Air Force Unmanned Aerial System (UAS) Flight Plan
2009-2047

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**Report Documentation Page**

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*Standard Form 298 (Rev. 8-98)  
Prepared by ANSI Std Z39-18*
AF ISR Transformation

- New challenges, new adversaries mandate new role for ISR
  - Collectively necessitated AF ISR Transformation
  - Expanded role and reach of AF ISR
  - Requires changing the culture regarding ISR

- Approach:
  - ORGANIZATION: Organize AF ISR as a holistic AF-wide enterprise to optimize presentation of ISR capabilities to service, joint, & national users
  - PERSONNEL: Develop ISR career paths to build viable “bench” of AF ISR senior leaders to meet 21st Century demands
  - CAPABILITY: Plan, guide, and orchestrate AF/ISR from a capability-based perspective as a consolidated functional area
1) **AF ISR Strategy**: AF ISR’s long-range plan that provides overall guidance and philosophy

2) **AF ISR Flight Plan**: Identifies options to resource the AF ISR strategy

3) **AF UAS Flight Plan**: Action plan to guide AF UAS development

4) **ISR CONOPs**: Describes how we envision integrating and optimizing ISR day-to-day operations
What do UAS’s Bring to Operations?

- Persistence—ability to loiter over a target for long time periods for ISR and/or opportunity to strike enemy target
- Undetected penetration / operation
- Operation in dangerous environments
- Can be operated remotely, so fewer personnel in combat zones—projects power without projecting vulnerability
- Integrates “find, fix, finish” sensor and shooter capabilities on one platform
Result: High Demand Asset

Growth in Air Force medium-altitude MQ-1 Predator and MQ-9 Reaper Combat Air Patrols

- 2004 = 5
- 2005 = 8
- 2006 = 11
- 2007 = 18
- 2008 = 33
- 2009 = 38

660% Increase in 6 years!
...A Joint approach to:

Get the **most** out of UAS to **increase** joint warfighting capability, while promoting service interdependency and the wisest use of tax dollars

Requires:
- Optimal Joint Concept of Operations (CONOPS)
- Airspace Control Resulting in Safe/Effective UAS Operations
- Air Defense Architecture to Achieve Security w/o Fratricide
- Increased Acquisition Effectiveness, Efficiency, Standardization
AF UAS Flight Plan: Vision for the future

An Air Force with...

- Unmanned aircraft that are fully integrated with manned aircraft across the full range of military operations
- UAS that use automated control and modular “plug-and-play” payloads to maximize combat capability, flexibility and efficiency
- Joint UAS solutions and teaming
- An informed industry and academia – knowing where we are going and what technologies to invest in

Capabilities-based Air Force UAS vision thru 2047: Defines DOTMLPF way forward
AF UAS Flight Plan
2009-2047

Colonel Eric Mathewson
AF UAS Task Force
Assumptions

- Manned and unmanned systems must be integrated to increase capability across the full range of military operations for the Joint Force
- UAS compelling where the human is a limitation to mission success
- Automation is key to increasing effects, while potentially reducing cost, forward footprint and risk
- The desired effect is a product of the “integrated system” (payload, network, and PED); and less the particular platform (truck)
- Modular systems with standardized interfaces enhance adaptability, sustainability and reduce cost
- Robust, agile, redundant C2 enables supervisory control (“man on the loop”)
- DOTMLPF-P solutions are linked and must be synchronized
Conventional Harbor
- 4 operators per crane
- Manpower-centric system
  - Legacy system
  - Manpower dependant
  - Manual Operation

“Multi-Crane Control”
- 1 operator per 6 cranes
  - 24x increase in efficiency
- Tech-centric system
  - Multi-crane Control
  - Automation (cranes and AGV)
    - DGPS
    - Algorithms
Autonomy – Multi-Aircraft Control
Potential Manpower Savings

- **2011** (Current system)
  - 50 CAPs
    - 50 MQ-9 CAPs
    - + 7 a/c in constant transit
  - 10 pilots per CAP
    - 500 pilots required
    - + 70 pilots to transit a/c
  - 570 Total Pilots

- **2012** (MAC)
  - 50 CAPs
    - 50 MQ-9 CAPs
    - 2 CAPs per MAC GCS
    - 1 transit per MAC GCS
  - 5 pilots per CAP
    - 250 Pilots required
    - + 0 to transit aircraft
  - 250 Total Pilots
  - **56% Manpower Savings**

- **TBD** (MAC + 50% auto)
  - 50 CAPs
    - 50 MQ-9 CAPs on orbit
  - 25 CAPs automated
  - 25 CAPs in MAC (5 pilots/CAP)
    - 125 pilots required
    - + 25 auto-msn monitor pilots
    - + 0 to transit aircraft
  - 150 Total Pilots
  - **64% Manpower Savings**

- **MAC = 1 pilot can fly up to 4 a/c**

**Integrity - Service - Excellence**
Modularity

Effective

Affordable

Flexible

B-52
- Standard Interfaces
- Variable / Tailorable armament set
- JFC Mission Flexibility
  - Conventional/nuclear
  - Stand-off strike, CAS

PCs
- Standard interface/bus
- Swappable components
- Promotes vendor competition
- Drives down price, improves quality, allows for tailorability
- $399 PCs are reality

C-130
- One platform/truck
- Supports multiple missions
- Swappable modules
AMC-X CONCEPT
CAPABILITIES STUDY

Multi-Mission Aircraft

- Mobility
- Long Range Strike
- Air Refueler

Common components, similar shape, and same production line

Enabling the “Global” in “Global Vigilance, Reach and Power!”
How do we get there?

**Methodology**
- Identified where we are today
- Examined future scenarios and desired capabilities
- From that future perspective identified actions to get there from today
- Matched compelling requirements to UAS capabilities aligned with AF Core Functions
- Identified and sequenced actions addressing not only materiel solutions, but also the doctrine, organization, training, facilities and policy
AF UAS Flight Plan: Mission sets for UAS

I n t e g r i t y  -  S e r v i c e  -  E x c e l l e n c e
SUAS “Family of Systems”

Nano
Navigator / communicate inside buildings

Micro
Close-in reconnaissance & situational awareness

Man-portable
- ISR
- Time-Sensitive
- Lethal

Air-Launched
- Close-in ISR
- Lethal
- SIGINT/DF

Multi-Mission
- ISR
- Force protection
- FID

Irregular Warfare
Increasing across all mission sets

Anti-Access Support

Scan Eagle

Next Gen Multi-Mission
- ISR
- Communications Relay
- Lethal / Non-lethal
- Electronic/Cyber Attack/SEAD
- SIGINT/Low Altitude Pseudo-Sats
- = New Mission areas

Bio-Mechanicals
- Indoor Reconnaissance
- Indoor Lethal/Non-lethal
- Indoor Comm
- Cyber attack
- Swarming

Now

Future

Integrity - Service - Excellence
Connectivity and Teaming

Future

MQ-LE
Collection/Info Ops
Connectivity

MQ-L
Collection/Info Ops
(AWACS/JSTARS)

MQ-L
EW/Collection/Info Ops
CAS/Air Interdiction/Airlift

MQ-Hyper Sonic
Strategic Attack/Prompt Global Strike

B-2/MQ-L Teaming
Strategic Attack/
CAS/Air Interdiction
Kinetic & Non-kinetic Wpns

MQ-L – JSF/MQ-X
Aerial Refueling/
Connectivity

F-22/MQ-X Teaming
Counterair/Missile Defense
Kinetic & Non-kinetic Wpns

JSF/Multi Msn MQ-X Teaming
Air Interdiction, CAS --
Kinetic & Non-kinetic Wpns

Multi Msn MQ-L/X, SUAS - FOS Teaming
ISR/EW/SEAD – Kinetic & Non-kinetic Wpns

Network

NAT'L (JCS,
NSA, NGA,
DIA, etc.)

JTF HQ, CAOC
MCEs, DCGS

SOF, ALO,
TAC-P

I n t e g r i t y - S e r v i c e - E x c e l l e n c e
Action Synchronization

Doctrine
- Near-term FY09-10
  - SCDR allocation
  - J2/J3
- Mid-term FY10-15
  - SUAS Sqdn
  - Mac Ops
  - Mac Logistics Sqdn
  - RSO Basing
  - Auto Tgt Engage
- Long-term FY15-25
  - Auto Ops Sqdn
  - Autonomous Fight
- Long-term FY25-47
  - Auto Flight

Organization
- SUAS Sqdn
- MAC Ops
- Mac Logistics Sqdn
- UAS AFSC
- Auto Ops Sqdn
- Autonomous Fight

Training
- 100% Sim Training
- Common GCS
- Assured Comm
- Auto TPED
- Sense & Avoid
- Modular Payloads
- UAS EA
- CBM+
- Autonomous Fight
- Swarming Alt Energy
- Auto MX
- Auto Target Engage

Materiel
- MAC
- Auto Hi-Fi T/O
- Sim Land
- ECSS
- UAS EA
- CBM+
- Autonomous Fight
- Swarming Alt Energy
- Auto MX
- Auto Target Engage

Leadership
- CC’s
- SAF/PA Outreach
- PME
- Career Pyramids
- Bedford Autonomy
- Building the “New” AF Leader

Personnel
- Rated
- SUAS Operator
- UAS LNOs
- Recruiting Focus
- Teaming w/ Schools
- Force Structure Reform

Facilities
- C2 Facility
- CFACC Facility
- Auto MX Facilities

Policy
- NAS
- ILAs
- Acq Excellence
- MAC-in-NAS
- Treaties
- Autonomy
- Auto Target Engage
AF UAS Flight Plan Vision

- An Air Force where unmanned aircraft systems are considered as viable alternatives to traditionally manned platforms

- An Air Force that harnesses increasingly automated, modular and sustainable systems resulting in a leaner, more adaptable, tailorable, and efficient force that maximizes combat capabilities to the Joint Force

- An Air Force that teams with the other Services, our allies, academia and industry to capitalize on the unique unmanned aircraft attributes of persistence, connectivity, flexibility, autonomy, and efficiency