

Company Overview



MQ-9B SkyGuardian

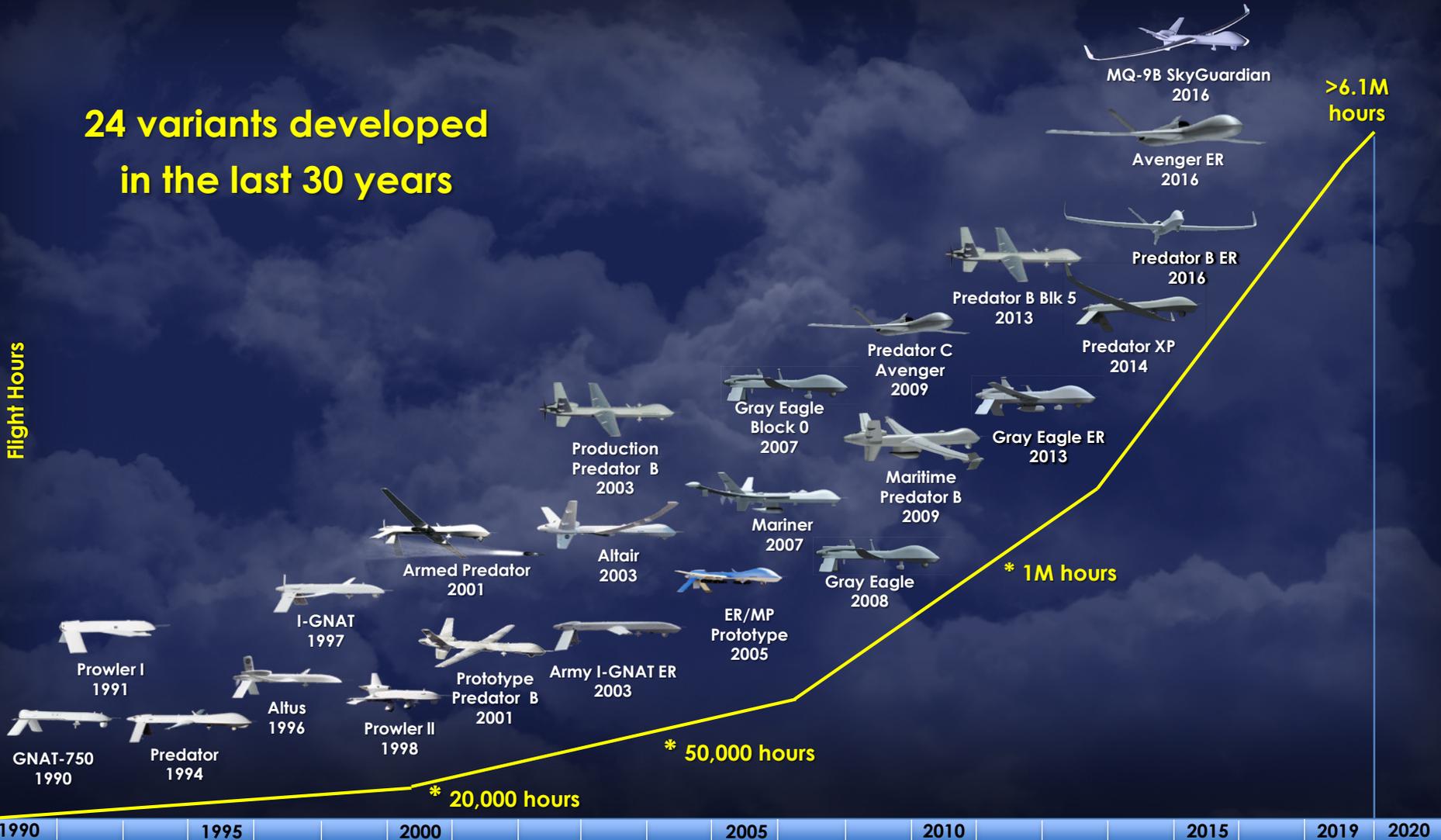
MQ-9B SkyGuardian
Blue Magic Belgium



This presentation does not contain U.S. export controlled technical data.

Growth and Evolution

24 variants developed
in the last 30 years



The World's Benchmark

6.1+ Million total flight hours
2019 – 600,000+ flight hours



Every second of every day, ~ 70 Predator-series aircraft are airborne worldwide

Long Endurance

Mission Flexibility

Affordable

Facilities Overview



Flight Operations – Gray Butte



Flight Operations – El Mirage



Flight Operations – Castle Dome



Manufacturing – Poway



Composite Manufacturing – Sabre Springs



R & D – Spanish Fork



Headquarters – Poway



Mission Systems – Rancho Bernardo



Engineering – Rancho Bernardo



Engineering – Poway



R&D – Adelanto



Flight Test & Training Center – North Dakota

10,000 + employees

5.0M ft² (465k m²)

2016-ASG-0028

Flight Operations – Gray Butte



Flight Operations – El Mirage



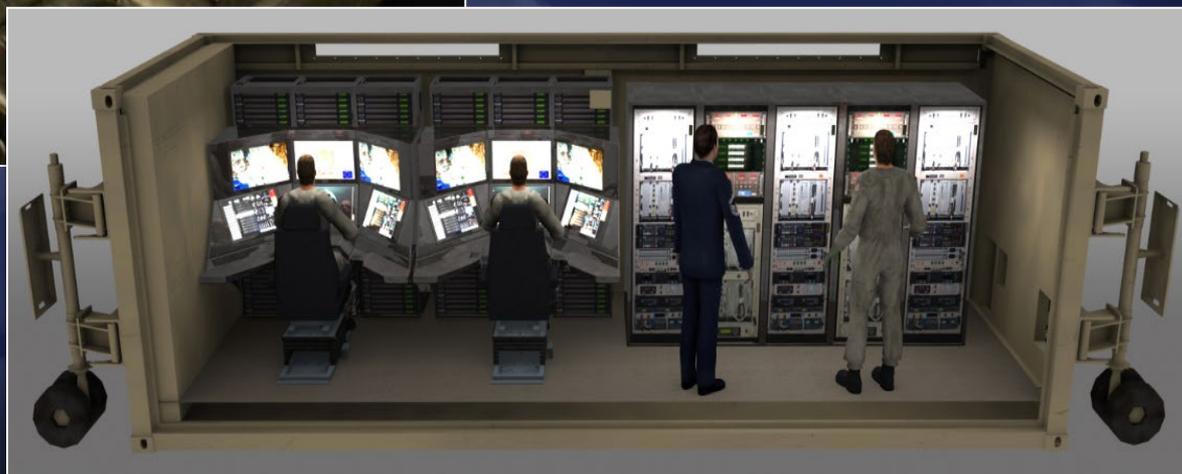
GCS & Aircraft

Advanced Cockpit Ground Control Station



- Redundant crew stations
- Touch screen controls
- Synthetic video with forward facing camera video overlay
- Electronic checklists

Manual (Pilot) or
Preprogrammed
Flight Control



GA-ASI Family of Aircraft

900+ aircraft delivered

450+ GCS delivered

630+ Lynx Radar delivered

6,100,000+ flight hours

– 90% combat hours

Worldwide Control

– Ku-SATCOM data link



Predator/Predator XP
Persistent Regional Surveillance



Gray Eagle ER
U.S. Army Troop Support



MQ-9B SkyGuardian
Civilian Airspace Compliant
Maritime Surveillance/Armed ISR

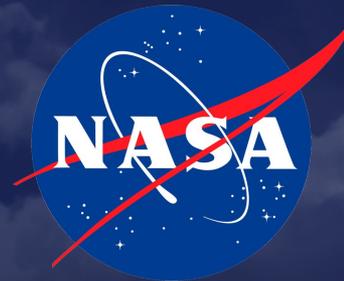
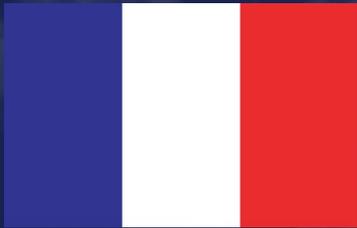
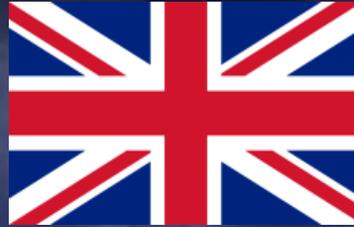
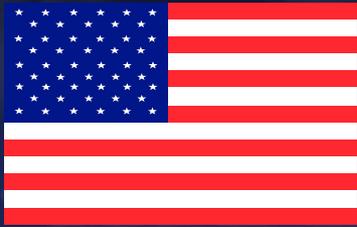


Avenger
Armed Reconnaissance, Quick Response



MQ-9A/Predator B/ Reaper
Maritime Surveillance/Armed ISR

General Atomics Customer Base



and more...



Predator XP

MTCR Category II RPAS

Characteristics

Wing Span: 55 ft (17m)
Length: 27 ft (8m)
Max T.O.W. 2,550 lb (1157 kg)
Fuel: 595 lb (270 kg)

Performance

Max Altitude: 25,000 ft (7620m)
Max Endurance: 35 hr
Max Air Speed: 120 KTAS



- Similar performance as Predator
- No wing hard points
- Improved avionics (triple redundant)
- Auto Take-off and Landing capability

Gray Eagle Extended Range



CHARACTERISTICS

Wing Span:	17 m (58 ft)
Length:	9 m (28 ft)
Powerplant:	180hp Heavy Fuel Engine (HFE)
Max Gross Takeoff Weight:	1,905 kg (4,200 lb)
Fuel Capacity:	408 kg (900 lb)
Payload Capacity:	181 kg (400 lb) internal capacity 227 kg (500 lb) each wing 227 kg (500 lb) on centerline
Weapons:	4 Hellfire missiles
Payloads:	EO/IR, SAR/GMTI, COMM relay

PERFORMANCE

Max Altitude:	7,620 m (25,000 ft)
Max Endurance:	40+ hr
Max Air Speed:	309 kph (167 KTAS)

FEATURES include

- Automatic takeoff and Landing (80,000+ flawless events)
- De-ice wings and tails
- Triple-redundant flight control system
- Dual redundant flight control surfaces
- Over-the-Horizon Ku Band SATCOM
- TCDL line-of-sight communications
- Dual rail Hellfire pylons
- Triple UHF/VHF SINCARES radios with winglet antennas

Predator C Avenger (Extended Range – 20 hr)



CHARACTERISTICS

Wing Span/Area:	76 ft (23m)
Length:	44 ft (13m)
Powerplant:	PW545B turbofan
Max Gross Takeoff Weight:	18,900 lb (8573 kg)
Fuel Capacity (internal):	9,550 lb (4332 kg) <ul style="list-style-type: none">• 8,550 lb (3878 kg) fuselage +• 1,000 lb (454 kg) aux tank
Payload Capacity:	3,500 lb (1588 kg) int./6,500 lb (2948 kg) total
Mission payloads:	EO/IR, Lynx Multi-mode Radar, SIGINT/ESM System, Communications relay

PERFORMANCE

Max Altitude:	50,000 ft (15240m)
Max Endurance:	20 hr
Max Air Speed:	360 KTAS

FEATURES

- Jet performance and reliability
- Reduced detection features
- Internal stores carriage
- Retractable EO/IR gimbal
- Hybrid electro/mechanical anti-lock brake system
- Six external hardpoints
- Compatible with all GA-ASI GCS

MQ-9A Block 5



CHARACTERISTICS

Wing Span:	66 ft (20m)
Length:	36 ft (11m)
Powerplant:	Honeywell TPE 331-10
Max Gross Takeoff Weight:	11,700 lb (5310 kg)
Fuel Capacity:	3,735 lb (1694 kg)
Electrical Capacity:	45kVA (Capable)
Payload Capacity:	850 lb int. (386 kg) 3,000 lb (1361 kg) across 6 wing hard points: 750 lb (340 kg) external on centerline
Payloads:	MTS EO/IR, Lynx Multi-mode Radar, 360° digital multi-mode maritime radar, Automated Identification System (AIS), SIGINT/ESM, Communications relay

PERFORMANCE

Max Altitude:	45,000 ft (13716m)
Max Endurance:	26 hr (35 hr with fuel tanks)
Max Air Speed:	240 KTAS

FEATURES

- Triple-redundant flight control system
- Redundant flight control surfaces
- Remotely piloted or fully autonomous
- Seven external stations for carriage of payloads
- C-Band line-of-sight data link control
- Ku-Band beyond line-of-sight/SATCOM data link control
- Over 90% system operational availability
- C-130 transportable
- Dual ARC-210 UHF/VHF Radios
- Redundant power generation
- Automatic Takeoff and Landing Capability (optional)
- Ice Protection System (anti/de-ice) system (optional)

MQ-9A / Predator B – Proven Pedigree

- Over 3 million Predator B flight hours
- Over 350 aircraft produced
- 26 (soon 36) MQ-9As operated by EU Member States
- Over 90% system operational availability



MQ-9 Family

NASA Altair



MQ-9A



USAF MQ-9A Block 1



USAF MQ-9A Block 5



MQ-9A
Big Wing



MQ-9B



DHS MQ-9A



MQ-9A Guardian



MQ-9B SkyGuardian

UK Military Airworthiness Authority (MAA) certification in work

Made for Civil Airspace access

Compliant with NATO flight certification standards
(STANAG 4671/UK DEFSTAN 00-970)



>40-hr Endurance ISR Configuration
Flew 48.2 Hours (May 2017)
>5834 km mission radius

CHARACTERISTICS

Wing Span: 79 ft (24m)
Length: 38 ft (11.7m)
Powerplant (4-blade prop): Honeywell TPE331-10
Max Gross Takeoff Weight: 12,500 lb (5,670 kg)
Fuel Capacity (internal): 6,000 lb (2,722 kg)
Payload Capacity: 4,000 lb (1,814 kg)
across 9 hard points,
800 lb (363 kg) internal
Power: 45 kVA
Backup power: 2.2 kW

PERFORMANCE

Max Altitude: >12,192 m
Max Endurance: 40 hr
Max Air Speed: 210 KTAS

CAPABILITIES Include

Lightning/Ice Protection
40,000 hr Service Life
Certifiable composites
Fastened structures
Fuel/Electrical Separation
Power plant fire protection
Damage tolerant airframe

Automatic Takeoff/Landing
Short takeoffs w/ alcohol water injection
Secure NATO-certified radios
C-Band line-of-sight (LOS) datalink
Back-up Beyond LOS (BLOS) datalink
Link 16 (optional)
Flight data recorder
Cooperative Detect and Avoid System
ADS-B In/Out
Traffic Collision Avoidance System (TCAS)
Provisioned for:
Airborne Collision Avoidance Radar

MQ-9B Trans-Atlantic Flight

Historic SkyGuardian Flight

NORTH DAKOTA



TAKE-OFF: 12:49 (CDT), July 10, 2018
General Atomics ASI Flight Test Center
Grand Forks, North Dakota

UNITED KINGDOM

LANDING: 18:51 (GMT +1), July 11, 2018
Royal Air Force Base
Fairford, United Kingdom



TIME: 24 hrs 02 min
DISTANCE: 3,760 nm

ALTITUDE: 26,960 ft.
AUTOMATED SATCOM LANDING

MQ-9B SeaGuardian

MQ-9B SkyGuardian + Maritime Kit = MQ-9B SeaGuardian

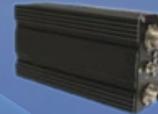
- Maritime Kit
 - Maritime radome
 - 360° Multimode Maritime radar in external radome
 - Automatic Identification System (AIS)



Maritime Radome



360° Maritime Radar



AIS Receiver

SkyGuardian: 40+ hr Endurance / 5834 km (3150 nmi) Mission Radius

SeaGuardian: 35+ hr Endurance / 4260 km (2300 nmi) Mission Radius

Payloads

Current ISR Capabilities

Electro-Optic/Infrared



- Full motion video
- EO/IR
- Laser illuminator

GA-ASI Lynx SAR



- Provides wide-area surveillance
- Ground moving target indicator
- Maritime wide area surveillance
- Precision geolocation
- All-weather - see through clouds

Maritime Surveillance MTS-B IQE EO Image



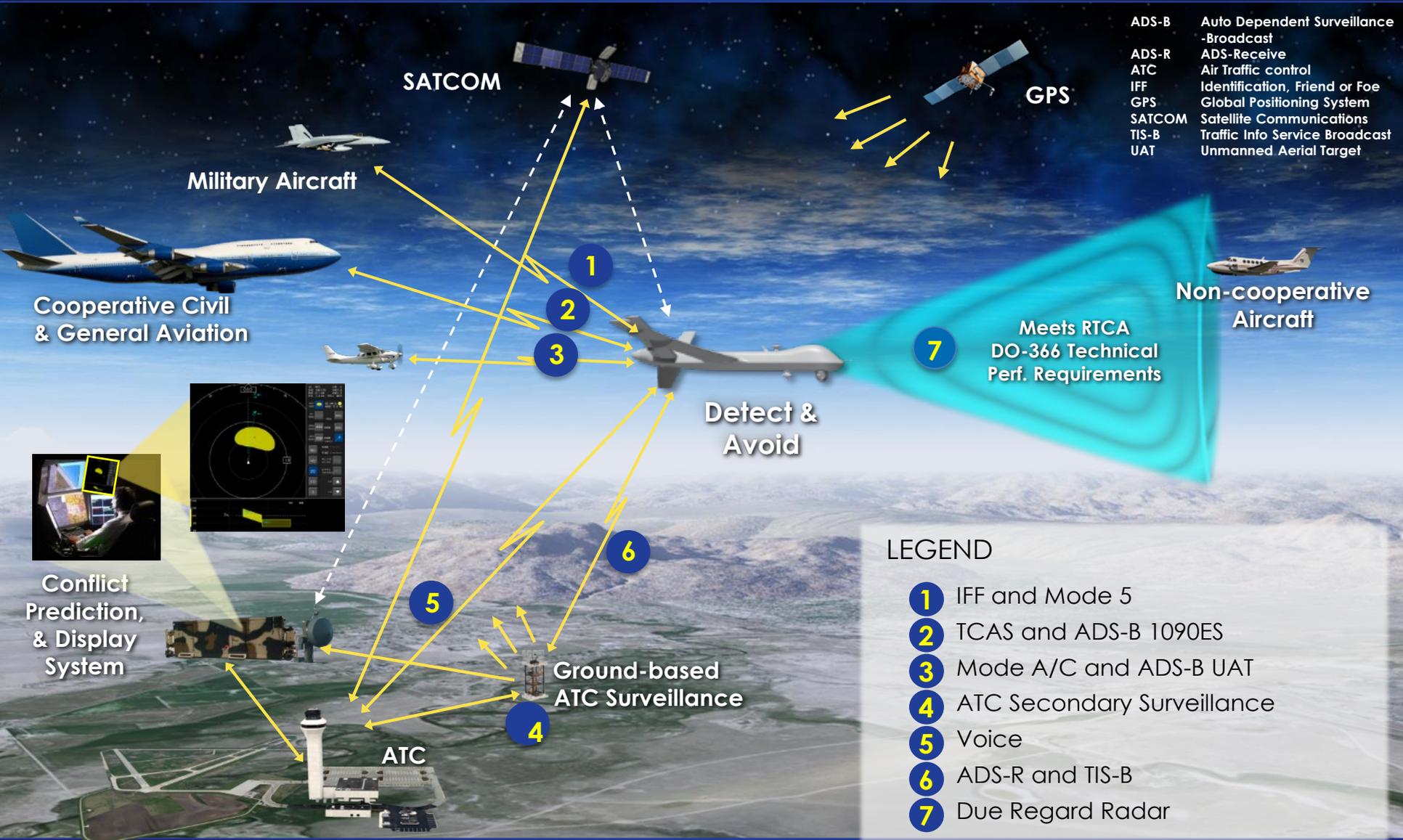
Vessel Identification "Eagle Service"
Aircraft altitude 15.908 ft (4849 m), Range 5,6 nmi (10,4 km)

Lynx Radar Imagery (Airfield)



SAR-On-SAR Provides Additional Clarity

MQ-9B Detect and Avoid (DAA) Overview



ADS-B	Auto Dependent Surveillance -Broadcast
ADS-R	ADS-Receive
ATC	Air Traffic control
IFF	Identification, Friend or Foe
GPS	Global Positioning System
SATCOM	Satellite Communications
TIS-B	Traffic Info Service Broadcast
UAT	Unmanned Aerial Target

LEGEND

- 1** IFF and Mode 5
- 2** TCAS and ADS-B 1090ES
- 3** Mode A/C and ADS-B UAT
- 4** ATC Secondary Surveillance
- 5** Voice
- 6** ADS-R and TIS-B
- 7** Due Regard Radar

MQ-9B Due Regard Radar for DAA

Proven DAA in non-segregated airspace

- Japan Demonstration
- Los Angeles airspace

**Detects Non-Cooperative Aircraft and
Validates Cooperative Tracks**



Active Electronically Scanned Array
(AESA)

Missions

MQ-9 – A Multi-role Platform

Military Operations



Civilian Missions



Border Protection/Disaster Assistance



Maritime Surveillance



GA-ASI Proven Aircraft Systems

- Supporting forces overseas, in homeland defense and civilian missions
- Expanding mission capabilities
- Providing interoperable RPA capability worldwide