JOINT STRIKE FIGHTER
the next generation strike fighter

JOINT STRIKE FIGHTER PROGRAM BRIEF

13 September 2005

Rear Admiral Steven L. Enewold, USN
Program Executive Officer, Joint Strike Fighter Program

Mr. Dan Crowley
Executive Vice President and General Manager
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VISION

DELIVER AND SUSTAIN
THE MOST ADVANCED, AFFORDABLE STRIKE FIGHTER AIRCRAFT TO PROTECT FUTURE GENERATIONS WORLDWIDE.

MISSION STATEMENT

BE THE MODEL ACQUISITION PROGRAM FOR JOINT SERVICE AND INTERNATIONAL COOPERATION.
DELIVER TO OUR WAR FIGHTERS AN AFFORDABLE AND EFFECTIVE NEXT GENERATION STRIKE FIGHTER WEAPON SYSTEM AND SUSTAIN IT WORLDWIDE.

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What Is JSF?

The next generation "family" of strike fighters

- F-16/F/A-18C "like" aero performance
- Stealth Signature and Countermeasures
- Advanced avionics, data links and adverse weather precision targeting
- Increased range with internal fuel and weapons
- Highly supportable, state of the art prognostics and health management

Lethal Survivable Supportable Affordable

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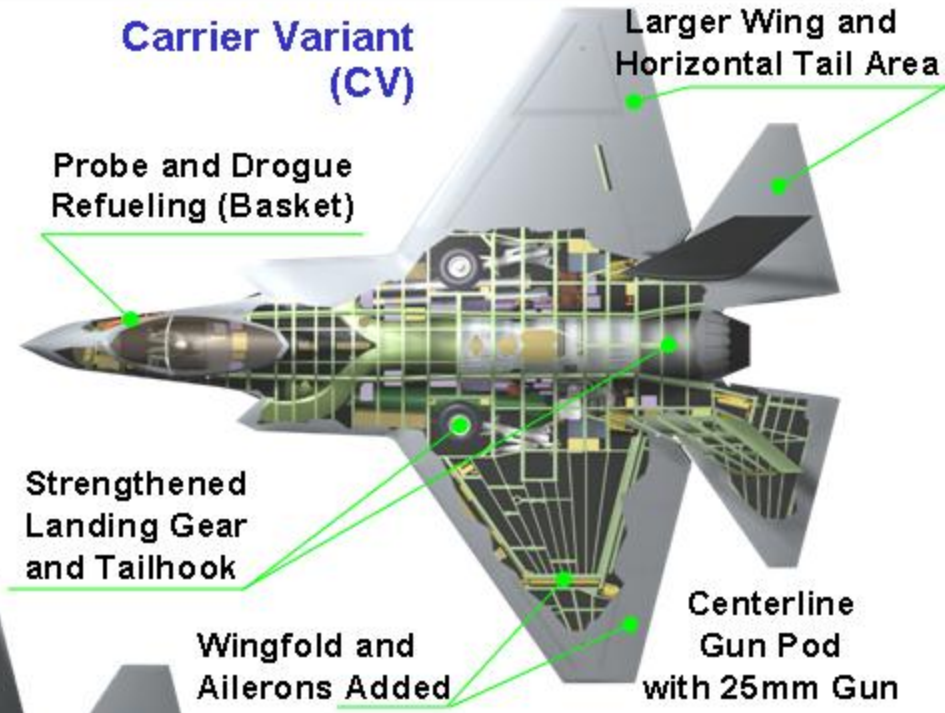
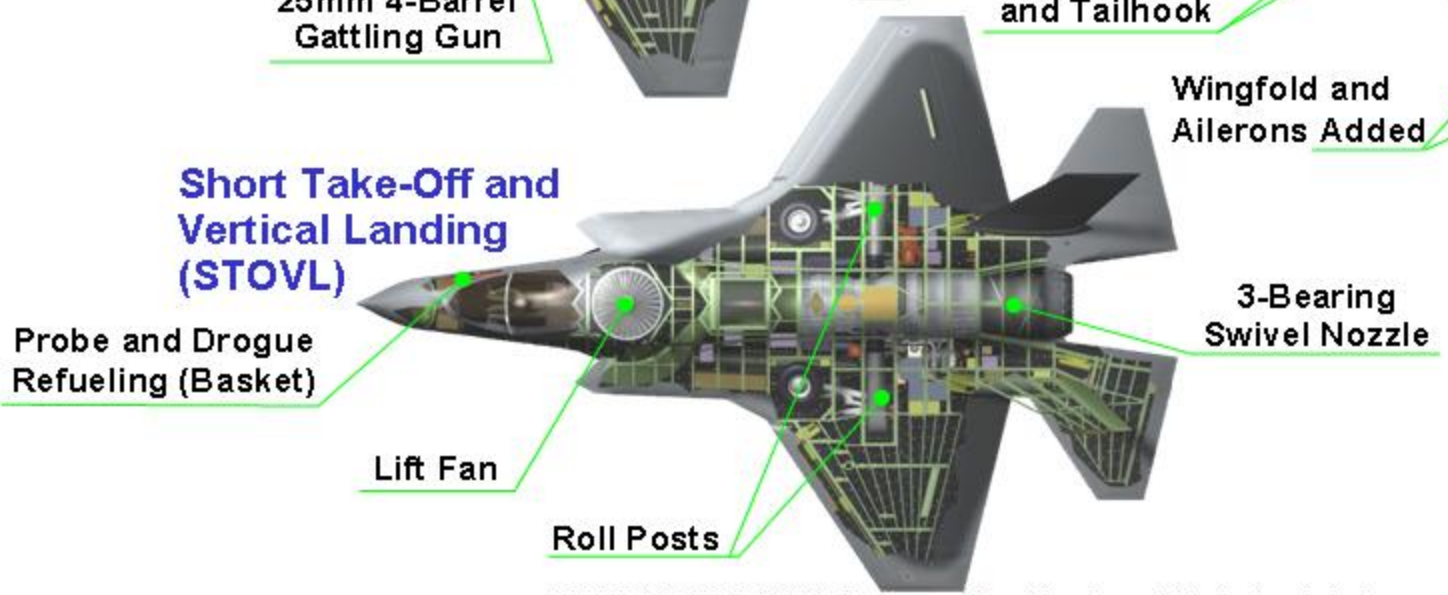
JSF Family Of Aircraft

One Program -- Three Variants
Meeting Service and International Needs





All variants
- 450-600 nm Range
- 1.6 Max Mach (Limit)
- Stealthy
- Same Weapons
- Similar Avionics
- Similar Flight Envelope
- Same Basic Engines

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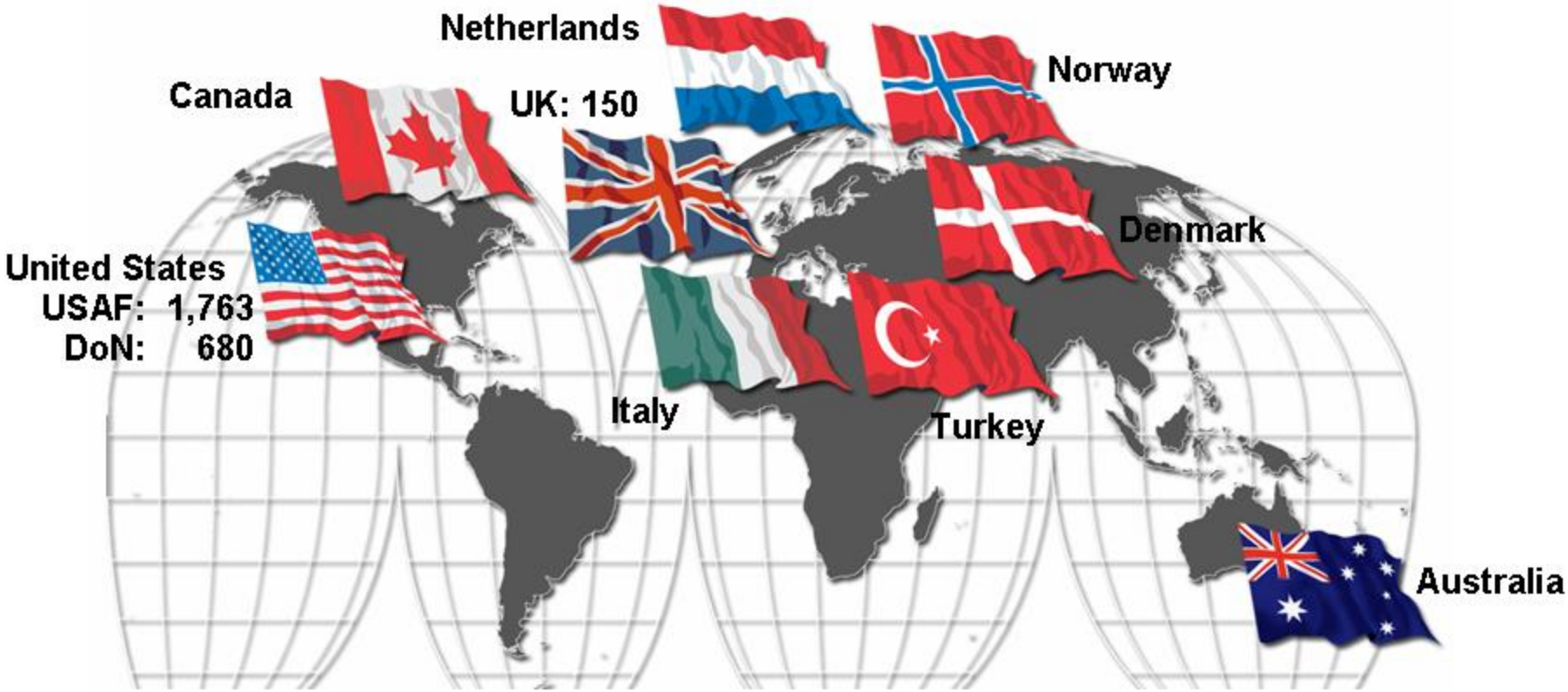
Service & International Needs



- **USAF:** Multi-role (primary air-to-ground) fighter to replace F-16 & A-10 & to complement F/A-22
- **USMC:** Multi-role, short takeoff, vertical landing strike fighter to replace AV-8B & F/A-18C/D
- **USN:** Multi-role strike fighter to complement the F/A-18E/F
- **UK (RN and RAF):** Supersonic replacement for Sea Harrier and GR-7

2,593 US/UK JSFs > 2,000 International JSFs

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JSF Enables True Joint/Coalition Operations

Domestic and UK

- F-16, A-10 — USAF
- F/A-18 — USN
- F/A-18, AV-8B — USMC
- Sea Harrier, Harrier GR7 — RN/RAF

F-35 Joint Strike Fighter

International

- Denmark, Norway, Netherlands, Italy, Turkey — F-16
- Australia, Canada — F/A-18
- Australia — F-111
- Italy — AMX, Harrier, Tornado

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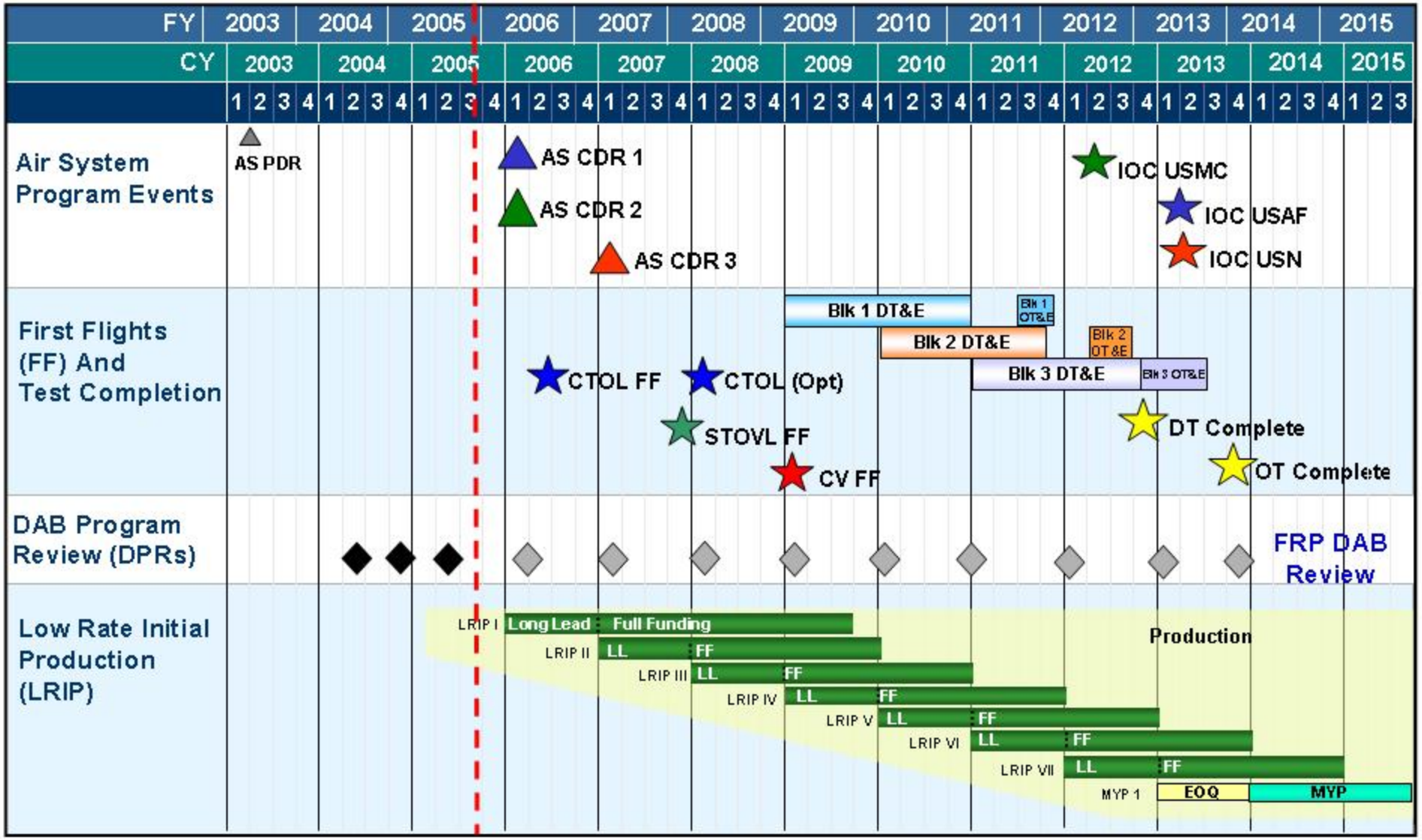
JSF Top-Level SDD Program Schedule



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F-35 Joint Strike Fighter

Three Years and Ten Months into Twelve-Year SDD Program

- **JSF System Development and Demonstration Contract Award on 26 Oct 01**
- **Air System Preliminary Design Review Completed in March 2003**
- **Successfully Resolved STOVL Weight Issues**
  - Benefits All Variants Through Commonality
  - All Variants Projected to Meet/Exceed Key Performance Parameters
  - "Optimized" designs underway
- **JSF Re-Plan Initiated**
  - STOVL Design Upgrades and Re-Plan approved by DAB (Oct 04)
  - F35 Contract Mod planned Sep 05
  - F135 Contract Mod awarded Aug 05
  - F136 SDD Contract Award Aug 05
- **Pratt & Whitney F135 Test Engines Have Accumulated Over 3409 Hours (as of 12 Sep 05)**
- **GE/Rolls Royce F136 Test Engines Have Accumulated Over 207 Hours (pre-SDD Effort)**
- **First CTOL Aircraft Manufacturing and Assembly Underway**
- **Airborne Mission Systems Testing Underway**
- **Service Concurrence on Joint Integrated Training Center**

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Key Performance Parameters

	KPP	STOVL	CTOL	CV
JOINT	***Radio Frequency Signature***	Low Observable		
	Combat Radius	450 nm USMC Profile	590 nm USAF Profile	600 nm USN Profile
	Sortie Generation	4 Surg / 3 Sust	3 Surg / 2 Sust	3 Surg / 2 Sust
	Logistics Footprint	< 8 C-17 equivalent loads (20 PAA)	< 8 C-17 equivalent loads (24 PAA)	< 46,000 cu ft 243 ST
	Mission Reliability	95%	93%	95%
	Interoperability	Meet 100% of critical, top-level Information Exchange Requirements Secure Voice and Data		
USMC/UK	***STOVL Mission Performance*** *Short Take-Off Distance*	550'	N/A	N/A
	STOVL Mission Performance *Vertical Lift Bring Back*	2 x 1K JDAM, 2 x AIM-120 With Reserve Fuel	N/A	N/A
USN	***Maximum Approach Speed***	N/A	N/A	145 knots

JSF is Projected to Meet or Exceed Key Performance Parameters

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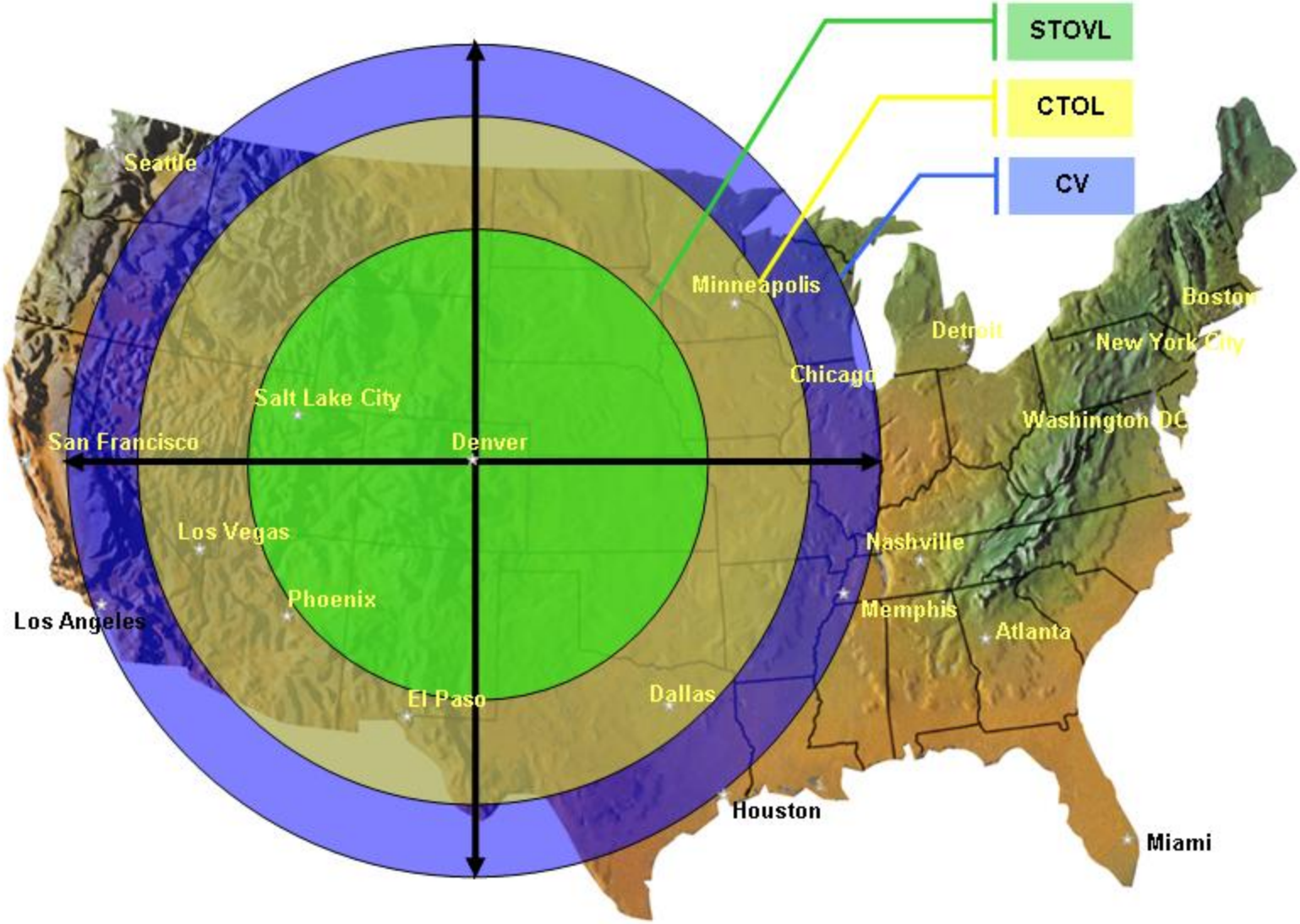
Combat Radius



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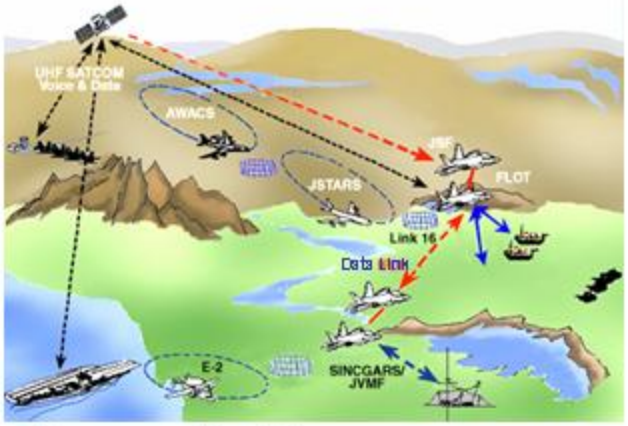
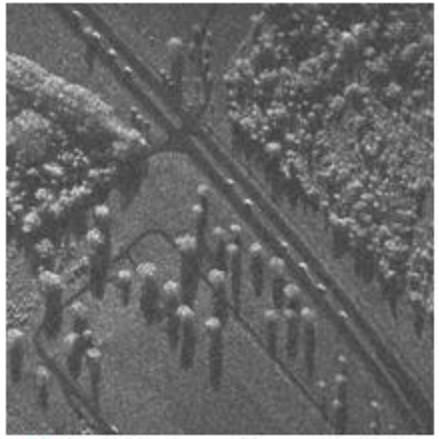
JSF Warfighter Capability Highlights



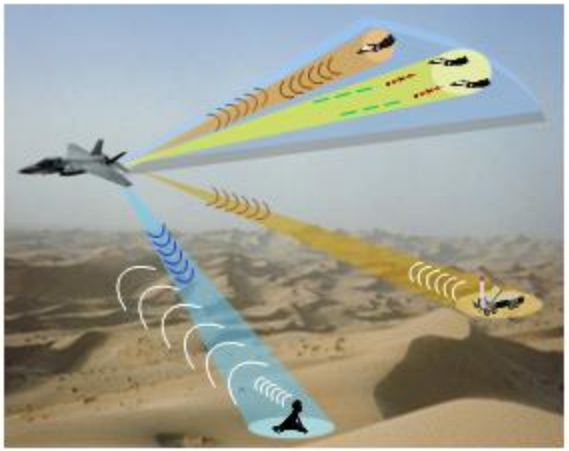
- Cooperative Ops
- Off-Board Connectivity



- Multi-Function AESA

- EO Targeting
- Versatile Weapons Capability

- All Around Situation Awareness



- Passive Precision Emitter Location and Targeting

- Fused, Coherent Common Operational Picture

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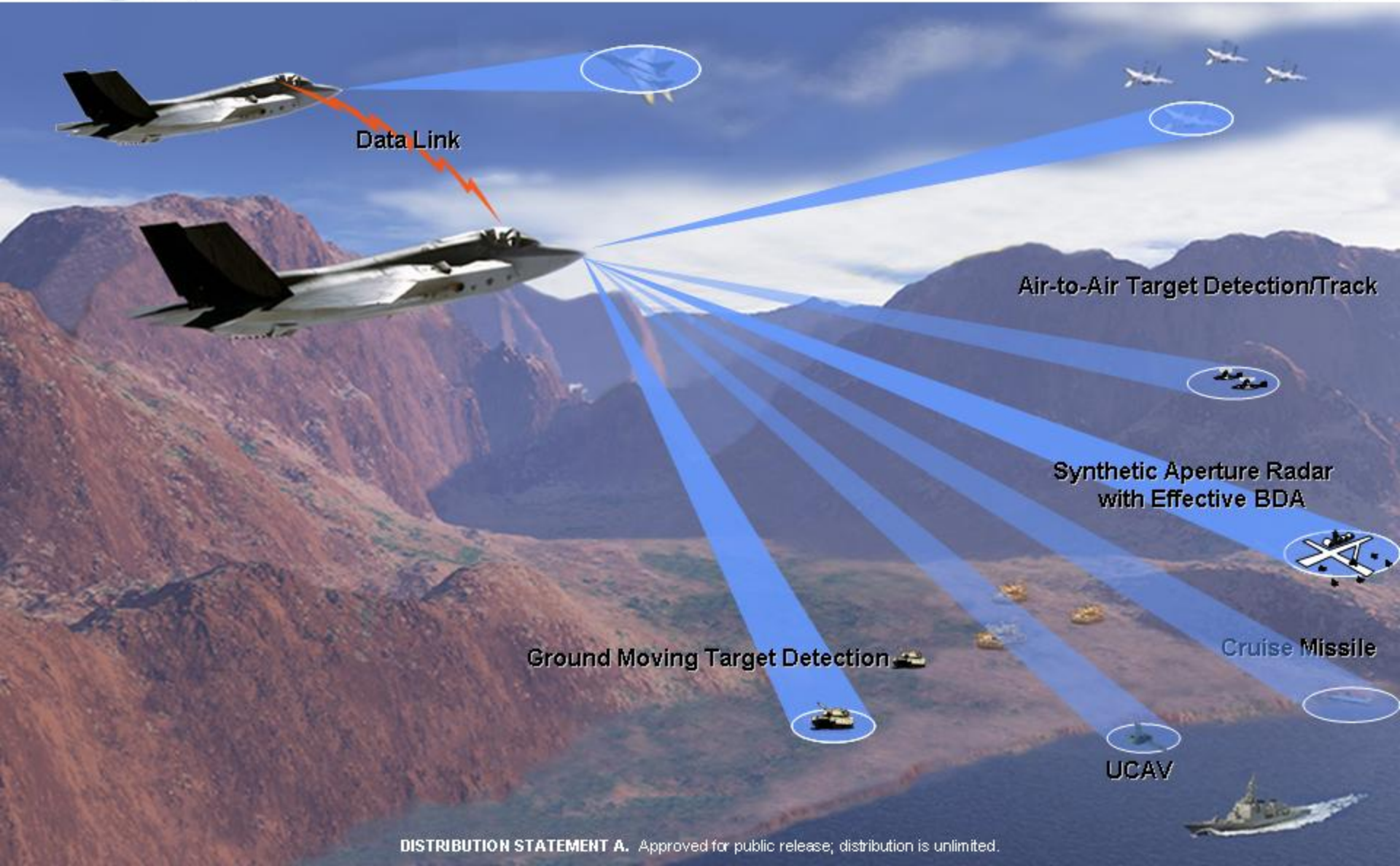
APG-81 Radar Active Electronically Scanned Array Interleaved Search & Track



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Synthetic Aperture Radar (SAR) Images from First Flight

- Northrop Grumman Electronic Systems completed the first two radar flights on the BAC1-11 aircraft on 23 and 25 August 2005 at Baltimore, MD
- Successfully completed multiple SAR images at various resolutions

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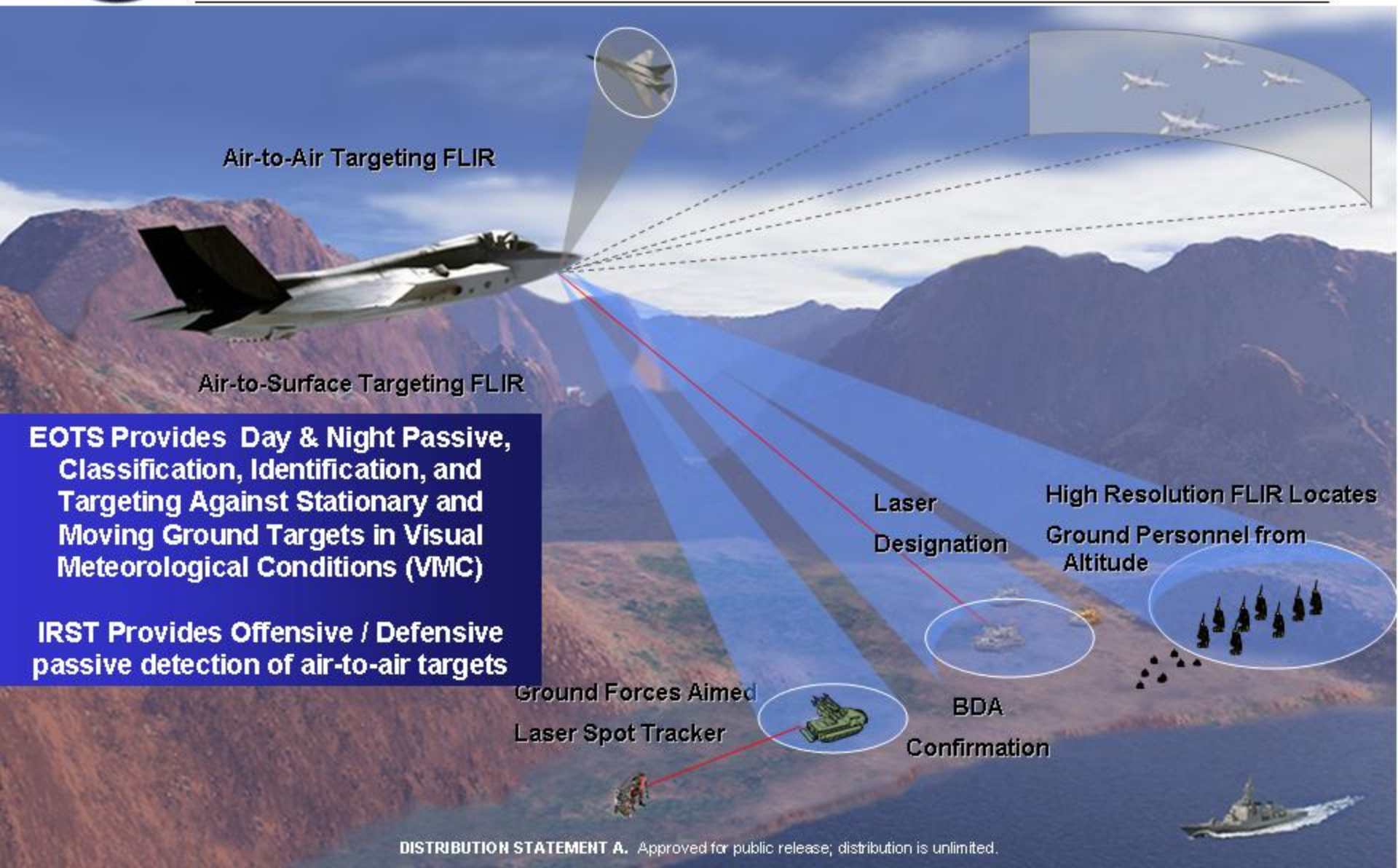
Electro-Optical Targeting System (EOTS) & Infrared Search & Track (IRST)



EOTS Provides Day & Night Passive, Classification, Identification, and Targeting Against Stationary and Moving Ground Targets in Visual Meteorological Conditions (VMC)

IRST Provides Offensive / Defensive passive detection of air-to-air targets

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Electro-Optical Targeting System
(EOTS)

- Internally Mounted
- Long Range, High Resolution
- NAVFLIR, Targeting FLIR, IRST Functions
- Digital Continuous Zoom

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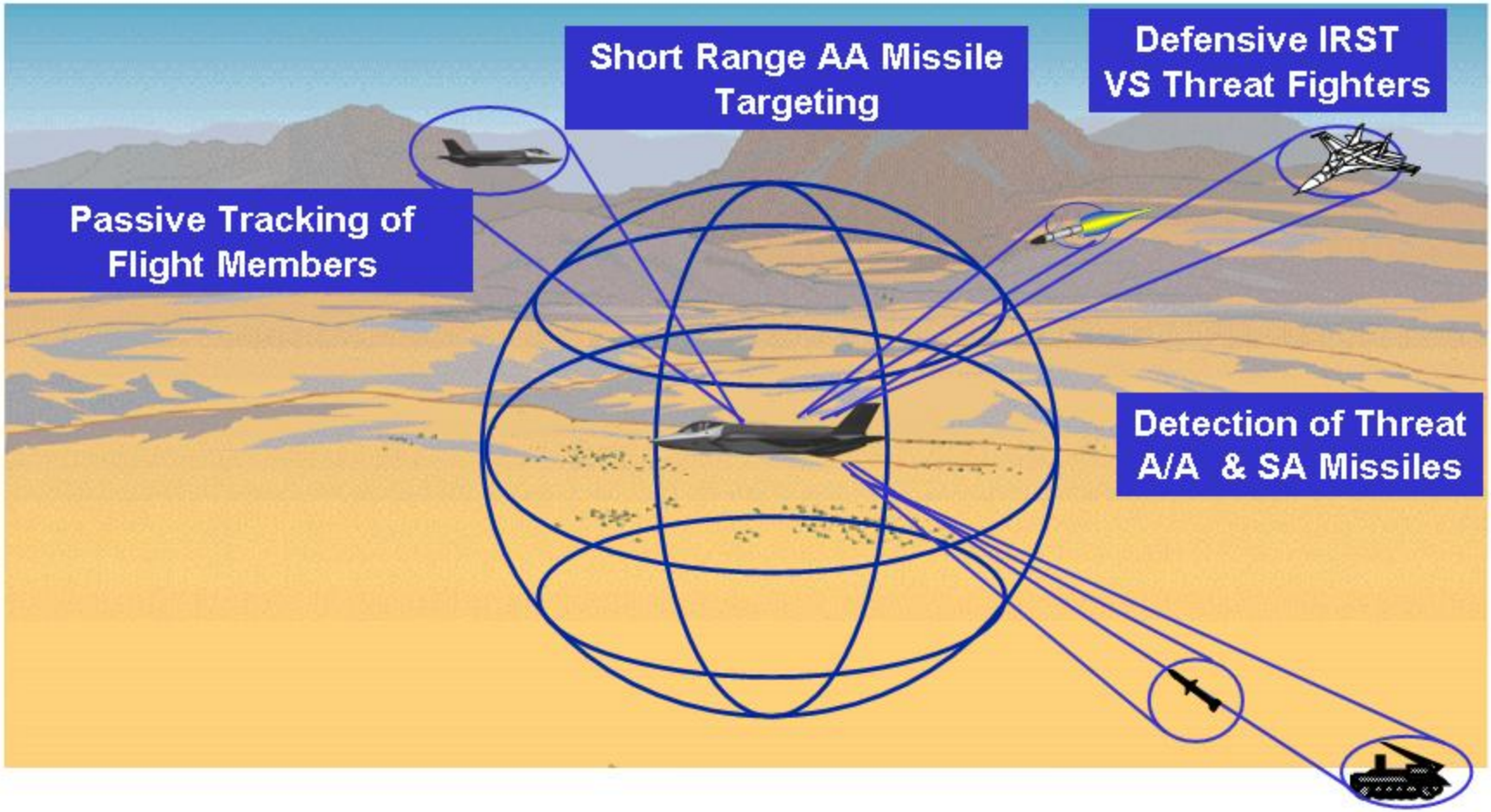
Distributed Aperture System
(DAS)

Full Spherical Coverage



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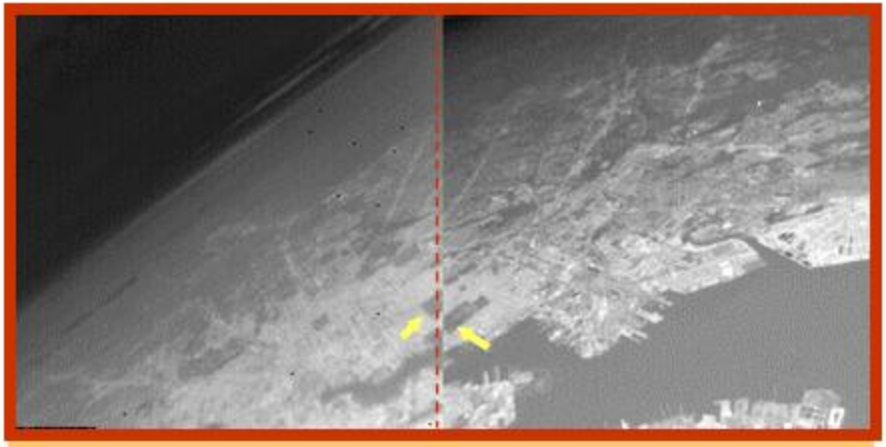
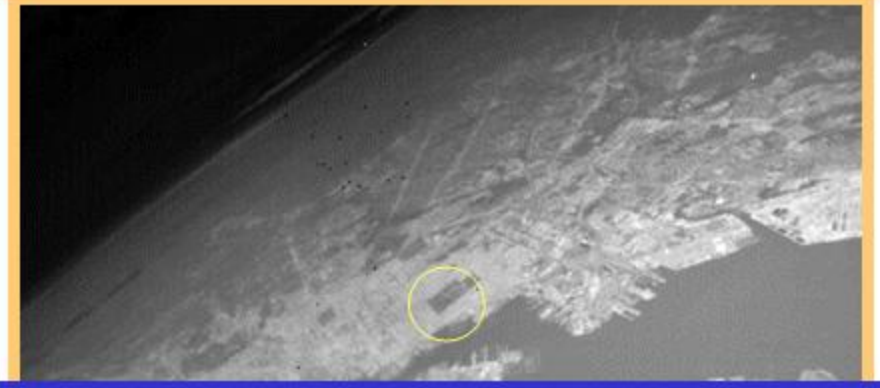
EO Distributed Apertures Flight Demonstration

JSF generates 6 continuous images….





….seamlessly stitched together for full 360 degree imaging capability!

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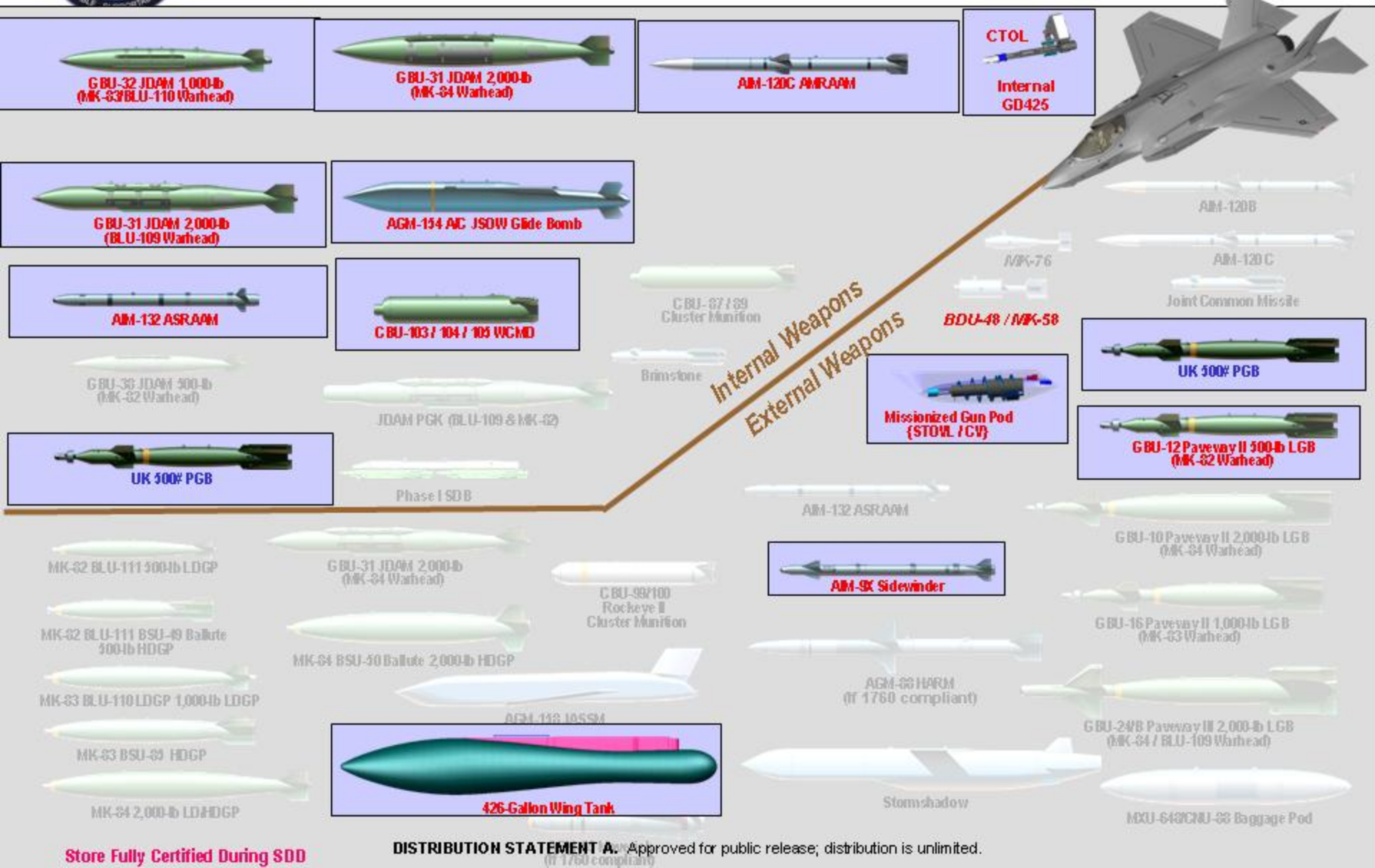
SDD Weapons List



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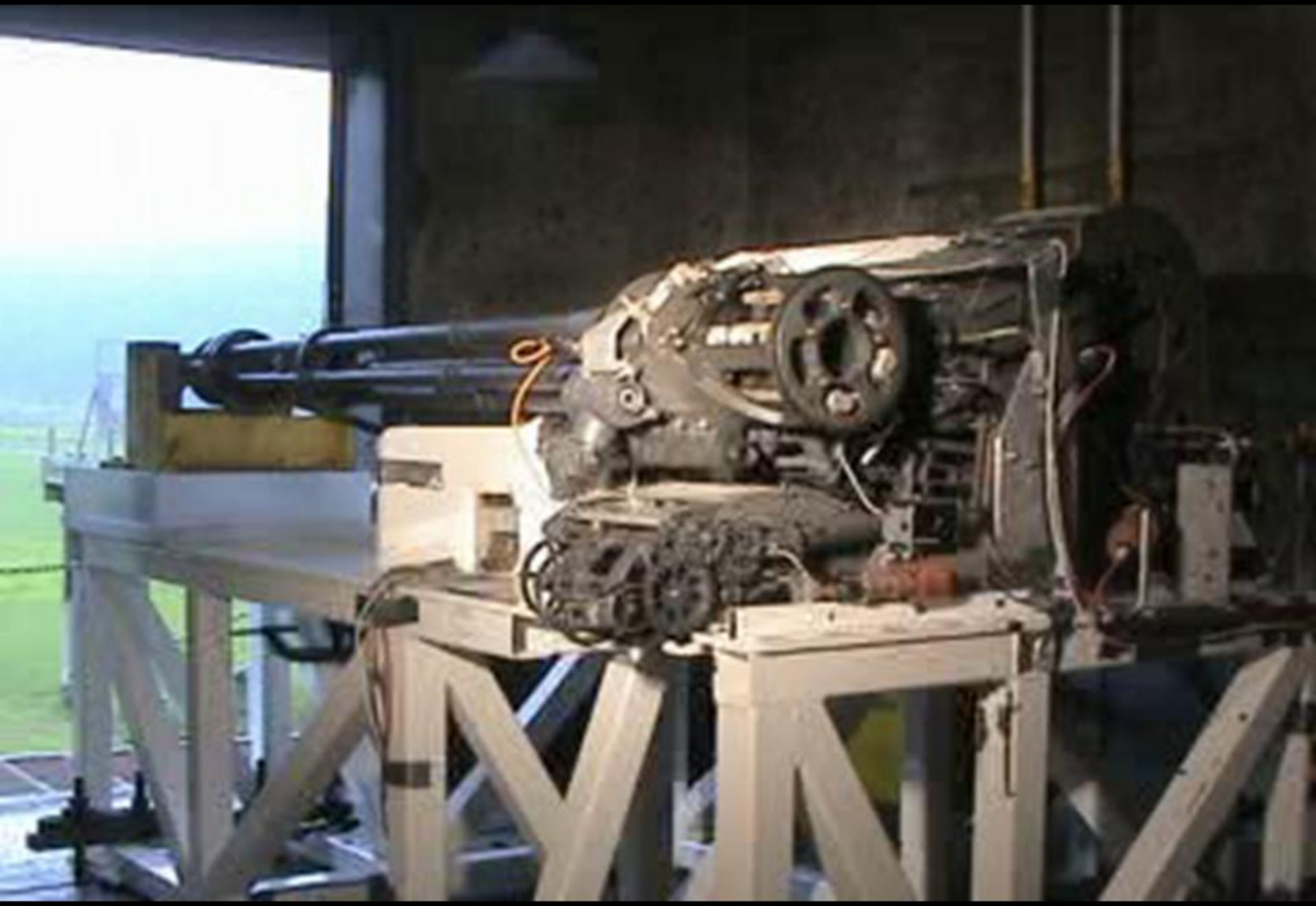

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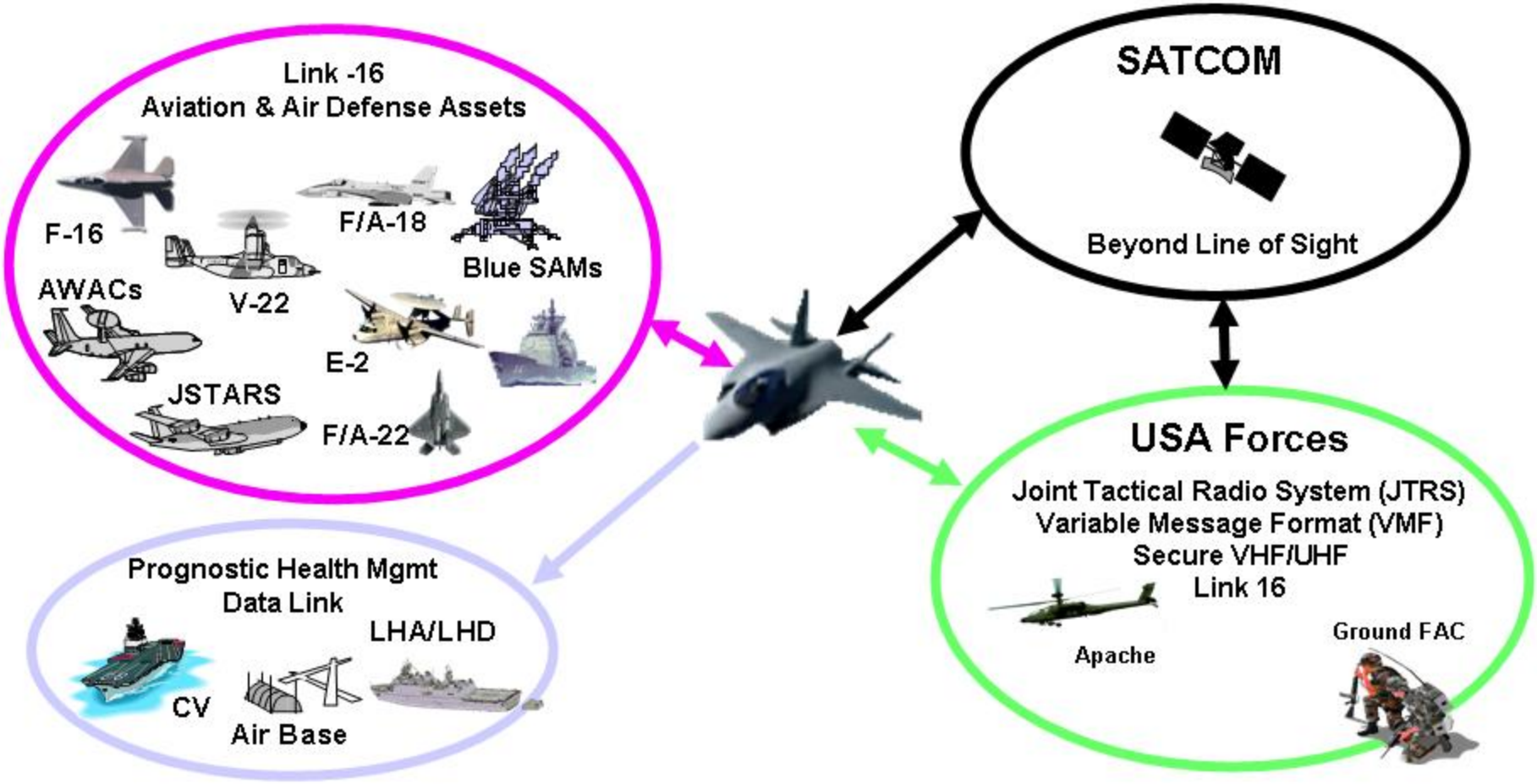
Voice and Data Link Interoperability



Over 120 Information Exchange Requirements to Ensure Interoperability Across US and Coalition Forces

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JSF Engine Interchangeability

PRATT & WHITNEY JSF PROPULSION SYSTEM F135 ROLLS-ROYCE HAMILTON SUNDSTRAND

F136 A STEP BEYOND

- Physically and Functionally Interchangeable
- Any Aircraft Able to Use Any Engine
- Common JSF Autonomic Logistics System Interfaces

GE AIRCRAFT ENGINES/ ROLLS ROYCE F136

PRATT & WHITNEY F135

CTOL

CV

STOVL

COOPETITION

JSF Engines - - Common Core for Aircraft Variants, Competition in Production

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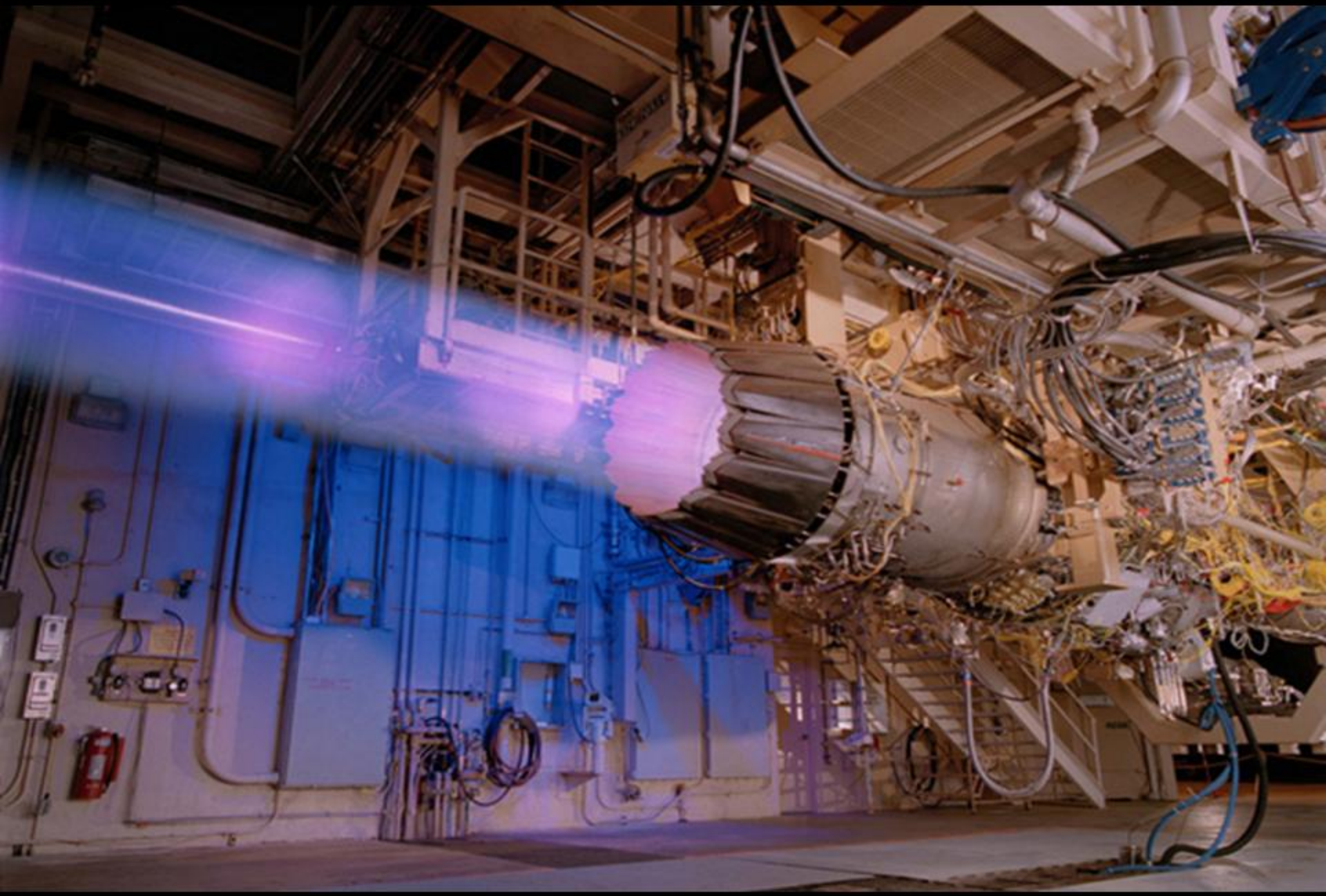

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JSF Autonomic Logistics System

Highly Supportable Aircraft

- Smart / Reliable Design
- Prognostics and Health Management
- Remove and Replace (R/R) Maintenance
- On Condition Maintenance
- Reduced Maintenance Skill Groups
  - AFSC, MOS, etc.

Training System

- Integrated Training
- Embedded Pilot Training
- On Demand Maintenance Training
- Air Vehicle Software Reuse

Support System

- Sustaining Engineering
  - 24/7 Help Desk
- Electronic Joint-Service Tech Data
- Intelligent Maintenance Management
- Global Supply Chain Insight
- Support Equipment Management

Autonomic Logistics Information System

- Distributed Information System
- Enterprise Resource Solution
- Secure
- Scalable
- Deployable

Autonomic Logistics Provides Order Of Magnitude O&S Savings

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Future … with F-35

- F-35 Creates Truly Global, Highly Effective Fighter Force
- Coalition Package Able to Tackle Heavily Defended Targets

Lethal,
Survivable,
Supportable…..
Affordable

***Future* Strike Package**

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JSF Overview

Dan Crowley

12 September 2005

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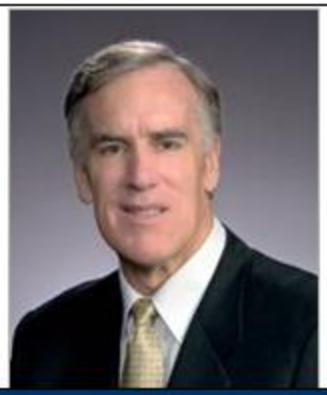
091205-26
AFA

JSF Leadership Team

JSF Program Executive Officer and Program Manager
RDML Steven Enewold

Executive VP and General Manager F-35 Program
Dan Crowley



Executive VP and General Manager F-35 Program Integration
Tom Burbage

JSF Deputy Program Manager
BGen C.R. Davis USAF

JSF Technical Director
John McKeown

Northrop Grumman VP and F-35 Deputy Program Manager
Janis Pamiljans

BAE SYSTEMS VP & F-35 Deputy Program Manager
Tom Fillingham

VP and F-35 Program Operations Deputy
Mike Walters

VP and F-35 Technical Deputy
Tom Blakely

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First Impressions

Power On

Mate

Mission / Vehicle Systems

Testing

Labs

International Partners

Cooperative Avionics Test Bed

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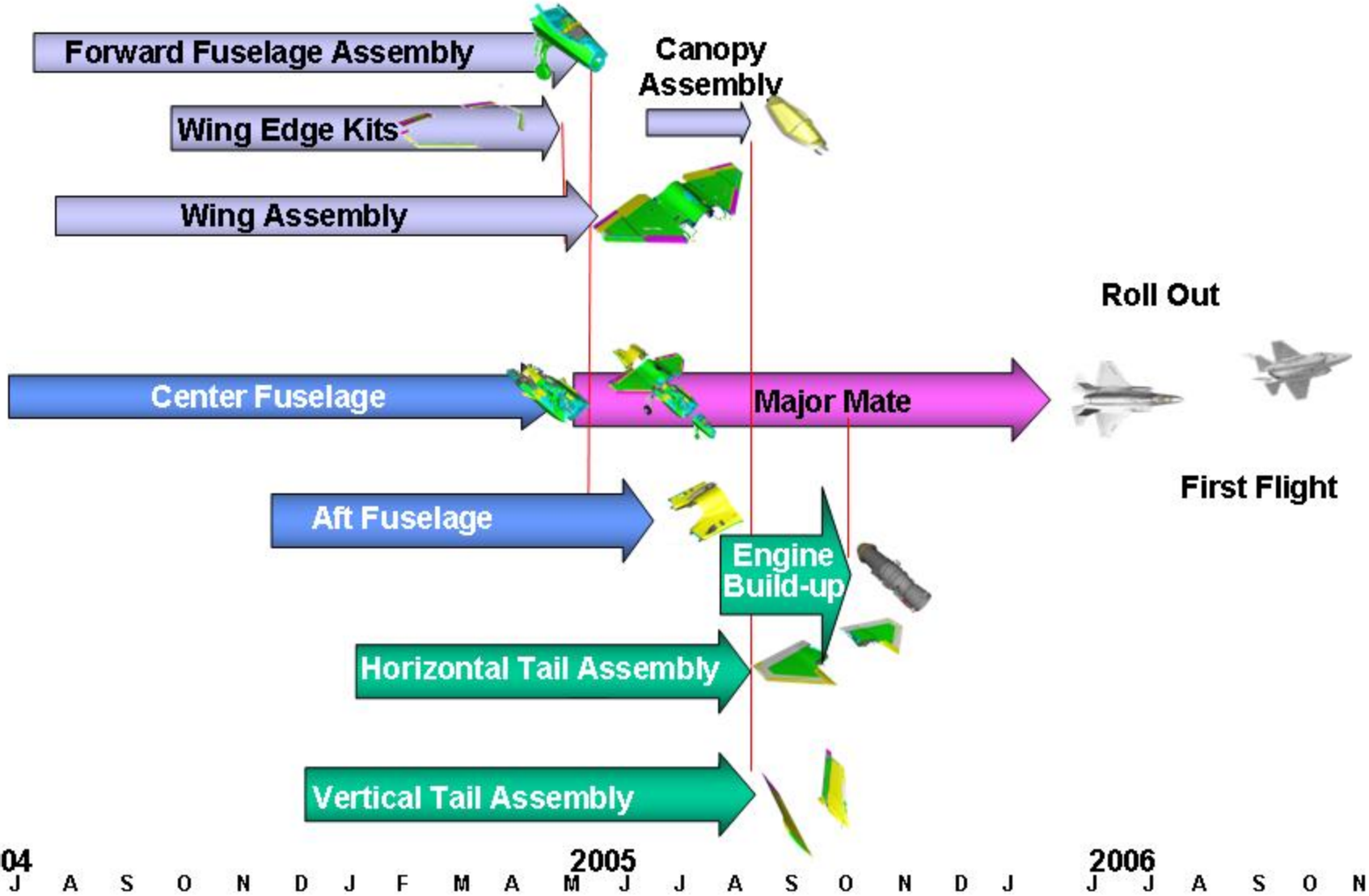
CTOL A-1 Major Assembly Schedule



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A-1
Initial Power On
Sept. 7, 2005

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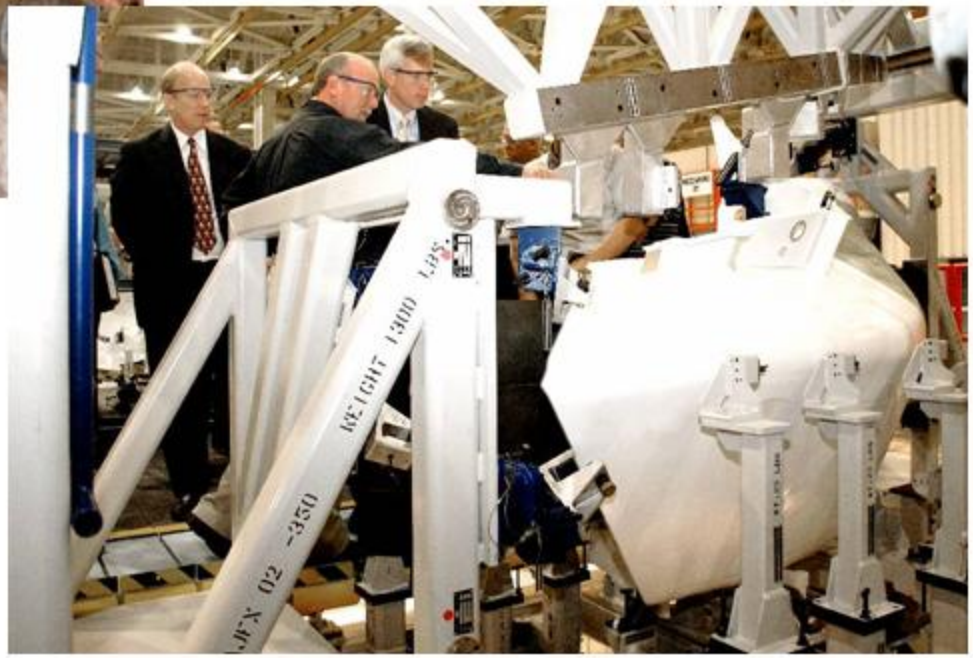
B-1 1st Jig Load - NGC



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F-35 Near Term Focus

Produce Initial War Fighting Capability

Improve Affordability Through Life-Cycle Cost Reduction

Prepare For Low Rate Initial Production – LRIP 1

Mature Global Sustainment

Strengthen International Partnerships

Improve Horizontal and Vertical Integration

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Questions ?

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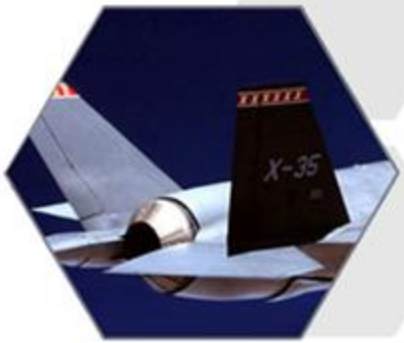
WORKING TO AFFORDABLY MEET THE REQUIREMENTS OF THE WARFIGHTER



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