DoD Unmanned Aircraft Systems Training Programs

Brief to ICAO

24 Mar 2015

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Chair, Unmanned Aircraft Systems Task Force

AT&L

Overview

- What Unmanned Aircraft Systems (UAS) the US Department of Defense (DOD) Flies
- How much
- How we train
- Summary

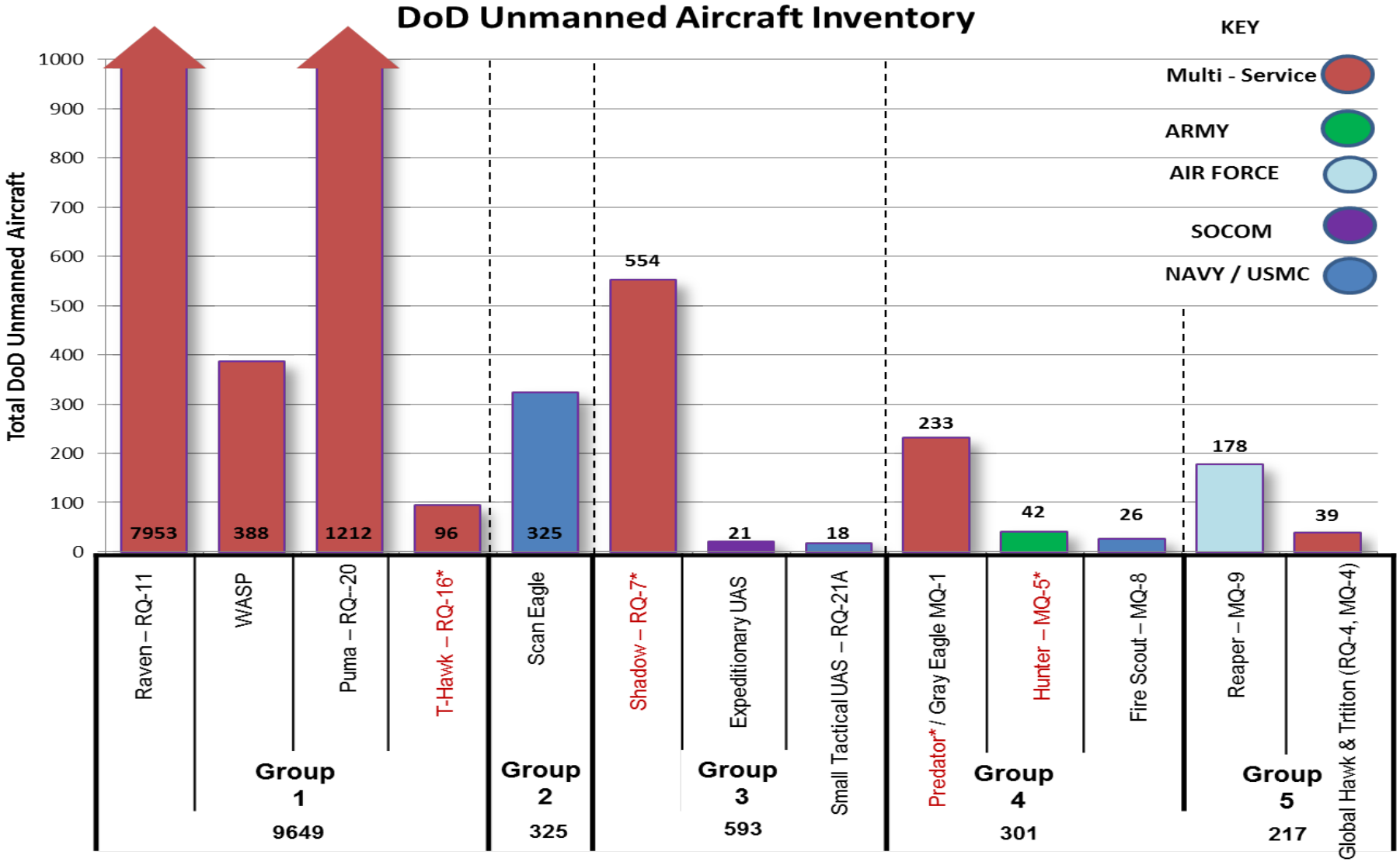
This is DoD UAS

…and this!

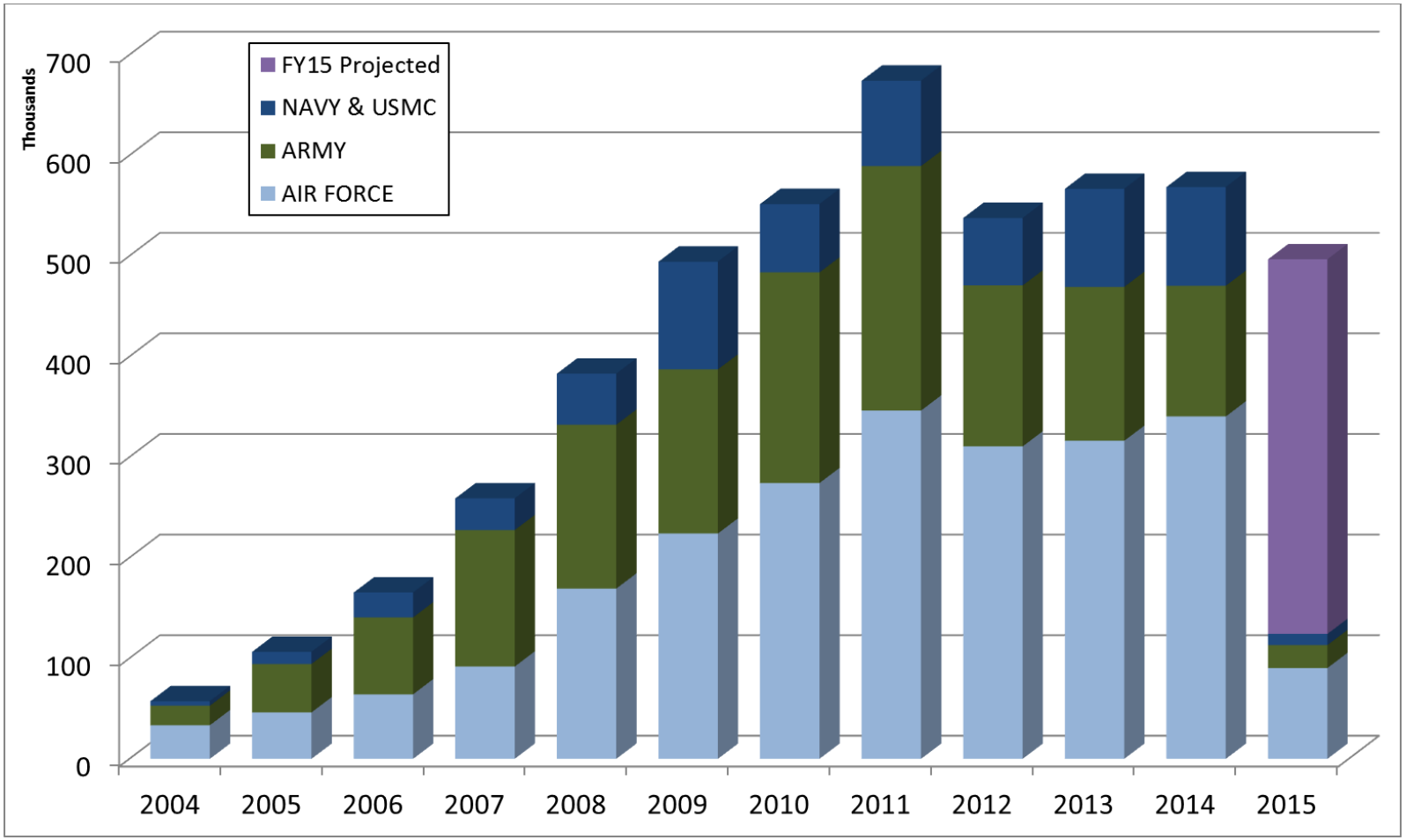
DoD UAS Groups

- **Group 1 - UAS typically less than 20 pounds in weight; normally operate below 1200 feet above ground level (AGL) at speeds less than 250 knots (Raven)**
- **Group 2 - UAS typically are in the 21 – 55 pound weight class; normally operate below 3500 feet AGL at speed less than 250 knots (Scan Eagle)**
- **Group 3 - These UAS weigh more than 55 pounds, but less than 1320 pounds. They normally operate below 18,000 feet mean sea level (MSL) at speeds less than 250 knots (Shadow, Integrator)**
- **Group 4 - These UAS weigh more than 1320 pounds; normally operate below 18,000 feet MSL at any speed (Fire Scout, Predator, Gray Eagle)**
- **Group 5 - These UAS weigh more than 1320 pounds; normally operate higher than 18,000 feet MSL at any speed (Reaper, Global Hawk/Triton, UCLASS)**

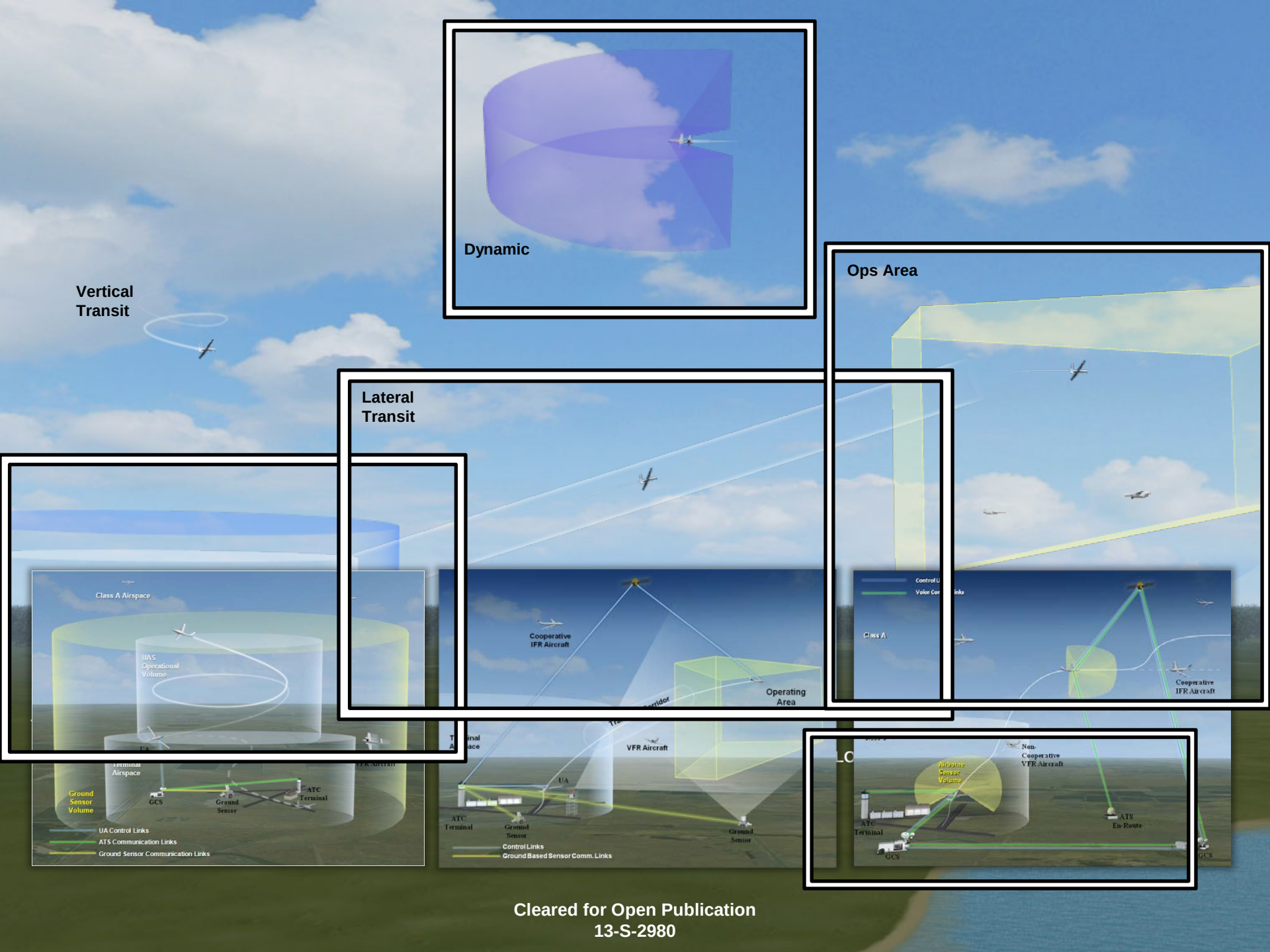
DoD Unmanned Aircraft Inventory



DoD UAS Flight Hours
(By Department, By Fiscal Year)



**Does not include Group 1 UAS*
***As of 1 Jan 2015*



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UAS Training DoD

- Per CJCSI 3255.01, DOD UAS pilots/operators will be trained to one of four basic UAS qualification (BUQ) levels:
  - BUQ-I: VFR in Class E, G, combat/restricted airspace < 1200 AGL
  - BUQ-II: VFR in Class D, E, G, combat/restricted airspace < 18,000 MSL
  - BUQ-III: VFR in any airspace < 18,000 MSL
  - BUQ-IV: All weather in any airspace up to FL 600
- DoD trains all UAS pilots/operators in formal, documented and repeatable training programs
- Maintenance training also done in formal programs, where applicable or appropriate

The term "Pilot" or "Operator" represents cultural differences between the Services and does not address a level of training

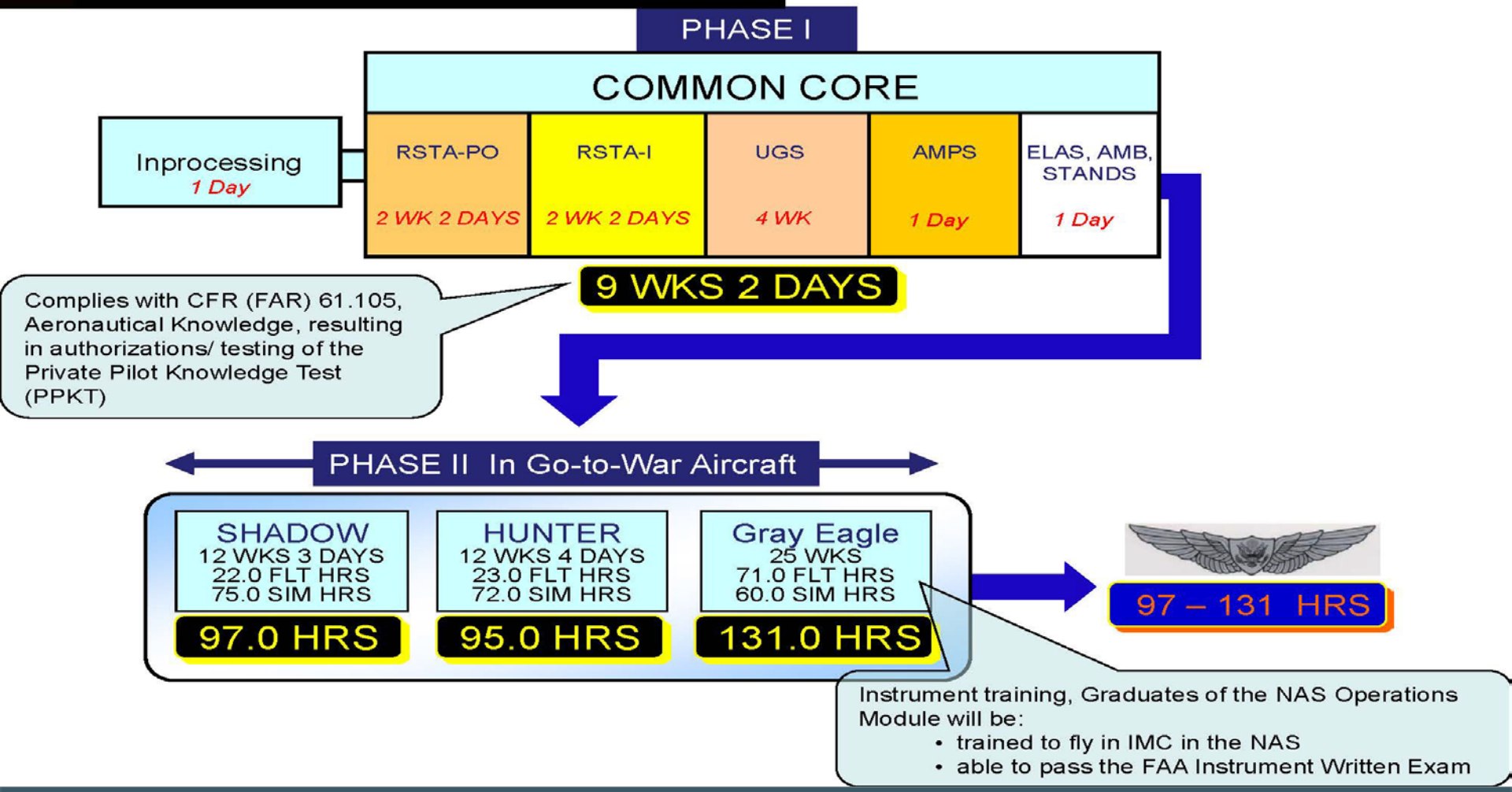
DOD UAS Training Programs
Air Force

	AF Pilot	AF UAS Pilot	PPL w/ Instrument Rating
GND TRNG	298 Hours	297 Hours	70 Hours
PILOT CERTIFICATION	- Contact - Dual - Solo - Cross country (w/solo) - Night - Simulated/Actual IMC 85 Hours	- Contact - Dual - Solo - Cross country (w/solo) - Night - Simulated/Actual IMC 40 Hours	- Basic flight maneuvers - Dual - Solo - Cross country (w/solo) - Night - Simulated/Actual IMC 40 Hours
INSTRUMENT CERTIFICATION	- Navigation - Dual - Solo - Instruments - Approaches - Simulated/Actual IMC	- Navigation - Dual - Instruments - Approaches - Simulated/Actual IMC - RPA sorties	- Navigation - Dual - Solo - Instruments - Approaches - Simulated/Actual IMC
TOTAL TIME FLIGHT + SIM	170 Hours	166 Hours	95 Hours

DOD UAS Training Programs
Army

AMERICA'S ARMY:
THE STRENGTH OF THE NATION

UAS Operator Training Pipeline



DOD UAS Training Programs
Navy Strategy

MQ-4 Triton Operator Training

- **Mission Training**
  - Previous qualified P-3/P-8 crewmembers
  - Air Vehicle Operator (AVO), Mission Payload Operator (MPO), and Tactical Coordinator (TC) training at Fleet Replacement Squadron (FRS).
- **Schedule**
  - AVO = 57 days, MPO and TC = 49 days
- **Curriculum**
  - Courseware combination of Classroom, Computer, and Web Based Training
- **Mission System Trainers**
  - Integrated into Mission Control System
  - Stand alone version located at FRS

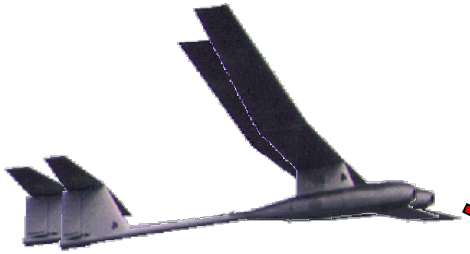
MQ-8 Fire Scout Operator Training

- **Mission Training**
  - H-60 pilots and Aircrew trained for MQ-8 AVO and MPO roles
  - AVO training will be provided by FRS and Wing Weapons Schools at the three training sites (NAS North Island, NAS Jacksonville/Mayport, and NAS Norfolk).
- **Schedule**
  - AVO est 5 weeks, MPO est 3 weeks
- **Curriculum**
  - Courseware combination of Classroom, Computer, and Web Based Training
- **Mission System Trainers**
  - Standalone Training Devices
  - Proficiency systems (Laptops)

DOD UAS Training Programs
SOCOM small UAS (sUAS)

- 80 hours / 10 days
  - Classroom
    - 20.0 hours
  - Flight P.E. and Simulator
    - 60.0 hours

TRAINING DAY	TD 0	TD 1	TD 2	TD 3	TD 4	TD 5
CLASS STARTS		0800	0800	0800	0800	0800
CLASS ENDS		1700	1700	1700	1700	1700
EVENTS	Travel day to training site	Course Introduction (0.5) SUASMAN (0.5) Directives/Instructions (0.5) Basic Aerodynamics (0.5) Manual/Flt-log (0.5) System Description (0.5) Assembly/Disassembly (0.5) Controls/Indicators (2.0) Falcon View/RPUAV (2.0) Simulator and PE (1.0)	Preflight/ Launch (0.5) Recovery/post-flight (0.5) Emergency Procedures(1.0) Weather(0.5) Incident Report (0.5) Airspace Management (1.0) COA/Observer (0.5) Mapping/GPS (0.5) Mission Planning (0.5) Falcon Tracker (0.5)	EP Test (0.5) Maintenance/TS (1.0) Untrained Assist (0.5) Hand-off (0.5) Remote Launch (w/Demo by Instructors) (0.5)	Range & Bearing Tool (0.5) Advanced Flight (0.5) Mobile Ops (0.5) Night Operations (0.5) Exam 1 Review (0.5)	Exam 1 (1.0)
RANGE STARTS			1200	1130	1300	1000
RANGE ENDS			1830	1830	1830	1830
EVENTS			Demo Flight (0.3) Lesson 1-1 (0.4)	Lesson 1-2 (0.4) Lesson 1-3 (0.4)	Simulator and PE (1.0) Lesson 1-4 (0.4) Lesson 2-1 (0.4)	Simulator and PE (1.0) Lesson 3-1 (0.3) Lesson 3-2 (0.5) Lesson 3-3 (0.6)
TRAINING DAY	TD 6	TD 7	TD 8	TD 9	TD 10	TD 11
CLASS STARTS	2400	2400	2400	2400	2400	
CLASS ENDS	1000	1000	1000	1000	1000	
EVENTS	Night / Range Safety (0.5)		Exam 2 Review	Exam 2	End Of Course Review Student Critiques System clean up/ Inventory and Turn in Graduation Certificates	
RANGE STARTS	2400	2400	2400	2400		
RANGE ENDS	0930	0930	0930	0930		
EVENTS	Lesson 4-1 (0.4) Lesson 4-2 (0.6)	Lesson 4-3 (0.6) Lesson 4-4 (0.5)	Lesson 4-5 (0.5) Make-up Lessons. Advanced Flying (Work on weak areas) **Note: Wx depending this could be used for Lesson 5-0 (as required)**	Lesson 5-0 (0.3-0.5) Culmination Exercise **Note: Wx depending this could be used for Lesson 5-0 (as required)**	**Note: Wx depending this could be used for Lesson 5-0 (as required)**	



1989, 11 lbs **2003, 4.2 lbs** **2007, 1.0 lbs**

DOD UAS Training Programs
Army Maintenance

AMERICA'S ARMY:
THE STRENGTH OF THE NATION

UAS Maintenance Training Pipeline

MOS TRAINING

15E UAS Repairer Course

Intro to Army Aviation 21 hrs	Shop and Flight Line Practices and Procedures 51 hrs	Army Aviation Forms and Records 36 hrs	Basic Electronics Training 144 hrs	Shadow Emplacement/ Displacement 72 hrs
Maintenance 72 hrs	Flight Operations 72 hrs	Fault Isolation 72 hrs	Flight Line Operations 36 hrs	Field Training Exercise 120 hrs

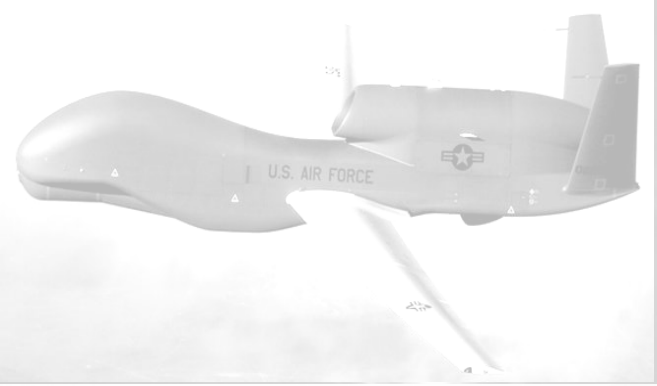
17 WKS

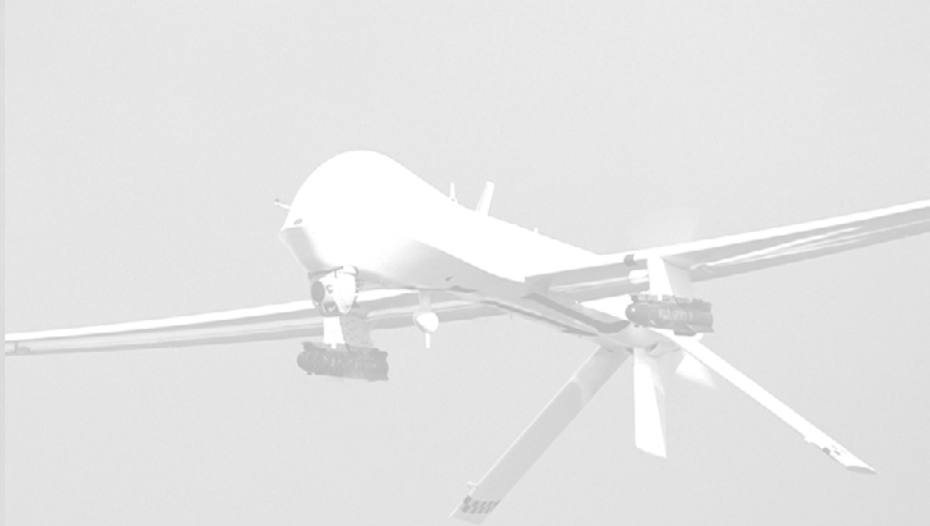
ASI TRAINING

HUNTER (U3)	Gray Eagle(U5)
10 WKS	18 WKS
27 WKS	**35 WKS**

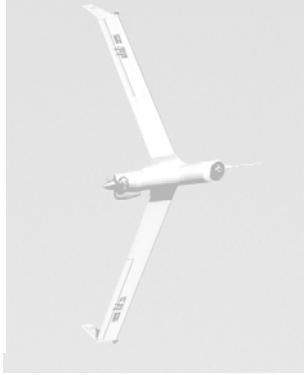
Summary

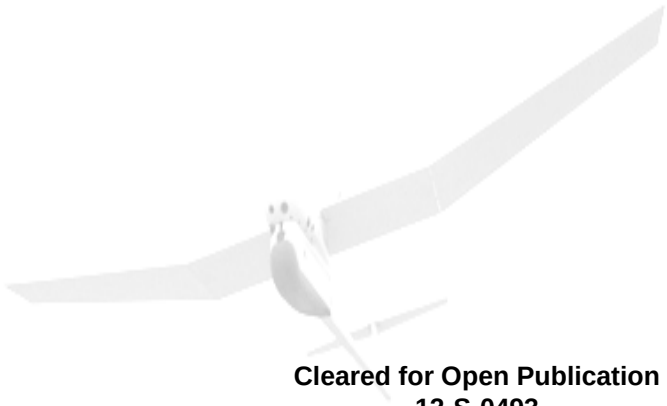
- Global UAS operations will continue at a sustained or increasing pace – mostly sUAS platforms
- DOD Training programs and standards are purpose built to meet airspace requirements
- Other requirements maturing
  - SAA Technology
  - Airworthiness





Questions?





Ground Operations
Air Force Predator/Reaper

Ground Operations
Air Force Predator/Reaper

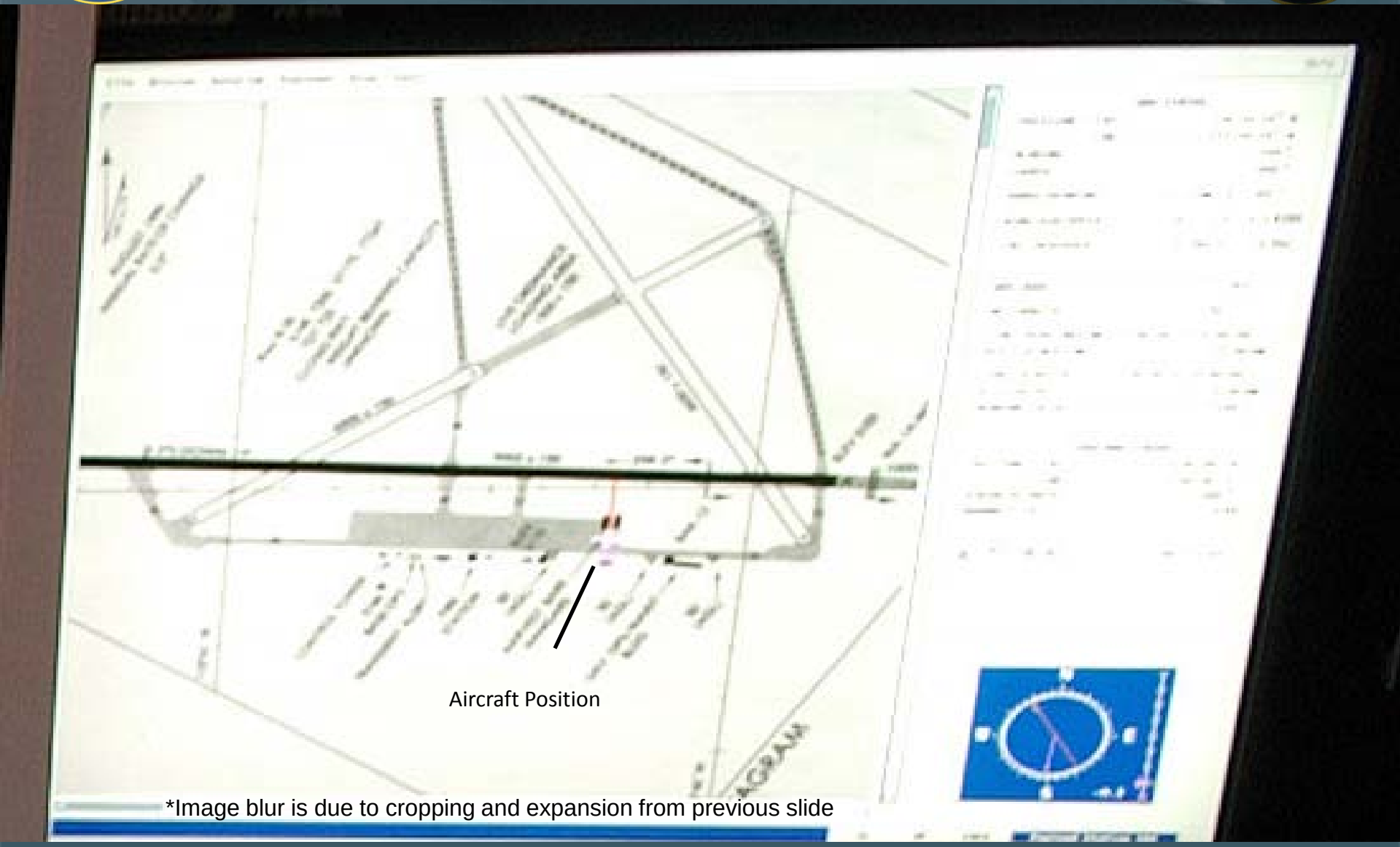
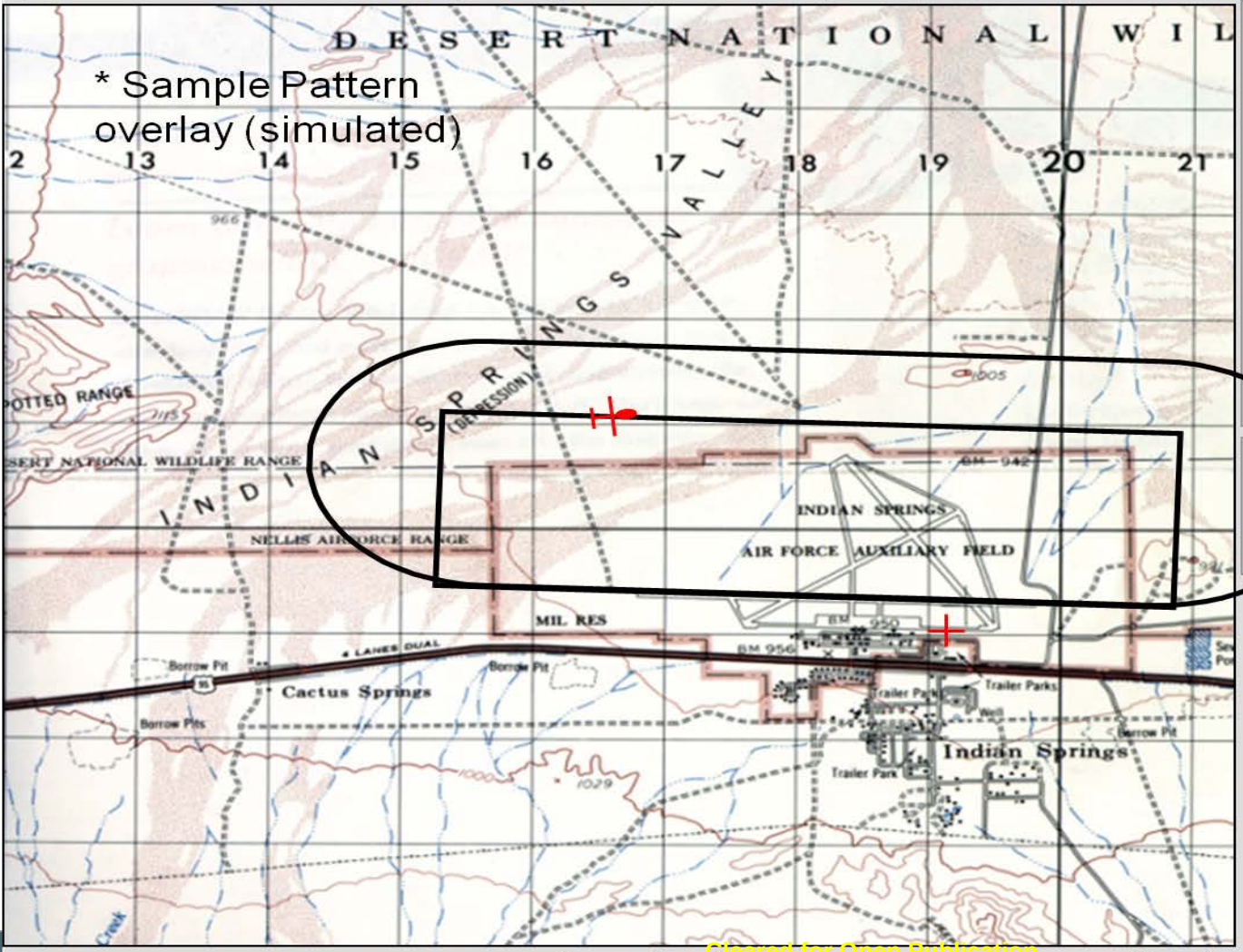


*Image blur is due to cropping and expansion from previous slide

Ground Operations
Air Force Predator/Reaper

Pattern Operations
Air Force Predator/Reaper

File Mission Datalink Payloads View Tools Dismiss All Dialogs

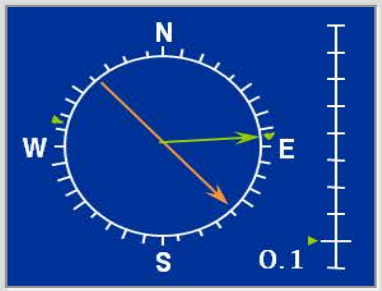


UAV STATUS

POSITION	LAT	36°34'50 N
	LON	115°40'11 E
HEADING		[redacted]°
COURSE		[redacted]°
RANGE/BEARING		[redacted]nm / [redacted]°
WIND DIR/SPEED		[redacted]° / [redacted]KIAS
FUEL REM/USED		[redacted]lbs / [redacted]lbs
INITIAL LL HDG		359 °
INITIAL LL ALT		6500 ft
NAV MODE		[redacted]
WP FROM/TO		[redacted] to [redacted]
TIME TO/AT NXT WP		[redacted] / [redacted]
DIST TO NEXT WP		[redacted]nm
TIME TO/AT CP		[redacted]
DIST TO CP		[redacted]nm
HEADING TO CP		[redacted]°

PAYLOAD STATUS

POSITION	LAT	36°36'00"N
	LON	115°46'00"E
SENSOR AZIMUTH		[redacted]°
GROUND ELEV.		[redacted]ft



1:50000 GA APTAREA CL 36°34'54" N 115°40'51" W CL OP EMER Pilot Station 064

Information Overload
Air Force Predator/Reaper

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