Predator Aircraft Series Status Report:
Military & Civilian Missions

Presented to:
RPAS Regulatory & Policy Forum
June 2014
The World’s Benchmark – Over 2.8 Million Flight Hours

Every second of every day, over 54 Predator-series aircraft are airborne worldwide

2013 – 475,950 flight hours
Growth and Evolution

17 Predator-series variants
developed in the last 20 years

Flight Hours


GNAT-750 1990
Prowler I 1991
Predator 1994
Altus 1996
Prowler II 1998

I-GNAT 1997

Armed Predator 2001

Army I-GNAT ER 2003

Prototype Predator B 2001

Production Predator B 2003

Altair 2003

ER/MP Prototype 2005

Mariner 2007

Predator C Avenger 2009

Maritime Predator B 2009

Predator XP 2013

MQ-9 Block 5 2013

2.8 M+ hours

1M hours

* 50,000 hours

* 20,000 hours

* 20,000 hours

Approved for Public Release. This presentation does not contain technical data per ITAR 22 CFR parts 120-130.
GA-ASI Family of Aircraft

- 680+ aircraft delivered
- 290+ GCS delivered
- 300+ Lynx Radar delivered
- 2,800,000+ flight hours
  - 90% combat hours
- **Capabilities include**
  - Direct control
  - Autopilot control
  - Auto takeoff / auto land available
- Robust voice and data communications
- Long endurance performance

Avenger
Armed Reconnaissance Multi-Mission, Quick Response

Predator B/MQ-9 Reaper/Guardian
Maritime Surveillance/ Hunter-Killer

Gray Eagle
U.S. Army Ground Troop Support

Predator/Predator XP
Regional Surveillance
Worldwide Control

Line-of-Sight

Satellite Relay

Forward Pass
Ground Control Stations

Current GCS

Storm GCS

Advanced Cockpit GCS
Delivering Situational Awareness: Advanced Cockpit

• Increased mission effectiveness
• Reduced training

• Successfully flown on Predator-series
• Optimal Human-Machine Interface
Aircraft
Air & Space magazine (June ’08) selected Predator as one of the “Top 10 Aircraft that Changed the World”

- First UAV to be controlled via satellite communications
- First UAV to provide voice radio communications
- First UAV to support manned aircraft with laser designation

1. Wright 1905 Flyer
2. Junkers F13
3. Boeing 314
4. The Enola Gay
5. MIG-15
6. Sikorsky S-55
7. Cessna 172
8. Learjet 23
9. Boeing 747
10. General Atomics RQ-1 Predator UAV
Predator XP

- Similar performance as Predator
- No wing hard points
- Improved avionics (triple redundant)
- Auto takeoff and landing capability
Gray Eagle

Differences from Predator

- 30% increase in GTOW
- Triple-redundant avionics
- Dual-redundant flight control surfaces
- Auto takeoff & land (20,000+ events)
- Heavy-fuel engine
- De-ice
- One System GCS
Predator B
Multi-Mission Aircraft System Configurable for:

Overland Reconnaissance

Maritime Surveillance

And

Predator B

Predator B Maritime-Configured

800,000 flight hours
Predator B Extended Range (Available Now)

- Fuel pods increase endurance to 34 hours (from 27 hours)
- Existing 66 ft (20m) wingspan, MGTOW 11,700 lb (5307 kg)
- Low cost and field retrofittable to standard Predator B
Certifiable Predator B
(Available 2018)

- Made for NATO airspace
- Compliant with U.S. and NATO flight certification standards
  - STANAG 4671/UK DEFSTAN 00-970
- 42-hr endurance
Predator C Avenger (video)
Payloads
# Payload Types

**System Modes**

<table>
<thead>
<tr>
<th>Payload Types</th>
<th>System Modes</th>
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<tbody>
<tr>
<td>EO/IR/LD</td>
<td>- Wescam MX-15, MX-20, M-12, M14TS</td>
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<td>- IAI – TAMAM/MOSP s80/770</td>
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<td></td>
<td>- Raytheon Camera Systems</td>
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<td>- + Others</td>
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<tr>
<td>Radar</td>
<td>- GA-ASI Lynx Multi-mode Radar</td>
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<tr>
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<td>- Raytheon SeaVue</td>
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<td>- Telephonics APS143V#</td>
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<td>- ELTA/EL/M2022A(V3)</td>
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<td>- + Others</td>
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<tr>
<td>Comm</td>
<td>- ARC-210 and Extender Comm Relay</td>
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<td>- RVT Air-to-Air and Air-to-Ground Video</td>
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<td>- Indium Low Data Rate Data Link</td>
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<td>- Harris PRC-117 Radio Relay</td>
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<td>- + Others</td>
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<tr>
<td>Specialized and Scientific Sensors</td>
<td>- Finder Mini UAV</td>
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<td></td>
<td>- CSAR (Personnel Locator Beacon)</td>
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<tr>
<td></td>
<td>- NASA ACES (lightning sensors)</td>
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<td></td>
<td>- RAF DB-110</td>
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<td>- NASA AMS (wild fire sensor)</td>
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<td>- + Others</td>
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<tr>
<td>Classified Programs</td>
<td>- Numerous Payloads</td>
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Sovereign Payload Capability Demonstration

- **Payload integration by a third-party**
  - Underwrites operational independence
  - Privately-funded/IRAD program(s)
  - Advancing to true plug and play
  - Integration of a SELEX Galileo Seaspray 7500E Radar
  - Flight demonstration on a GA-ASI Predator B

- **First phase of broader development program**
Current ISR Capabilities

**Electro-Optic/Infrared**
- Full motion video
- EO/IR

**GA-ASI Lynx Multi-mode Radar**
- Provides wide-area surveillance
- Ground Moving Target Indicator
- Maritime Wide Area Surveillance
- Precision geolocation
- All-weather – See through clouds
Wide-Area Sensor Capabilities

All-weather SAR imagery

GMTI and EO/IR cross-cueing

EO/IR
Wide-Area Stripmap: Surveillance of Key Infrastructure

Important irrigation canal

Pipelines

Powerline towers
Lynx Maritime Wide Area Surveillance

Lynx Maritime Multi-Mode Radar

EO/IR Imagery

Lynx Multi-Mode Radar
Missions
Payload Capacity = Multi-mission Capability

Military Operations

Civilian Missions

Border Protection/Disaster Assistance

Maritime Surveillance
Border Protection Missions
Civilian Missions — Disaster Assistance
Predator B Maritime Configuration

Operational with the U.S. Government
Universal pod supports SeaVue/Sea Spray maritime radars
Equipped with Automatic Identification System (AIS)

Endurance 25 hr
Speed 240 KTAS
Altitude 45,000 ft (13716m)
Payload Capacity
Internal 850 lb (386 kg)
External 3,750 lb (1701 kg)
GA-ASI Proven Aircraft Systems Provide:

- **Immediate NATO interoperability**
  - GA-ASI MALE RPA operated by: USAF, USN, USA, UK, Italy, and France
  - MQ-9 coalition ops are ongoing in Afghanistan

- **Support to forces overseas, in homeland defense and civilian missions**
  - Military persistence, strike & ISR – land or sea
  - Border protection – land and maritime
  - Disaster assistance
    - River flooding, hurricanes, earthquakes, wildfires

- **Expanding mission capabilities due to growth potential**
  - Continuing Predator-series RPA product improvement and upgrades
  - Advancing sensor technology
  - Open for integration of national sovereign payloads