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Boeing Defense, Space & Security

Unmanned Airborne Systems
Product Overview

The Boeing Company – Top Down Look

Boeing Defense, Space & Security

Boeing
Defense, Space &
Security
President & CEO

Dennis Muilenburg

Boeing
Military
Aircraft
President

Chris Chadwick

UAS Programs

*Vice President &
General Manager*

Mike Kurth

Products: Mature and evolving technology

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Tactical

ScanEagle

Integrator

Dominator/MECC

Vertical Takeoff/Landing

Unmanned Little Bird

A160

HALE

Phantom Eye

Command and Control

COMC2

ScanEagle Overview

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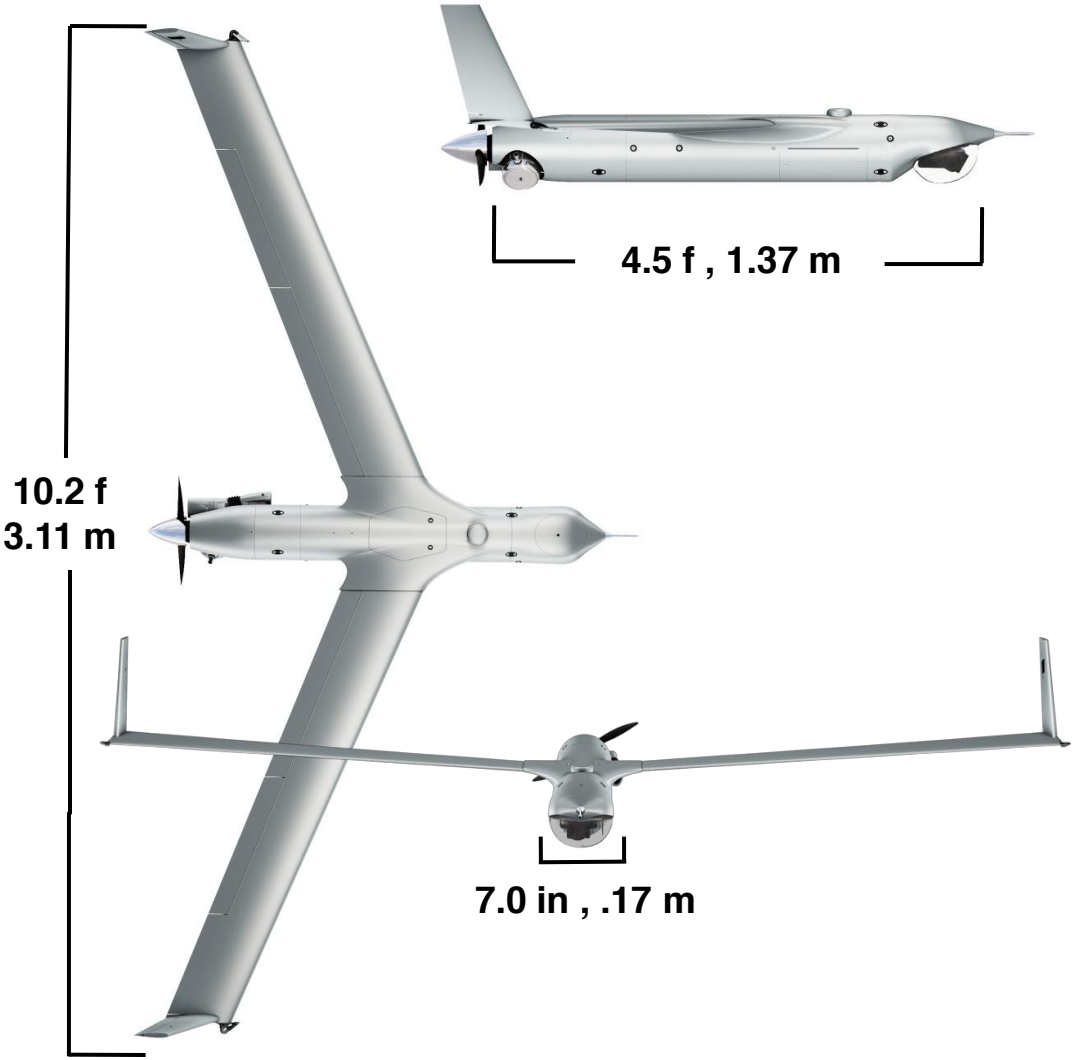

QUICK SPECS	
GTOW	44.0 lbs
Fuel + Payload	12.4 lbs
Max level speed	82 kts
Cruise speed	55 kts
Ceiling	20,000 ft
Endurance	24+ hours
Total Operational Hours	685,000+
Shipboard Sorties	3,400+

- Heavy Fuel Option, JP-5, JP-8 or Jet-A
- Mode 3C Transponder
- Automated Launch / Retrieval
- Fully Autonomous
- Small physical and personnel footprint
- Wide weather envelope

NightEagle Overview

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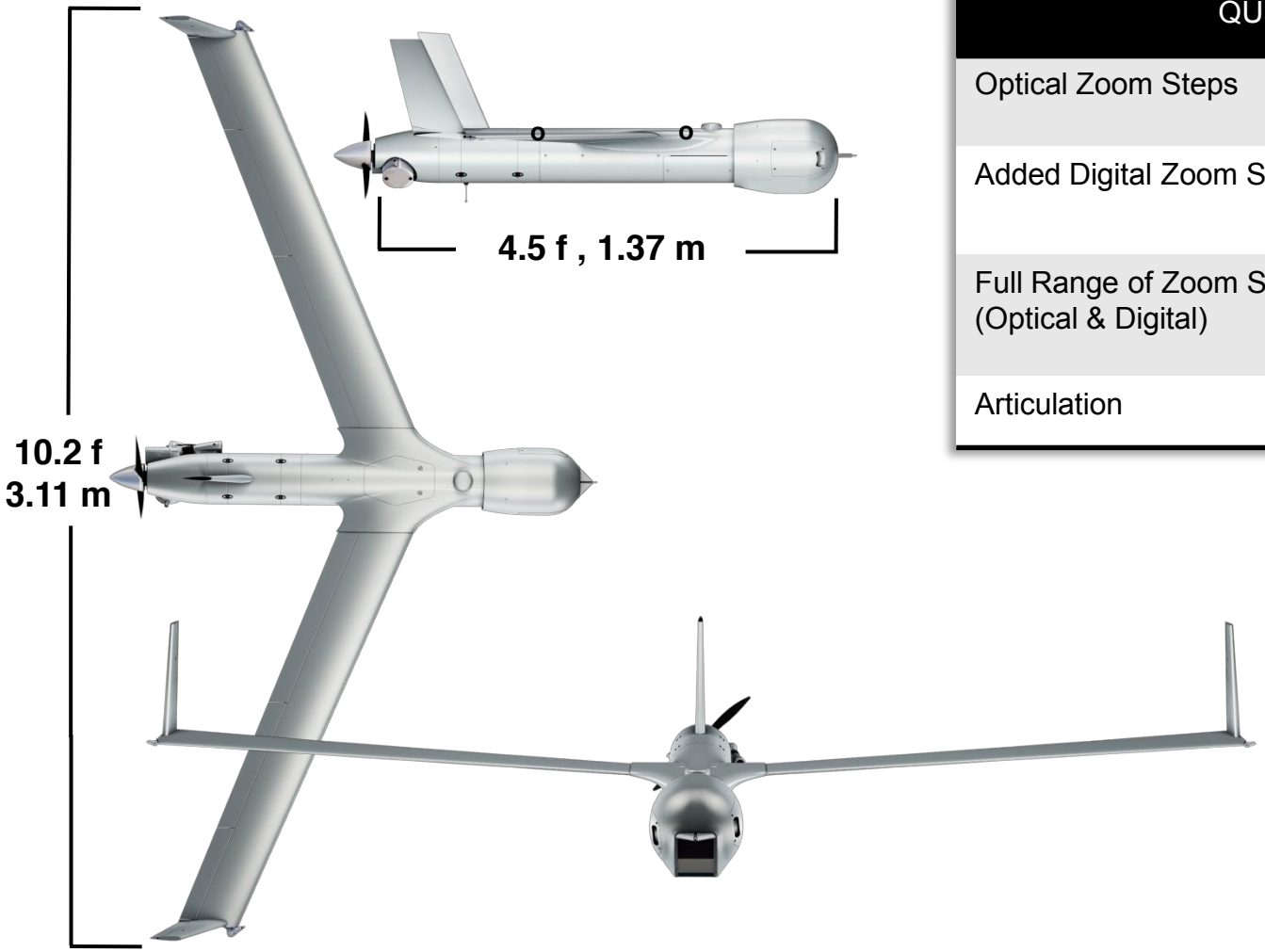

QUICK SPECS	
Optical Zoom Steps	2.5 (4x) - 10 (1x) FOV
Added Digital Zoom Steps	1x - 4x
Full Range of Zoom Steps (Optical & Digital)	1x -16x
Articulation	+75 to -45 (120º)

Integrator Overview

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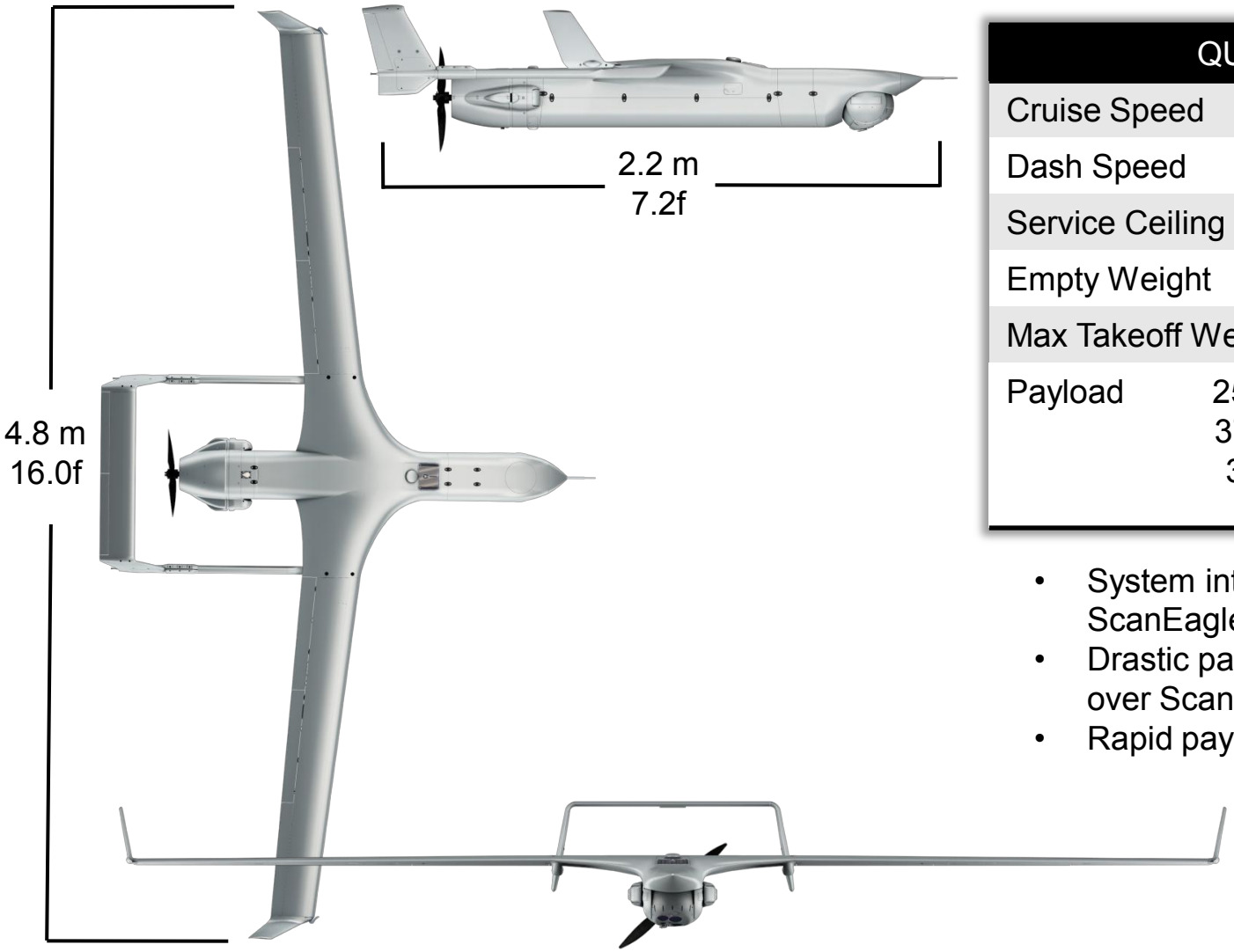

QUICK SPECS	
Cruise Speed	55 knots
Dash Speed	80+ knots
Service Ceiling	>15,000 ft / 4572M
Empty Weight	75 lbs / 34.0kg
Max Takeoff Weight	135 lbs / 61.2 kg
Payload	25 lbs/11kg & 250W / 15hrs 37.5 lbs/17kg max. payload 350W max. payload power

- System interoperability with ScanEagle
- Drastic payload envelope increase over ScanEagle
- Rapid payload integration

Dominator Overview

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- **Air, surface or sub launched UAS Capability**
  - Same air vehicle for air, sub & surface vertical launch
  - Multi-aircraft capable
  - Realistic recovery option
  - Optimizes use of existing ScanEagle subsystems
  - Small footprint/manning requirement
  - Leverages endurance for forward hand off/recovery
- **Mission support**
  - Potential missions include: ISR, Communications relay, Info Ops
  - Designed for modular growth to support multiple missions with new payloads and sensors

Forward Control Capability

Pre-flight Ground Testing

Ramp Launch or External Carriage

Uses Existing Recovery

MECC Overview

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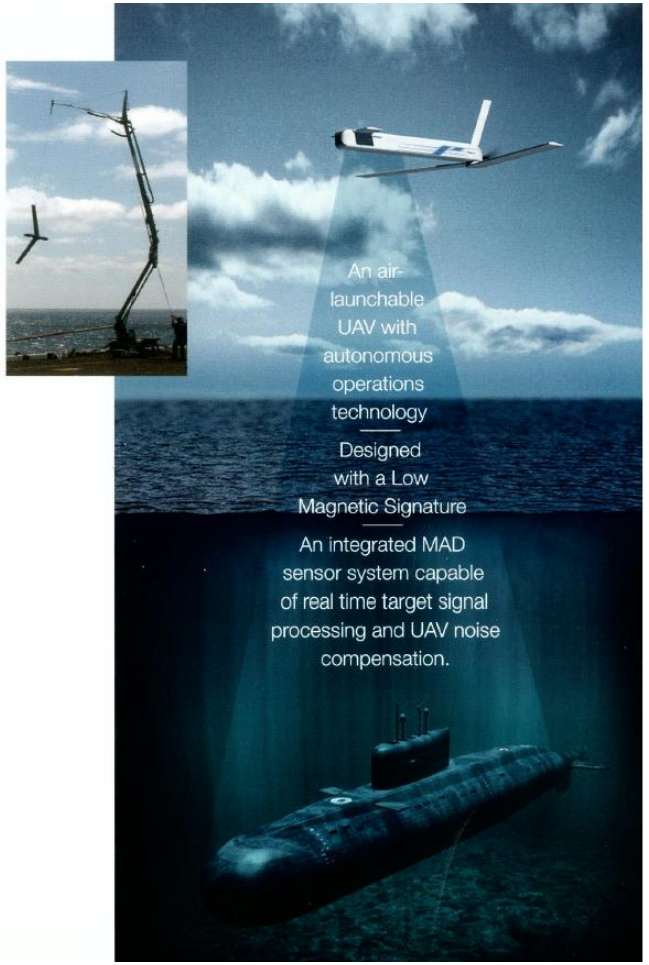
- **MagEagle Compressed Carriage is an air-launched, autonomous extension of the P-8 combat systems**
  - Special Mission variant of the Dominator UAV
  - Internal or external carriage / launch options
  - Equipped with Magnetic Anomaly Detection (MAD) system capable of localizing and autonomously tracking a submerged submarine in deep or littoral waters.
  - Autonomous search, detection, localization, track and lost contact search
  - 10-24 hours endurance
  - Beyond-Line-Of-Sight (BLOS) capability utilizing TacMobile, communications relay, or SATCOM
  - Recoverable and re-deployable by ships or shore stations



Unmanned Little Bird Overview

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- **Optionally manned Group 4 VTOL UAS**
- **Runway independent**
- **Mutli-mission flexible**
  - Up to 2,400 pounds payload capacity
  - Ideal for ISR, search and rescue, cargo, communications relay
  - Demonstrated capability in both land/maritime environments
- **Mature, Cost effective and proven platform**
  - Over 800 hours of testing
  - 2005 Grover Bell Award – Best Advancement in Rotorcraft Flight

- ***Unmanned kit available for existing manned helicopters**

Unmanned Little Bird Specifications

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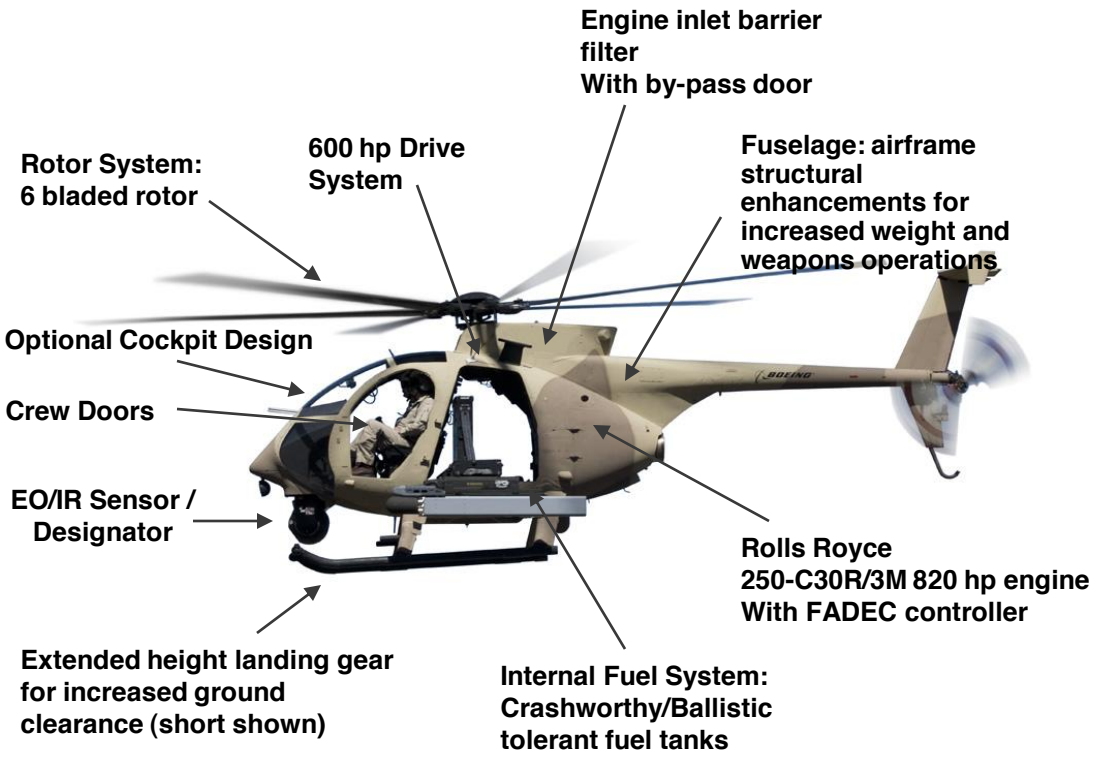
Dry Weight	2,300 lbs
Max Takeoff Weight	4,700 lbs
Fuel Capacity	2,100 lbs
Cruise Speed	130 kts
Range	735 NM
Endurance	11.7 hrs
Service Ceiling	20,000 ft MSL
Max Internal payload	2,400 lbs
Max External payload	2,500 lbs
Max payload w/ Full Fuel	300 lbs
Navigation	Redundant INS/GPS
Powerplant	820 hp Rolls Royce 250-C30R/3M rotary engine
Data/Video Link	Fully digital, compressed video
Data Link Range	Unrestricted
Max Dimensions	32.06 ft (length) 8.1 ft (height)
Rotor Diameter	27.3 ft



Unmanned Little Bird is a mature, proven platform that's ready today to meet diverse customer mission requirements

Phantom Eye Overview

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- **Phantom Eye High Altitude Long Endurance Capabilities**
  - Repositionable pseudo-satellite operating in the stratosphere for Persistent ISR and Assured Communications
  - Dual hydrogen-burning Ford engines & liquid hydrogen tanks
  - 1100 to 2500 lbs Payload, 7 to 10 days Endurance
  - Highly reliable avionics & subsystems design
  - Highly autonomous with contingency management
  - Provides affordable 24/7 operation to support Missile Defense, ISR, or Communications needs
- **Enabling Technologies**
  - Hydrogen internal combustion engines
  - Lightweight cryogenic fuel storage

Phantom Eye Demonstrator

- Wing: 150 ft span
- Length: 52.9 ft
- Empty weight: 8,081 lb
- Useful fuel:1,876 lb
- Max payload: 450 lb
- TOGW: 9,957 lb

- Two 2.3L Ford H2 engines
- Two 8 ft diameter LH2 fuel tanks
- Redundant VMS for long endurance flight demonstration
- All composite bonded wing
- Fuselage & empennage

COMC2 Overview

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- **Common Open Mission-Management Command and Control**
  - Flexible software suite that enables control of multiple, disparate UAS by a single operator
  - The core C2 system for a full range of UAS—flight proven
  - Reduces operator workload
  - Accepts inputs and provides data to external sources
- **Open Systems Architecture, Modular Design**
  - COMC2's common, non-proprietary, open systems architecture provides optimization of unmanned assets while reducing footprint and software upgrade expenses
  - Modular design allows new applications to be added or modified with minimal time and effort
  - Scalable from handheld devices to multi-screen workstations to airborne manned C2, ISR and strike platforms
  - Compatible with DoD emerging architectures and standards

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