UNITED STATES AIR FORCE


# *Air Force Aerial Targets*

## *October 2011 NDIA Brief*

## *Fort Walton Beach, FL*

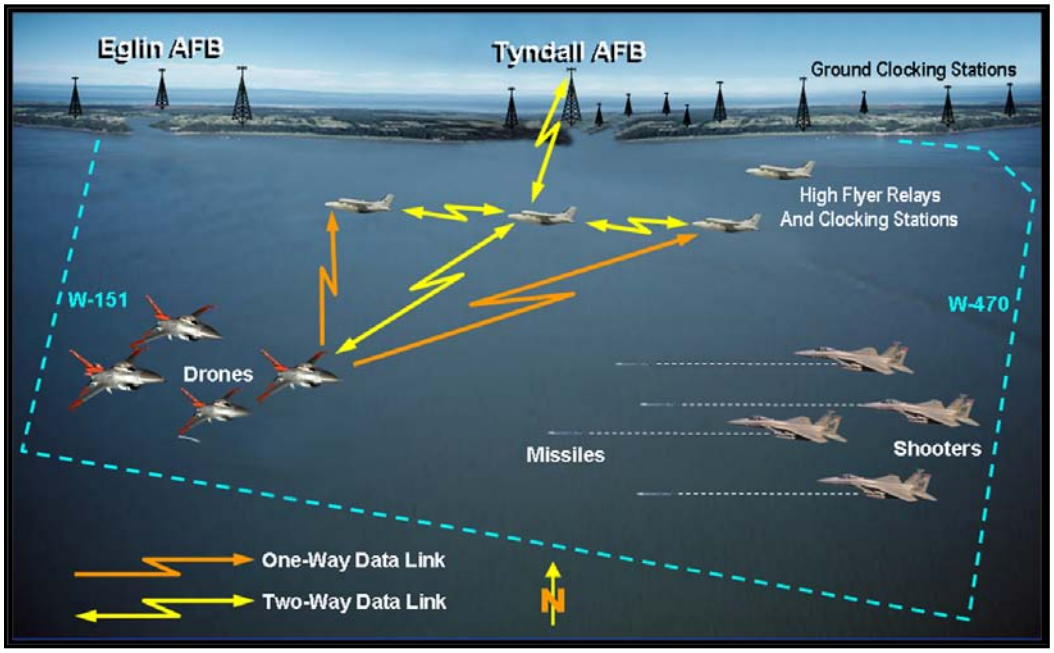
*Ms. Holly Reedy*
*Chief, Full-Scale Targets*
*Aerial Targets Branch (AAC/EBYA)*
*Eglin AFB, FL*

# Overview

- **System Description**
- Organizational Structure
- Product Groups
  - Subscale Aerial Targets
  - Full-Scale Aerial Targets
  - Target Control Systems (TCS)
- Summary

# Targets Operations

- **Provide "Presentations" of Realistic Threat Representative Systems in Support of Joint Requirements:**
  - Lethality Testing Required for New or Improved Weapon Systems Prior to Production (10 USC 2366)
  - USAF Air-to-Air Weapon System Evaluation Program
- **Validate Performance of DoD Air-to-Air Missiles and Aircraft Systems**
  - Emulates Performance, Signatures and Countermeasures (Infrared and Electronic Attack)




**Aerial Target "Presentations" Include:**

- The Target Itself
- Threat Representative EA/IR Payloads
- Target Control System (TCS)
- Missile Scoring
- Launch, Recovery, Maintenance & Repair of Target

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# Aerial Targets Branch (AAC/EBYA)

- Air Force Headquarters
- Air Force Materiel Command
- Air Armament Center
- Armament Directorate (AAC/EB)
- Test and Training Division (AAC/EBY)
- Aerial Targets Branch AAC/EBYA

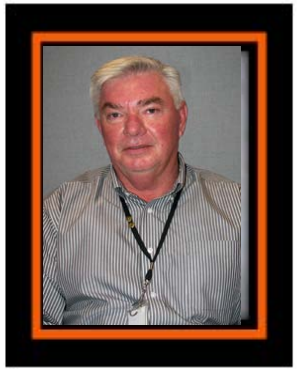
***Maj Gen Kenneth D. Merchant, Commander***

***Mr. Randy Brown, Director***
***Armament Directorate***

***Lt Col Patrick, Acting Materiel Leader***
***Test and Training Systems Program Manager***

***Mr. Michael VandenBoom, Materiel Leader***
***Aerial Targets Program Manager***

***Mr. Michael VandenBoom***
***Materiel Leader***



***Mr. Dave Osborn***
***Chief, Logistics***

***Mr. Jim Cornwell***
***Chief, Subscale Targets, Target Control System***

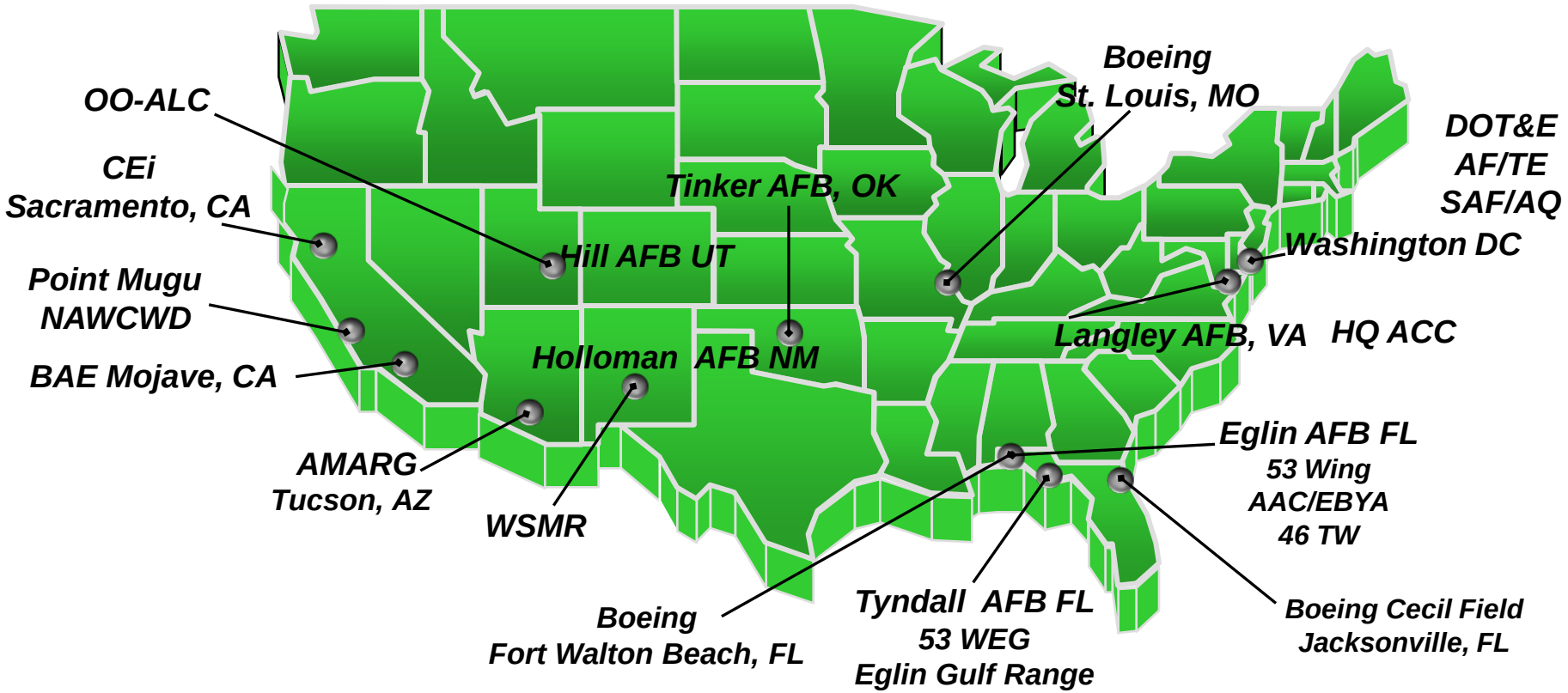
***Ms. Holly Reedy***
***Chief, Full-Scale Targets Section***

***Ms. Tammy Robbins***
***Chief, FM***

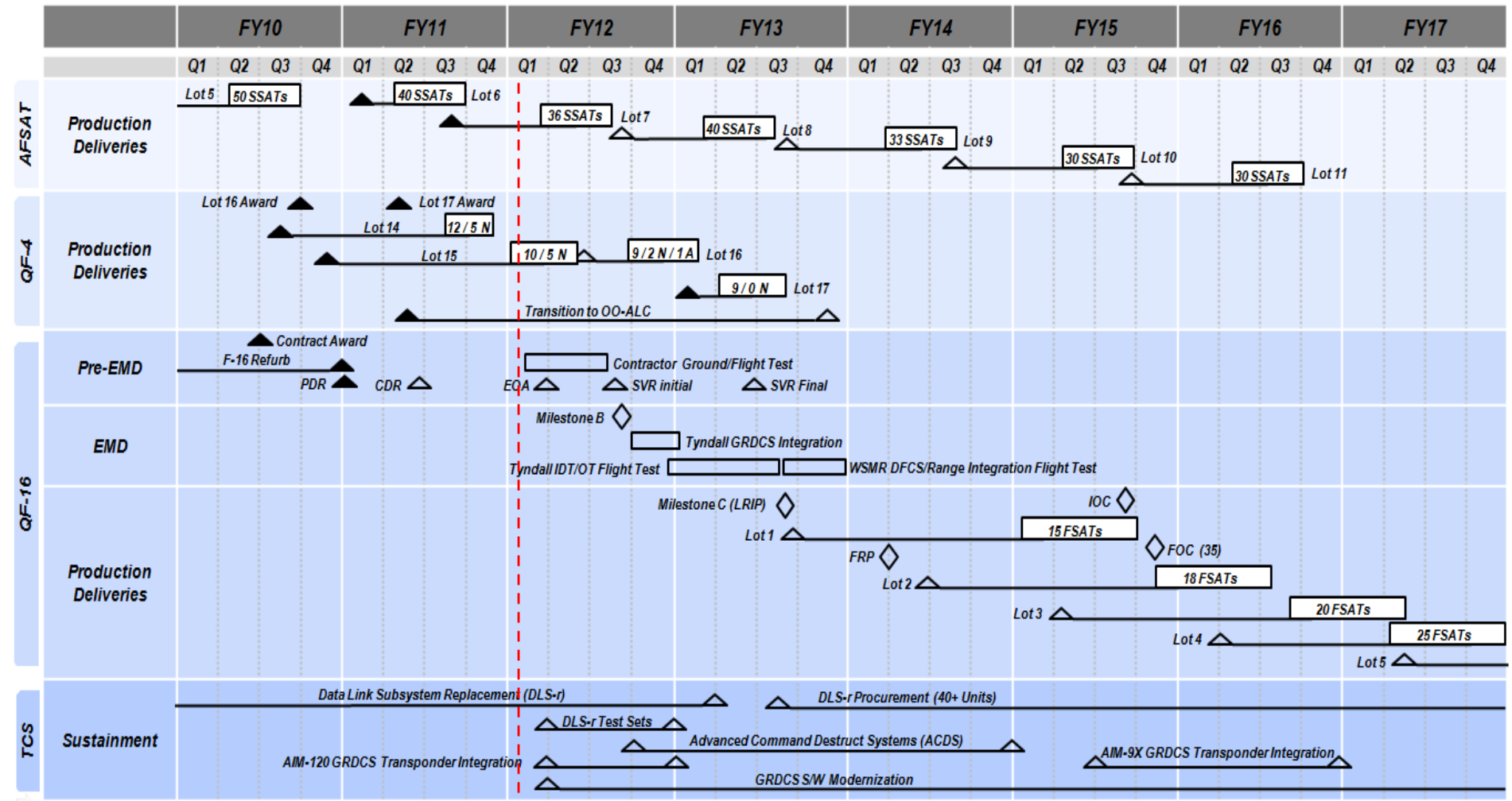
***Ms. Cheryl Junkers***
***Chief, Contracting***

***Mr. Greg Pixley***
***Chief Engineer***

# USAF Aerial Targets Stakeholders



# Program Schedules



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# AFSAT Subscale Aerial Target

*Jim Cornwell, Program Manager (Acting)*

***Prime Contractor: Composite Engineering, Inc. (CEi)***

***ACAT III*** ***Contract Type: FFP***

***Description:***

- **An Affordable, All-Composite Airframe**
- **Flies Faster/Slower, Higher/Lower, and Provides 3x+ More Presentations Than Legacy Subscale Targets**
- **Program in Production Phase**
- **Operates via Ground Based Target Control System**
- **Subsonic, Relatively Heavy Payload Capability**

# AFSAT FY11 Accomplishments

- **Current Program Focus**
  - Sustainment Planning Through 2020
- **Awarded Lot 8 Productions**
  - 224 Targets Delivered to Date
  - 2 Lots (Lots 9 & 10); Final Lots Under Current Contract
- **196 WEG Operational "Hot" Missions Supported Since Fielding**

| | *FY11* | *Since Fielding (FY08)* |
|---|---|---|
| **Launches** | **127** | **412** |
| **Presentations** | **448** | **1502** |
| **Missile Shots** | **462** | **1259** |

- **LRS Deliveries Set For 2QFY13 (6 Tyndall; 3 UTTR)**

# FY12 Road Ahead

- **Continuing Production**
  - Lot 9 Award Jan 2012
  - Acquisition Planning for Follow-On Production Contract
- **Fielding of New Launch Rail Systems**
- **Product Improvement Activities**
  - Completion of IEA Development and Testing
  - Completion of SIRS Blocks 3/4 Development and Testing
  - Development of RCS Pods

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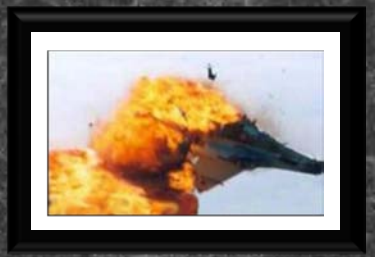
# QF-4 Full-Scale Aerial Target

*Capt Briana Mack, Program Manager*



***Prime Contractor: BAE Systems, CA***

***ACAT III*** ***Contract Type: FFP***

***Description:***

- **Full-Scale Aerial Target for Threat- Representative Weapon System Evaluation**
- **Meets USAF, USA, USN, Allied Test Requirements**
- **Droned, Refurbished F-4 Aircraft Out of AMARG**
- **Program in Full Rate Production**
- **Operates via Ground-Based Target Control System**
- **Supersonic, High-G, Heavy Payload Capability**
- **Provides 3rd Generation Threat Representation**

# QF-4 2011 Accomplishments

- **Key Focus – Bridging the Gap Until QF-16 IOC**
  - Completing Production Lots 15 -17
  - Sustainment Planning Through 2017
- **Awarded Last Production Lot (Lot 17) Feb 11**
  - Total of 289 QF-4s Delivered to Date
- **FY11 Operations**
  - 1102 Missions
  - 15 NULLO
  - 8 Kills

# End of Program Challenges

- **Regen/Repair Challenges With Older QRF-4C Aircraft**
- **Post Production Planning**
  - Production Deliveries Complete 4QFY13
  - Sustainment Support in Place
  - Post Production CLINs for EN/LG Reach-back
- **QF-4 Transition to OO-ALC**
  - DSM Function Complete After Last Production 4QFY13
  - Transition Execution 1QFY14

# QF-16 Full-Scale Aerial Target

*Mr. Kenneth Hislop, Program Manager*

***Prime Contractor: Boeing Company, St. Louis, MO***

***ACAT: II Contract Type: FPIF / FFP***

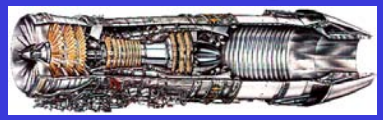
## *Description*

- **Next Generation Full-Scale Target for Threat-Representative Testing & Weapon System Evaluation**
- **Provides 4th Generation Threat Representation**
- **Meets USAF, USA, USN, Allied Test Requirements**
- **Refurbished F-16 Aircraft With Drone Mod Installed**
- **Supersonic, High-G, Heavy Payload Capability**
- **Operations Via Ground Based Target Control System**

# QF-16 Program Snapshot

- **Production Quantity - 210 QF-16s (AF Only)**
- **DT/OT Oversight Program**
- **Upcoming Program Milestones:**
  - First A/C Mod Complete - 1Q FY12
  - Flight Testing - 2Q FY12
  - Milestone B - 3Q FY12
  - Milestone C - 3Q FY13
  - IOC - 3Q FY15
  - FOC - 2Q FY16

# QF-16 System Integration

| Airframe | Engines | Support/Test Equip | Ground Systems |
|---|---|---|---|
|  |  |  |  |
| F-16 A / F-16 C | F100 – PW Engines | Common F-16 SE | GRDCS/DFCS (Tyndall/WSMR) |
| |  | Common Engine SE | GRDCS Fixed Sites |
| | F110 – GE Engines | GRDCS Datalink Tester | Scoring Ground Station |
| | | GRDCS Trailer | |

## Airborne System

| Automatic Flight Control System | Command Telemetry System | Payload Control System | Flight Termination System | Airborne System Scoring | Peculiar Support Equip |
|---|---|---|---|---|---|
| | | | Warhead / Fuze | Encryption Chip | |

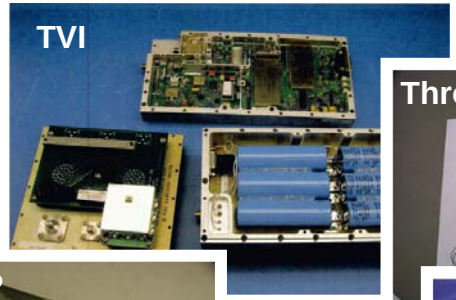
Government Furnished (67% of $)

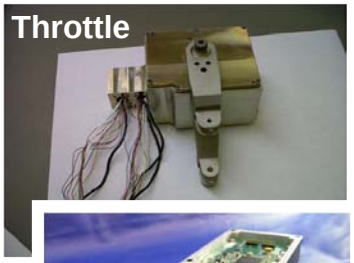
Contractor Developed (33% of $)

**QF-16 System Integration:**
**Contractor Drone Peculiar Equipment w/ GFP**

# DPE Development

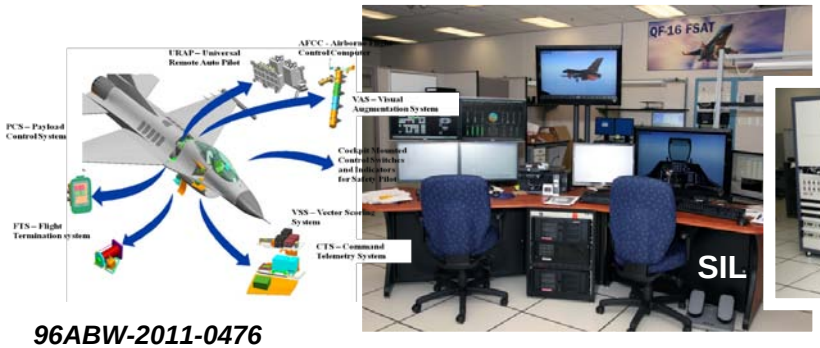
- **Boeing DPE Hardware**
  - Automatic Flight Control Computer (AFCC)
  - Transponder Vehicle Interface (TVI)
  - Autothrottle
  - Universal Replacement Auto Pilot (URAP)
  - Vector Scoring System
  - Visual Augmentation System (VAS)
  - Backup Radar Altimeter
  - FTS Components



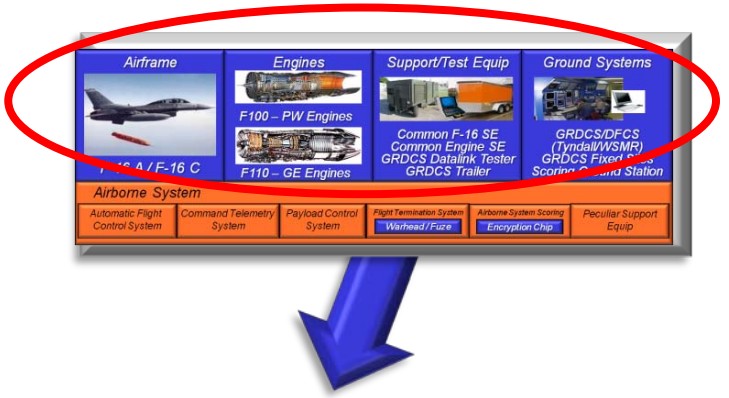


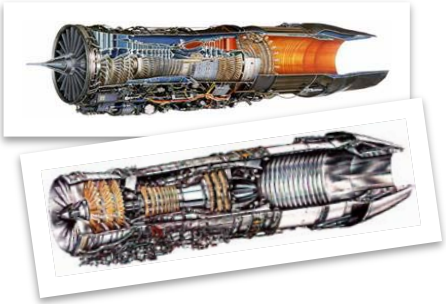




# GFP Program

**AIRCRAFT - Block 15/25/30**

- ALL Aircraft Regenerated for MANNED flight (~300 hrs)



**ENGINES**

- Engines – 3 Configurations
  - F100-PW-220 (MANNED)
  - F100-PW-200D (UNMANNED)
  - F110-GE-100B (MANNED/UNMANNED)
- Minimum 600 (PW)/900 (GE) Cycles for MANNED

**SUPPORT EQUIPMENT**

- Required at Cecil, AMARG, Tyndall, Holloman

**TARGET CONTROL SYSTEM INTEGRATION**

- Emulator
- Trailer/Towers
- DataLink Tester

# QF-16 Production

F-16
Records
Review

**REGENERATE F-16**

Induct -1000 Stored F-16 in AMARG Production Line

**Engine Refurb**

Refurb F100-PW & F110-GE Engines at JEIM/CIRFs for Delivery to AMARG

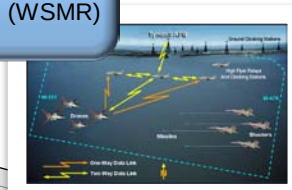
- Edwards AFB
- Tucson, AZ 162nd ANG
- New Orleans, LA ANG
- Springfield, IL ANG

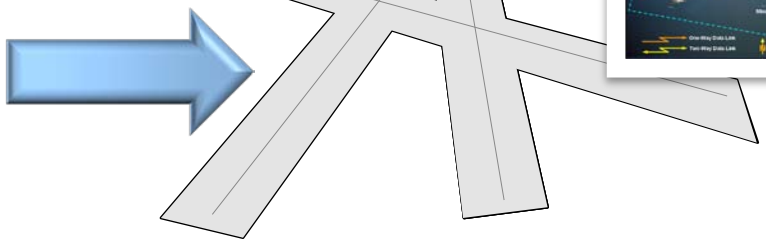
**DPE Installation**

Boeing Install Drone Package at Cecil Field, FL
GFP Repair (O&A)


**Drone Operations**

Tyndall AFB, FL (EGTTR)
Holloman AFB, NM (WSMR)





# QF-16 Program Status

- **All Six Regen Pre-EMD A/C Delivered to Cecil Field**
- **First Drone Mod Started Sep 11**
- **Concurrent Subsystem Qual Tests Underway**
- **Tackling Airworthiness Certification Challenges**
- **QF-16 Testing Activities**
  - QF-16 Ground Test 1QFY12
  - QF-16 Flight Test 2QFY12
- **Capturing Lessons Learned from EMD Regen Efforts**
- **Standing Up AMARG/Engine Depots for Production**

*First Pre-EMD Jet Delivery To Cecil Field*

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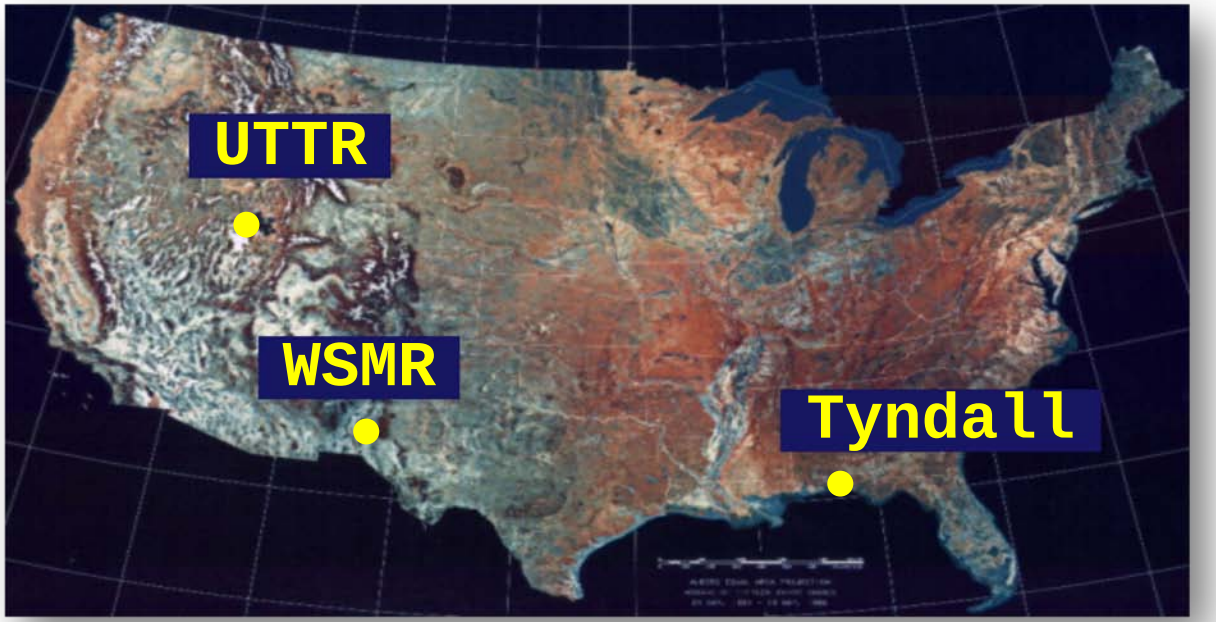
# Target Control System (TCS)

*Ms. Kathy Fuszner, TCS Program Manager*

## *Description*

- **Tracks/controls 4 targets & 10 aircraft/missiles**
- **Provides command destruct of targets and missiles**
- **Compatible with QF-4, AFSAT (QF-16 integration ongoing)**
- **System developed by 46th TW, operated by 53d WEG**

# Ranges




## *Tyndall AFB / Eglin AFB*

- Main Mission Ops (53 WEG)
- GRDCS Sustainment & Dev (46 TW)
- Target & Target Control Acq (AAC/EBYA)

## *Holloman AFB / WSMR, NM*

- Support FSAT Ops (53 DET) Utilizing Drone Formation Control System (DFCS) at White Sands

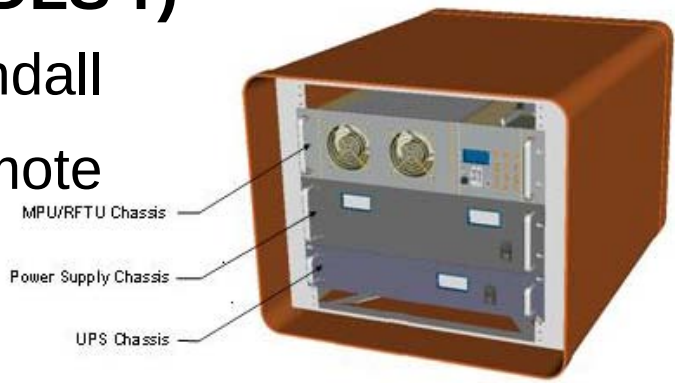
## *Utah Test & Training*

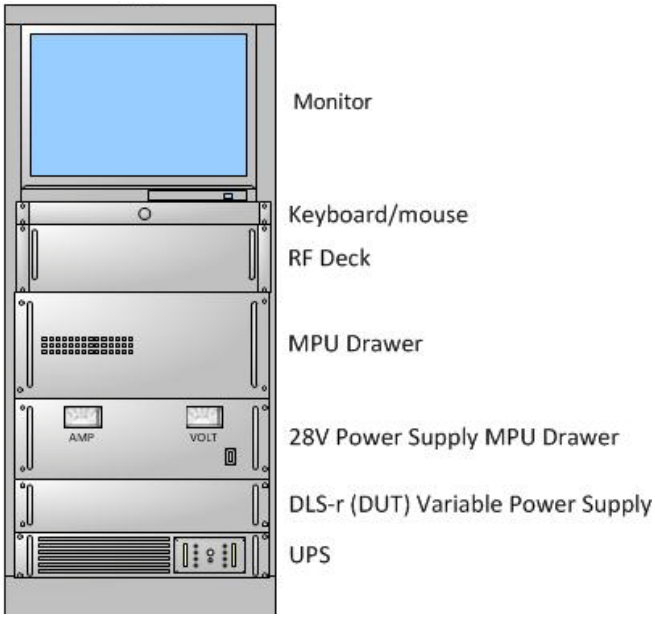
- Support Combined Combat Archer and Combat Hammer Evaluation (53 WEG)

# DLS-r

- **Data Link System Replacement (DLS-r)**
  - Replace unsustainable DLSs at Tyndall
  - Provide data communication for remote drone operations
  - Development Ongoing (14)
  - Test/Integration FY12
  - Follow-On Procurement FY14
- **DLS-r Interim Test Set (IACS-III)**

  **46 TW (Bldg 22)**
  - Pt. Mugu
  - Eglin/Tyndall



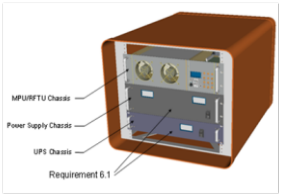



# Current GRDCS Efforts

## Data Link System Replacement (DLS-r)

- Provides Data Relay for Remote Drone Ops
- Replacement Reduces Risk for Tst/Trng Programs

**DLS-r**




**DLS**

## GRDCS Display Upgrades

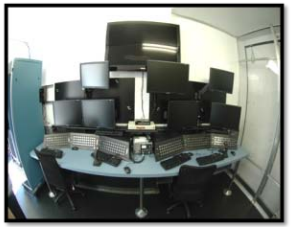
- Replacing Obsolete Propriety Systems w/ Open Standards
- Modern Technology Display

## Platform Specific Efforts

- Software Updates & Integration

## Mobile GRCDS Trailer/Towers

- GRDCS Capability at Cecil Filed for Contractor Ground/Flight Test
- Remains at Cecil for Production



## Other GRDCS Sustainment

- Technology Refresh
- GRDCS Tech Data Package (Drawings / Manuals)

# Future Features

- **Insert TCS Interface Standards**
  - DLI (Data Link Interface)
  - VCI (Vehicle Control Interface)
- **Consider Other Scoring Technologies**
- **Software Modernization**
  - Migrate Control Processors to Linux Servers
  - Decoupled Simulation to Standalone Processor
  - Enhance System Startup and Configuration to Point/Click Interface
  - Enhanced Logging, Record More Data
  - Real-time Matlab® Analysis Capability
  - Integrate GRDCS Transponder for AIM-120

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- **AFSAT Workhorse for Warfighter**
  - Supported 67 Operational Missions in FY11
  - Next Step: Award Lot 9 in FY12
- **QF-4 Production Planned Through FY13**
  - Program Transition to Logistics Center for Sustainment
  - Planning for Availability Through 2017
- **QF-16 Preparing for Contractor Test**
  - First Production Delivery Late FY14
- **TCS**
  - Modernization Underway
  - Backbone for Target Platforms