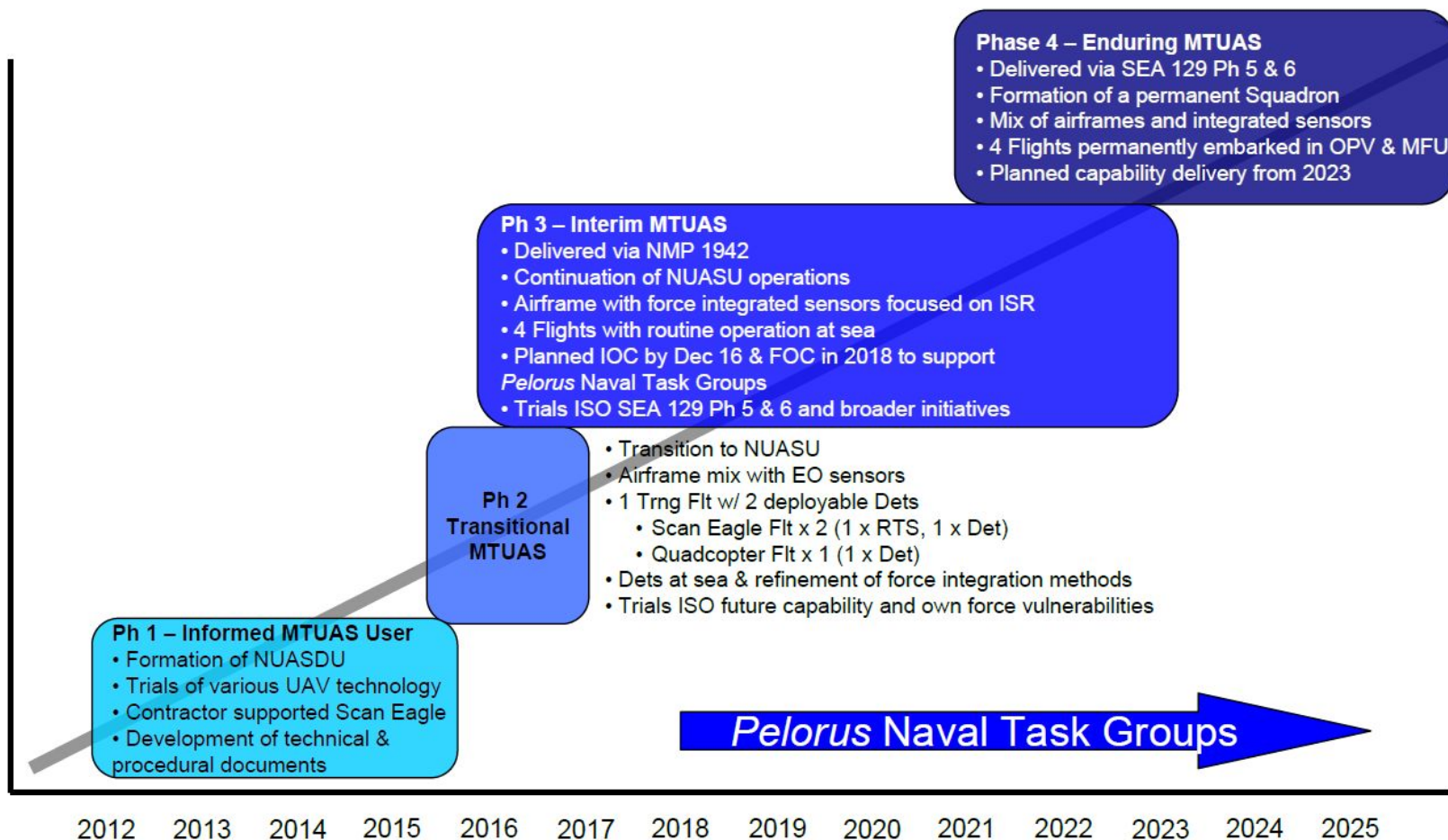
- Located at the Navy Fleet Air Arm, HMAS Albatross
- Unit of HQ Fleet Air Arm, proudly sponsored by NAVSTRATCOM (DAVN)
- 20 Navy Personnel plus a full time OEM FSR
- UAS operations conducted from Jervis Bay sites and Navy Ships with ScanEagle, Phantom 3, S900 and 3DR Solo

- **NUASU Mission**

- Make Navy an informed customer for project SEA 129 Phase 5
 - Stage 1: Minor War Vessels
 - Stage 2: Major War Vessels
- Develop corporate knowledge and experience in UAS (centre of excellence) to assist related projects and position Navy for introduction of the mature solution

RAN MTUAS ROADMAP

MTUAS
CAPABILITY



Navy UAS Journey

- **2013 – Formation of Navy UAS Development Unit (5 personnel)**
- **2015 – Acquisition of ScanEagle, renamed Navy UAS Unit (14 personnel); conduct of S-100 and Integrator demonstrations**
- **2016 – First Of Class Flight Trials in HMA Ships Choules and Newcastle; Christmas Island Operational Evaluation with ScanEagle**
- **2017**
 - Increase in personnel to 23 IOT support 3 Flights (2 x ScanEagle, 1 x S-100)
 - Introduction of S-100 into service for Operational Evaluation
 - FFG FOCFT for S-100
 - Tactical Development for MTUAS
 - OP MANITOU deployment on FFG for ScanEagle



MTUAS Operational Capabilities

- **Operational Capability: Persistent ISR using various payload types (EO / IR / AIS / ViDAR / Radar / COMINT / HyperSpec)**
- **Other considerations:**
 - Capable of blue water, littoral and over-land operations.
 - Capable of operations either land-based or embarked.
 - Small overall footprint for embarked installations.
 - Equipment rapidly deployable by road, sea, rail or strategic air.
 - UAS could be used to enhance embarked helicopters or as a stand alone capability.
 - High level of autonomous systems.



UAS Roles – Not Just Surveillance

- **Surface Warfare**
 - Find, Fix, Track, Target, Engage and Assess
- **Amphibious Warfare**
 - Pre-assault reconnaissance (inc. hyperspectral)
 - Ship-to-shore Force Protection
 - SF support
- **Naval Surface Fire Support**
 - Pre strike reconnaissance
 - Observation of fire
 - BDA
- **HA/DR, SAR, Range Clearance**



UAS Roles – Not Just Surveillance

- **Maritime Interdiction Operations**
 - Recce, blind side eyes, transmit to RVT
- **Straits and Sea Lane Transit**
 - Force protection
- **Intelligence Support**
 - Endurance is comparatively large
- **Relay**
 - Voice or datalink



Navy UAS Types

- **MTUAS (Tactical, Tier 2/3)**

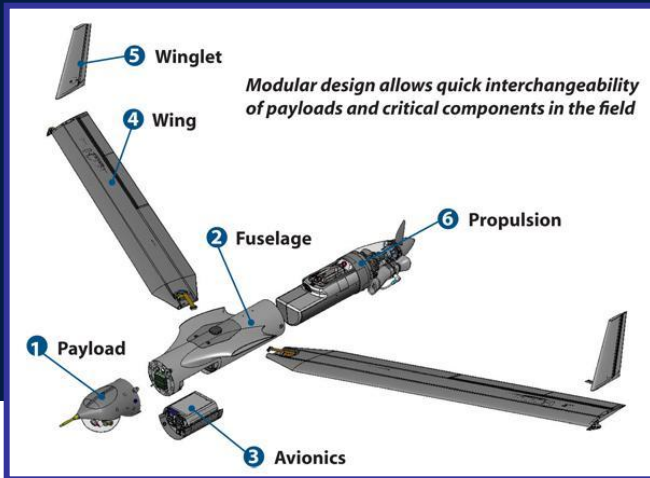
- Insitu ScanEagle
- Schiebel Camcopter S-100

- **Multi Rotor (Tier 1)**

- DJI Phantom
- DJI S900
- 3DR Solo

Class	Tiers	Typical Terms	Examples	Typical Physical/ Performance Characteristics			
				MTOW (kg)	Span (m)	Op Alt (ft)	Speed (kt)
Small	Tier I	Micro	AV Wasp	< 1	~ 0.3	< 500	~Ten
		Mini / small	Skylark Raven	~ 10	1-2	< 1000	~Tens
Tactical	Tier II	Sub-Tactical	Aerosonde Scan Eagle	~30-50	> 3	< 10000	< 100
	Tier III	Tactical	Shadow 200 I-View250	Hundreds	>5-10	< 10000	~50-100
	Tier IV	MALE	Heron, Predator	>>1000	> 15	< 40000	100-200
Theatre	Tier V	HALE / HAE	Global Hawk	> 10000	> 30	> 50000	100-300+
Survivable		UCAV/UR AV	J-UCAS	> 10000	> 10	Varies	>>100

ScanEagle UAS



Insitu ScanEagle (Tier 2, sub tactical)

MTOW: 22 kg

Wingspan: 3.11 m

Length: 1.2 m

Endurance: 12 - 24 hours

Cruise Speed: 55 kts

Max Dash Speed: 75 kts

Max Ceiling: 15000+ ft

Payload: 6.5 kg (Single/Multi)

Engine: 28cc 2 Stroke (C10 or JP5)

LRE weight: Approx 2500 kg

System Components



Directional Antenna(s)



Remote Pilot Station



Skyhook

Launcher

Launch

Remotely Piloted Aircraft



Schiebel Camcopter S-100 UAS

Camcopter S-100 (Tier 2, sub tactical)

MTOW: 199 kg

Rotorspan: 3.4 m

Length: 3.11 m

Endurance: 6+ hours

Cruise Speed: 55 kts

Max Dash Speed: 90 kts

Max Ceiling: 15000+ ft

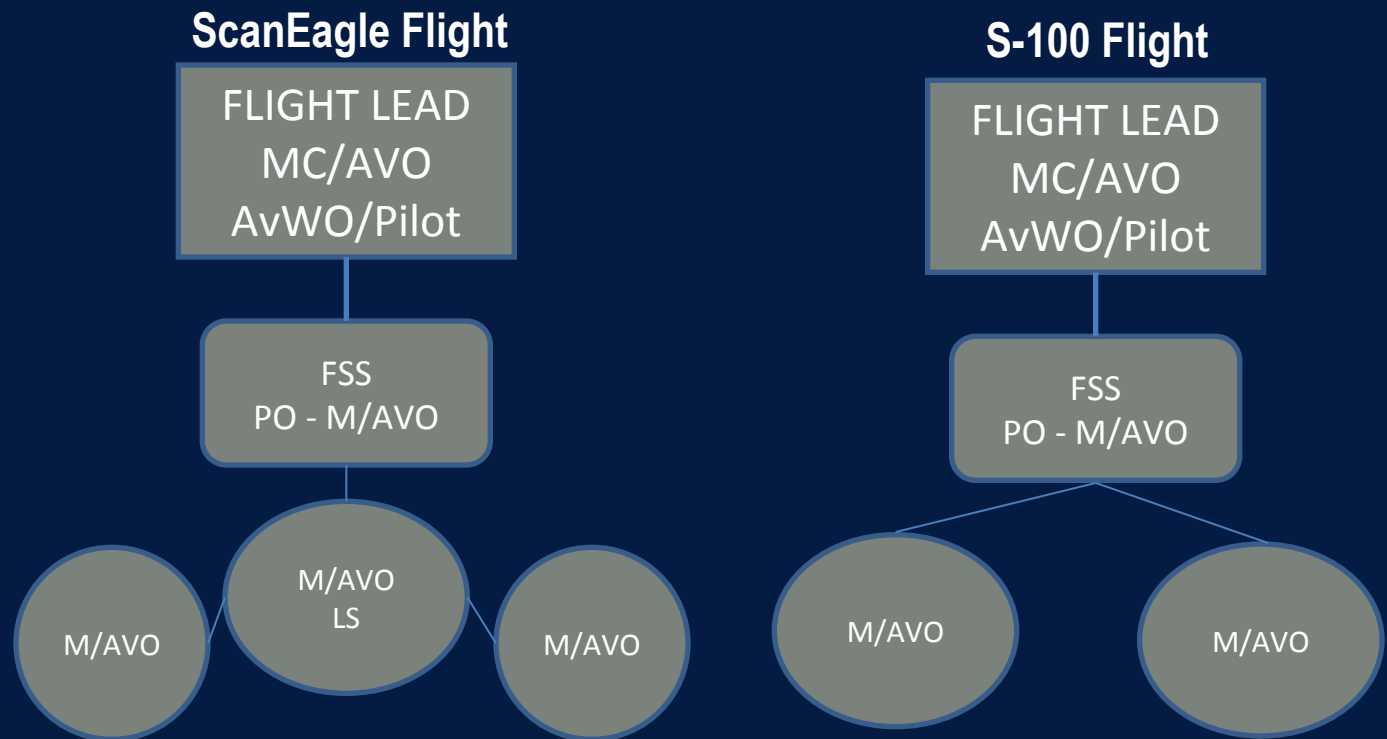
Payload: 50 kg (Single/Multi)

Engine: Twin Rotor HFE 2 Stroke (JP5)

LRE: Nil, VTOL



Current Crew Models



Crew Endurance (IAW ABR 5150) = 10 hours

AVO Rotation approx every 2 hours

MC currently an Aircrew Officer



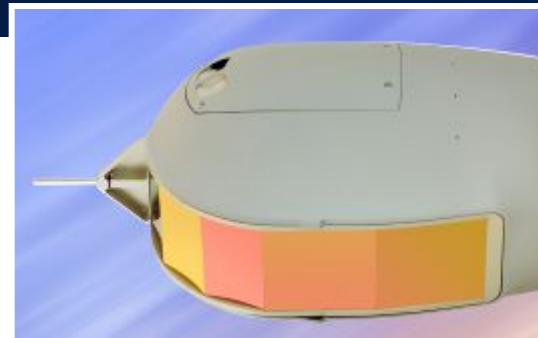
Payloads

- Payloads available in various stages of maturity.
- Operational payloads include:
 - EO/IR Hyperspectral Laser
 - SAR (CCD/GMTI) Maritime Radar ESM
 - NBC Sensors Comms Relay SIGINT
 - Weapons ViDAR LiDAR
- Future payloads will include:
 - MAD Sonobouys Sense & Avoid
 - Directed Energy Weapons



MX10S

MWIR 2



Payload Example Imagery



EO600 36x Zoom
RPA ALT – 3000FT

EO900 171x Zoom
RPA ALT – 3000FT



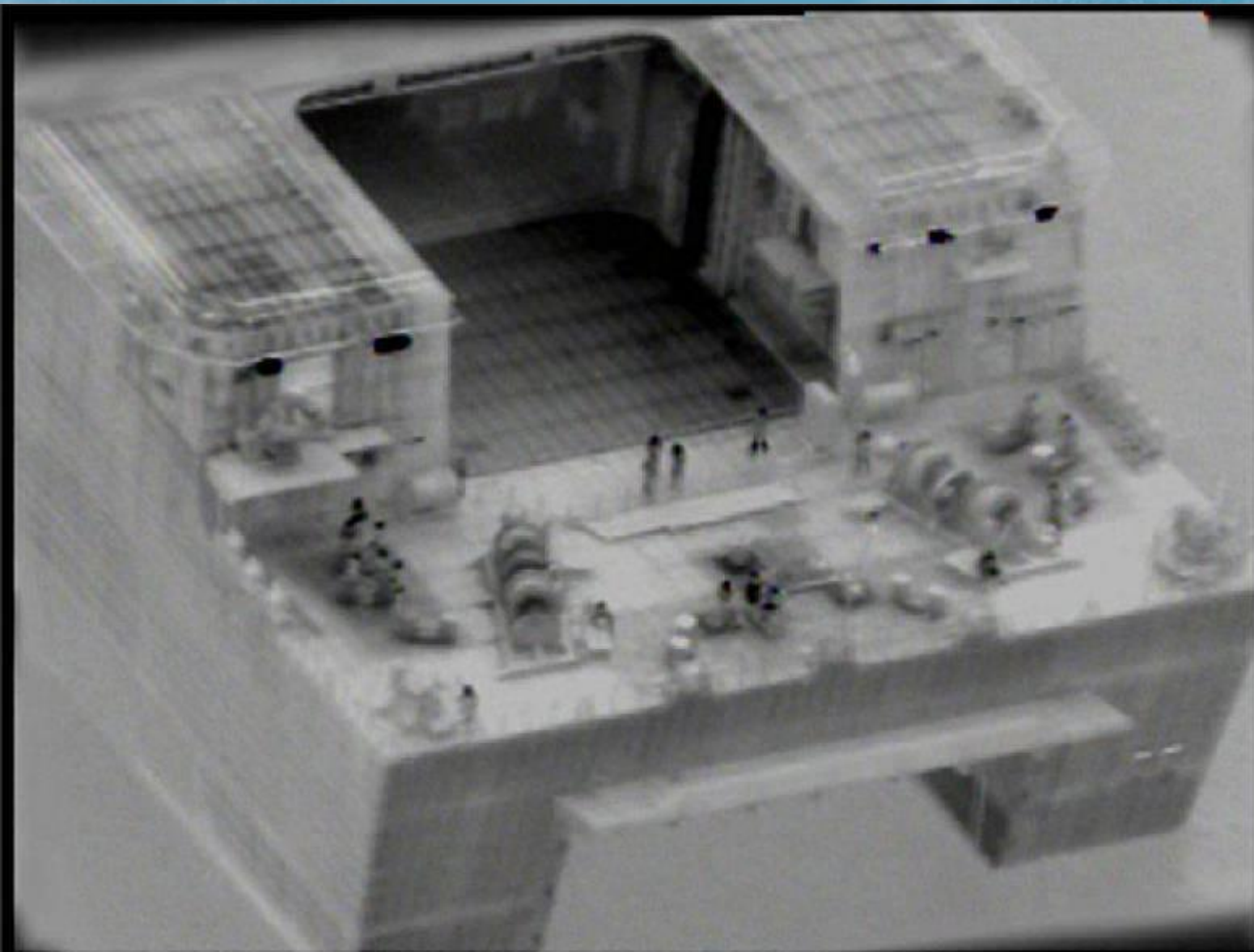
EO900 Imagery



MWIR2 Imagery



MWIR2 Imagery



PicoSAR



Questions??

