Air Armament Center

Air Force
Precision Strike Weapons
Development Status

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Integrity - Service - Excellence
Outline

• Air Armament Center Successes
• Status of Current Weapons
• Next Generation & Future Weapons
The Heart and Soul of the Air Force is Range and Payload

– Gen Moseley at 2006 Blue Summit

The Air Armament Center fields the Payload that puts the “Force” in Air Force
What We Do at AAC

From Concept to Employment

- Science & Technology w/ AFRL, DTRA and Others: Develop the idea and produce a tech demonstration
- Product Support w/ Acquisition Organizations: Manage the Development of the weapons
- With 46TW, 53d W, AFOTEC and Sister Services Conduct Test & Evaluation to prove weapon readiness
- With ALC’s and Sister Services Sustain and Demil the stockpile
- Run an AF base supporting Expeditionary Air Force

Transition Technology to Weapon Systems and Provide War Winning Capabilities On Time, On Cost
Evolution of Precision

1943
- WWII
  - 1500 B-17 sorties
  - 9000 bombs (250#)
  - 3300 ft CEP
  - One 60’ x 100’ target

1970
- Vietnam
  - 30 F-4 sorties
  - 176 bombs (500#)
  - 400 ft CEP
  - One target

1991
- Desert Storm
  - 1 F-117 sortie
  - 2 bombs (2000#)
  - 10 ft CEP
  - 2 targets per sortie

2004
- OAF/OEF/OIF
  - 1 B-2 sortie
  - 16 bombs (2000#)
  - 7 ft CEP
  - 16 Targets per Pass

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Air Armament Family

Lead Developer
XXX – USAF
XXX – USA
XXX – USN

Prior  70s  80s  90s  00s  Future
Status of Current Weapons

Highlighting Some of Our Air Armament Center Success

Small Diameter Bomb (SDB I)

Joint Direct Attack Munition (JDAM)

Sensor Fuzed Weapon (SFW)

Wind Corrected Munitions Dispenser (WCMD)

HARM Targeting System (HTS)
Small Diameter Bomb (SDB I)

- All-weather, autonomous, precision strike
- Decrease collateral damage
- Increased loadout for multiple strikes per sortie at standoff ranges
- IM compliant 250-lb class multipurpose warhead
- Diamond-back wing provides increased range
- 4-piece pneumatic carriage system
- Cockpit-selectable electronic fuze – impact, height-of-burst & delay
- INS/GPS augmented by differential GPS
- Anti-jam GPS with SAASM
Joint Direct Attack Munition (JDAM)

• Global Positioning System (GPS) aided Inertial Navigation System (INS) tail kit
• Mk 80 Series/BLU-109 warhead compatibility
• Accurate <5 meters, in-flight retargeting
• Autonomous and adverse weather
• Over 166,000 delivered
• Over 16,675 combat-proven in OAF, OEF, and OIF

Consistently Accurate, Reliable, & Affordable Guidance Kit
The Warfighter’s “Air-to-Ground Weapon of Choice”
Wind Corrected Munitions Dispenser (WCMD)

- Tail kit for guiding dispenser weapons
- INS corrects for winds, launch transients and ballistic errors
- Accuracy: 100ft req’d; ~50ft demo’d
- Fielded on B-1, B-52, F-15E, F-16C/D
- Future fielding on A-10, F-35
- Combat proven: 1,650 used in OEF/OIF
- Full Rate Production completed Oct 06
  - 27,596 tail kits built
  - AUPP (BY94): $25K req, $13.5K actual
Sensor Fuzed Weapon (SFW)

- Unpowered, top attack, wide area, cluster munition, designed to achieve multiple kills per aircraft pass against enemy armor and support vehicles
- 1000 lb Tactical Munitions Dispenser
  - 10 Submunitions Each With 4 Projectiles
- Operational on F-16C/D, F-15E, A-10, B-52, B-1B, B-2
- Combat Proven in Operation Iraqi Freedom

<table>
<thead>
<tr>
<th>SFW Characteristics</th>
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<tr>
<td>Length: 231 cm (91 inches)</td>
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<tr>
<td>Diameter: 39.6 cm (15.6 inches)</td>
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<tr>
<td>Weight: 417 Kg (920 Lbs.)</td>
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Joint Air-to-Surface Standoff Weapon
JASSM

Air Force program provides an autonomous, long range, conventional, air-to-ground, precision missile able to strike highly defended, high value targets

• Takes out enemy command and control
• Survives the advanced threat environment
• Reduces risk to aircrew
• Operates in adverse weather
• Launches from both fighters and bombers
• Reduces mission planning timelines
HARM Targeting System (HTS)

• Rapidly generate ranges to target radars & provides greater discretion between different types of enemy radars

• Current Pod (R6) Enhances F-16CJ Ability To Target/Kill Enemy Radar Supports Suppression Of Enemy Air Defenses (SEAD) Wild Weasel Mission Area
  - High Speed Anti-Radiation Missile (HARM) Has Been Primary Weapon

• New R7 Pod Allows PGM Targeting And Multi-Ship Data Sharing Capabilities For Destruction Of Enemy Air Defenses (DEAD) Role
  - Brings JSOW, JDAM, JASSM, WCMD-ER, & SDB to DEAD mission

• 8 in diameter, 56 in long, 85 lb
Future Technology Opportunities

I just read that a new computer chip is on the market. Your machine is out of date.

You're behind the curve. Technology is racing ahead without you. You're no longer state-of-the-art or leading edge.

Sometimes people like you can get jobs in museums.

I bought this thing yesterday!!
What Are Next Generation Weapon Effects?
Air Armament Focus

- Network Enabled Weapons
- Universal Aircraft Interface
- Directed Energy
- Mobile Targets
- Low Collateral Damage
Networked Weapons

Reach Back

Global Hawk / Sensorcraft

Bombers/Strike Fighters/UAVs Deploy ADM Constellation

Autonomous In-Flight Refueling

Gateway/Refueling Vehicles

Microprobe Sensors Deployed From Dominators

Joint Air Operations Center (JAOC)

Air Support Operations Center (ASOC)

MC2A (Airborne AOC)
Universal Armament Interface (UAI)
Technical Approach

Program Objective: Decouple weapon integration schedules from aircraft OFP update cycle
Directed Energy

- AAC Established as Center of Excellence for Directed Energy
  - Supporting SOCOM Advanced Tactical Laser (ATL) ACTD
  - Planning ATL Extended User Evaluation
  - Transition planning for active denial systems
New Strike Weapons Challenges

Hit a moving target in weather
Small Diameter Bomb (SDB II)

- SDB II provides the warfighter with precision tactical standoff capability against mobile targets in all weather conditions.
  - Increased Loadout / Kills Per Sortie
  - Minimum Collateral Damage
  - Anti-Jam GPS / INS
  - Reduced Logistics Footprint
  - Multi-mode Seeker
  - Utilizes Weapon Datalink
  - Link 16 and UHF
  - Size: ~70 inches and 250 lbs
  - AUPP (BY05$)
    - THR $86K, OBJ $61K
  - 40+ Nautical Miles Standoff
Focused Lethality Munition (FLM)

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There is an urgent operational need to provide airborne platforms, including the F-15E, SDB I, modified to include a composite case and DIME fill. New Technology:
- Composite Case Warhead
- MNX-1209 Explosive (DIME*)
- Blast Only

SDB I Hardware Attaches to Composite Case

dramatically reducing collateral damage
Affordable Moving Surface Target Engagement (AMSTE)

- CSAF-Directed Program to Field Limited Near-Term Maritime Interdiction Capability for PACAF
  - Operationalize Capability Demonstrated Nov 04 Resultant Fury Exercise
  - 2000 lb JDAM Datalinked to Receive In-flight Target Updates From JSTARS
- AMSTE Jointly Managed by JDAM & JSTARS Program Offices To Deliver Integrated Capability
  - JDAM Required Assets Available
    - May 09 (Sep 08 Objective)
  - Contract Award in FY07
  - Production Award in FY08
• Field-Installable Seeker Kit For Inventory JDAMs
  – Laser guidance for moving target capability
  – GPS/INS guidance retains baseline stationary accuracy
• LJDAM Development Internally Funded By Boeing
  – 2005/2006 Technology Development and SDD Activities
  – Completion of environmental qualification testing
  – Six flights (3 Stationary, 3 Movers)
• Evaluated in 2007 USG Demo
  – 11/12 hits on fast movers
  – Positive fielding recommendation
We Have Been Well Recognized

Joint Direct Attack Munition
David Packard Excellence in Acquisition Award
Perry Award at the Precision Strike Conference

Passive Attack Weapon
John J. Welch Award
David Packard Excellence in Acquisition Award

Wind Corrected Munitions Dispenser
Outstanding AFMC Contracting Team Award

Air Armament Academy
1st Annual USD AT&L Workforce Development Award

Sensor Fuzed Weapon
DoD Value Engineering Award

B-2 Shelter
Jacobs Master Builder Award

Advanced Medium Range Air-to-Air Missile
Bernard J. Schriever Award
Outstanding AF System Program Director
Outstanding AF Program Manager

Small Diameter Bomb
John J. Welch Award
Perry Award at the Precision Strike Conference
War-winning Capabilities …

Help Design Supportability Into Tomorrow’s Weapons Today

… On Time, On Cost