



Air Armament Center



Air Force Precision Strike Weapons Development Status

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U.S. AIR FORCE

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



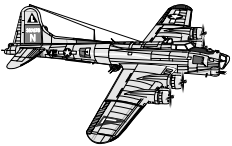
Arming the Warriors

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



Evolution of Precision

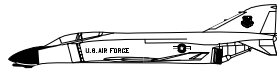
1943



WWII

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

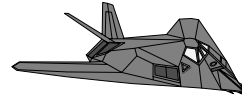
1970



Vietnam

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

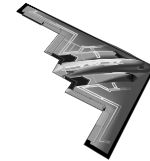
1991



Desert Storm

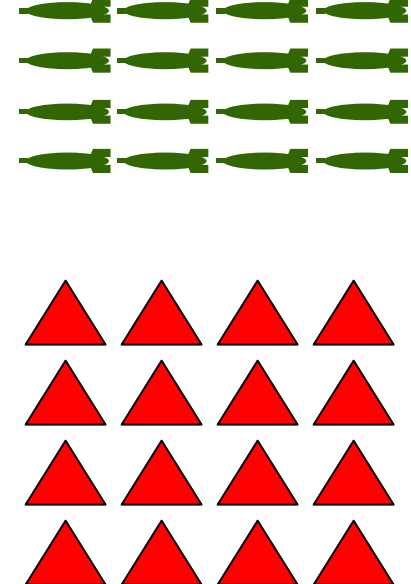
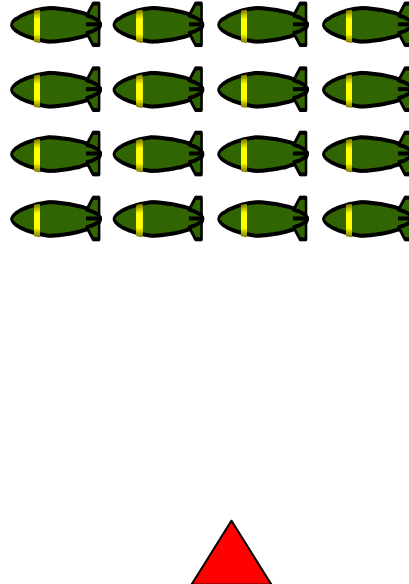
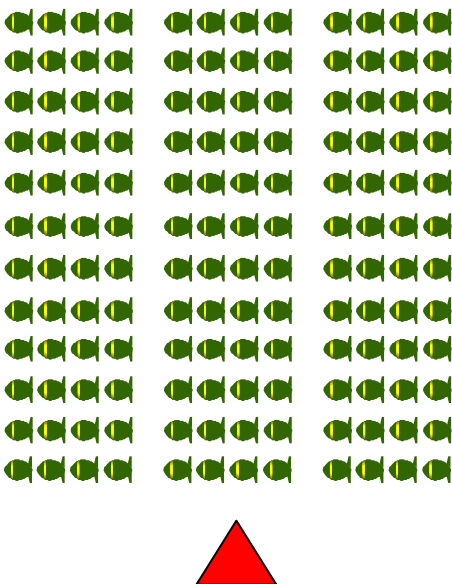
1 F-117 sortie
2 bombs (2000#)
10 ft CEP
2 targets per sortie

2004



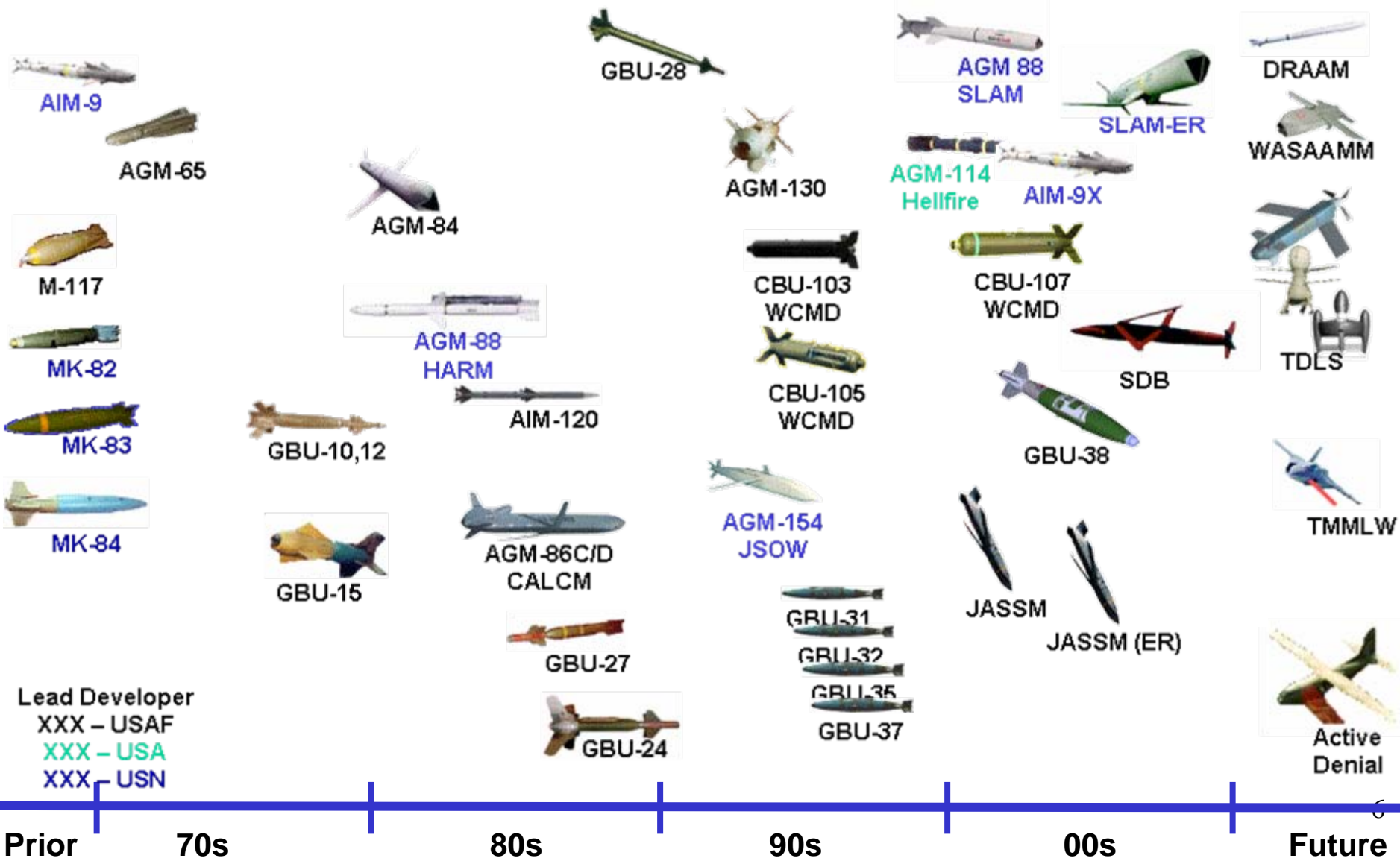
OAF/OEF/OIF

1 B-2 sortie
16 bombs (2000#)
7 ft CEP
16 Targets per Pass





Air Armament Family





Status of Current Weapons



Highlighting Some of Our Air Armament Center Success



**Small Diameter Bomb
(SDB I)**



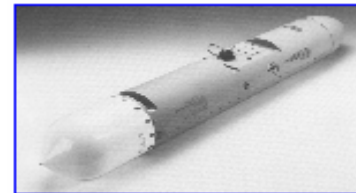
**Joint Direct Attack Munition
(JDAM)**



**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



Accuracy Support Infrastructure (ASI)

Remote Units Master Station



Mission Planning

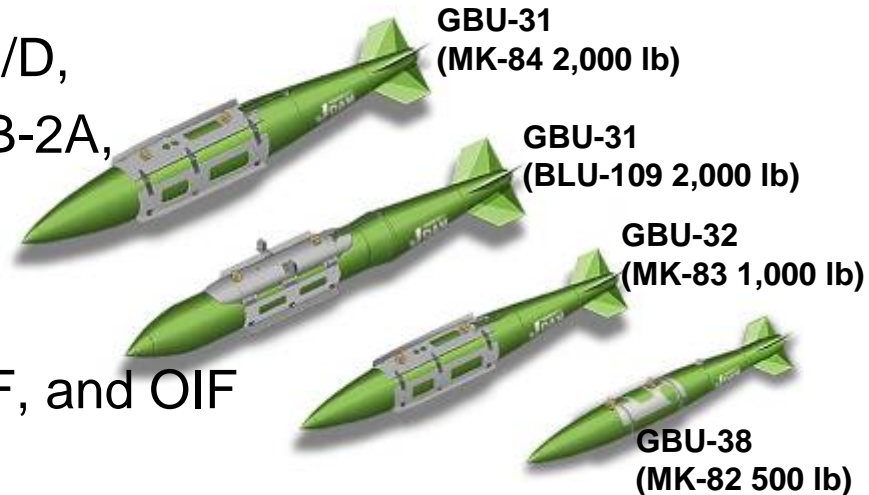
Logistics



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
- Operational on F-15E, F-16C/D, F/A-18C/D, F/A-18E/F, F-22A, F-117, AV-8B, B-1B, B-2A, and B-52H
- 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)

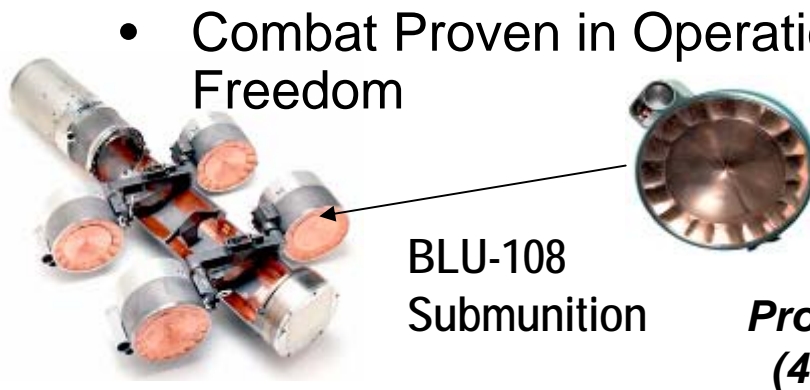


- Tail kit for guiding dispenser weapons
- INS corrects for winds, launch transients and ballistic errors
- Accuracy: 100ft req'd; ~50ft demo'd
- Fielded on B-1, B-52, F-15E, F-16C/D
- Future fielding on A-10, F-35
- Combat proven: 1,650 used in OEF/OIF
- Full Rate Production completed Oct 06
 - 27,596 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

SFW Characteristics

Length: 231 cm (91 inches)
Diameter: 39.6 cm (15.6 inches)
Weight: 417 Kg (920 Lbs.)

BLU-108
Submunition

*Projectile
(40 per)*



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**



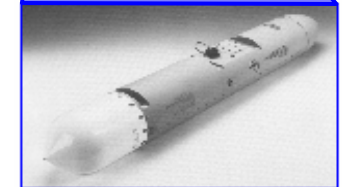
HARM Targeting System (HTS)



- 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



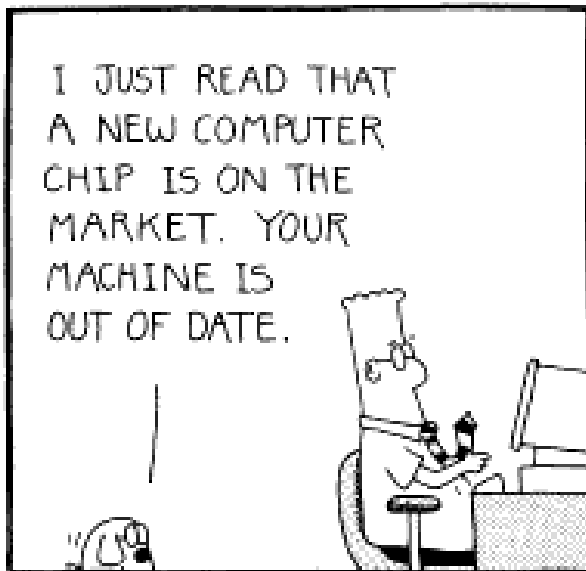
**AGM-88
(HARM)**



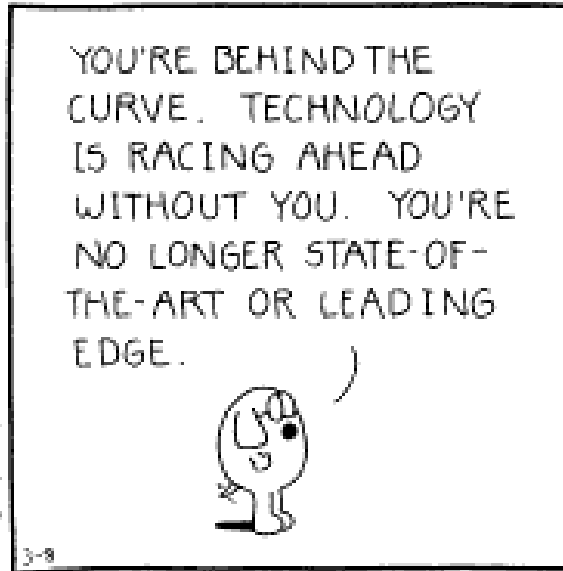
HTS Pod



Future Technology Opportunities

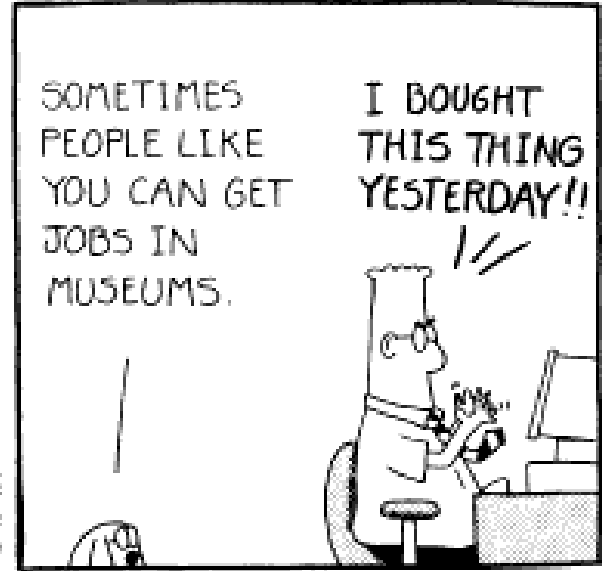


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What Are Next Generation Weapon Effects?





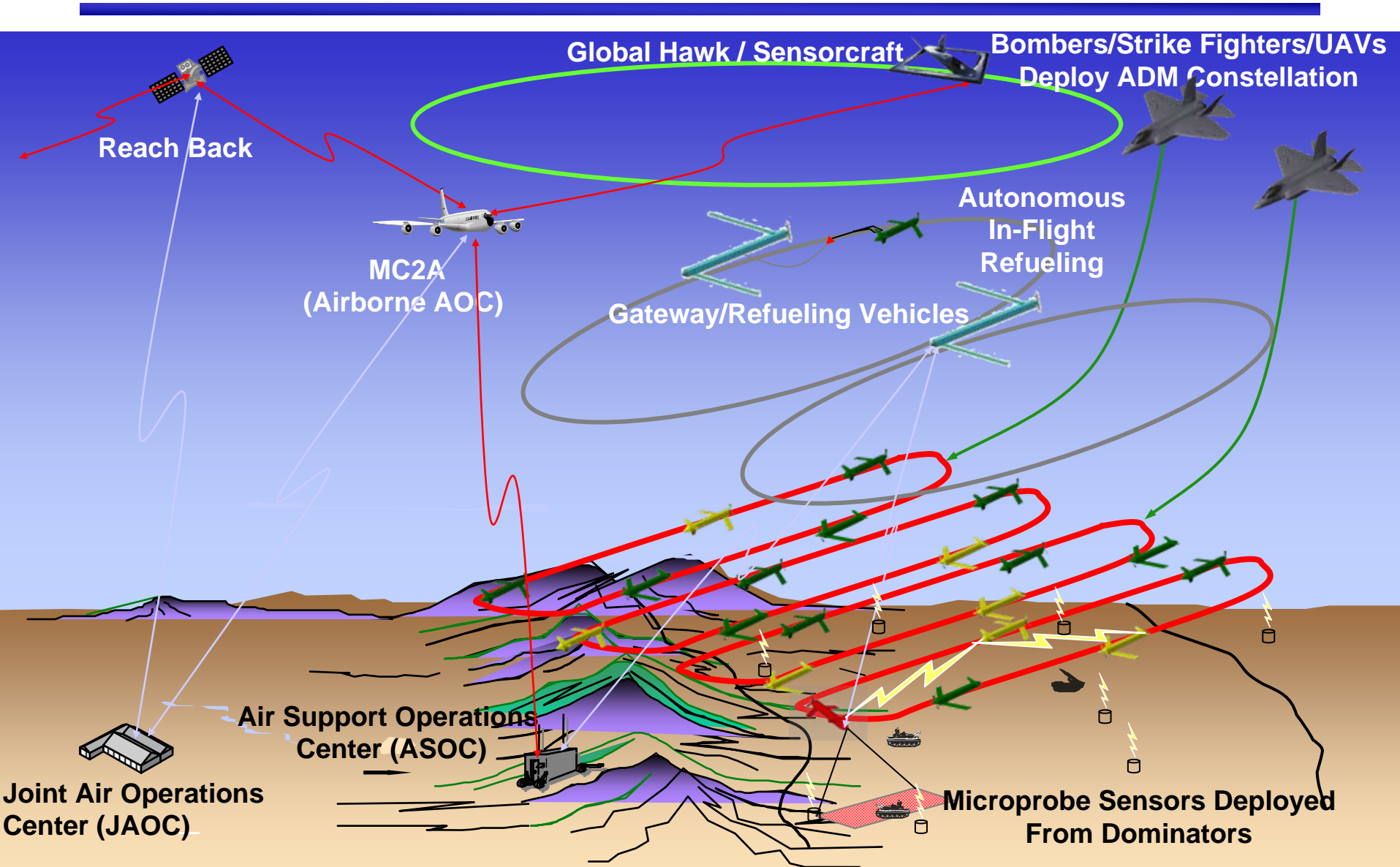
Air Armament Focus



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



Networked Weapons





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)



USCENTAF/CD

524 Shaw Drive, Suite 200
Shaw AFB, SC 29152-5029

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**

MEMORANDUM FOR USCENTCOM/Deputy Director, CCJB

FROM: USCENTAF/CD
524 Shaw Drive, Suite 200
Shaw AFB, SC 29152-5029

SUBJECT: Focused Lethality Munition (FLM) Advanced Concept Demonstration

1. (U) USCENTAF fully supports the FLM Advanced Concept Technology Demonstration (ACTD). The intent of this ACTD is to demonstrate the military utility of a collateral damage (LCD) warhead integrated into the Small Diameter Bomb I (SDB I). The FLM is not intended to replace the SDB I but to complement it. This ACTD exploits the Munition Metal Explosive (DIME) fill and composite warhead technologies being developed in the Air Force Research Laboratory. DIME is a tungsten high explosive that imparts increased blast/lethality over traditional high explosives. A composite case encapsulates the DIME fill and breaks into small non-metal fibers upon detonation minimizing warhead fragmentation effects.

2. (U) There is an urgent operational need to provide airborne platforms, including the F-15E, the ability to kill targets in a high collateral damage environment. SDB I, modified to incorporate a composite case and DIME fill, offers the potential for precisely delivering a lethal blast against soft targets and dramatically reducing collateral damage. USCENTAF requires precision-guided weapons explicitly tailored to operate within a complex battlespace. While our current enemies have shown little respect for international laws of armed conflict, the US military must always strive to minimize the impact of war. The ability to prosecute previously off-limit targets with a precision

dramatically reducing collateral damage

offers the potential to fill an existing capability gap—the ability to precisely engage high collateral damage targets. This ability to effectively prosecute previously off-limits targets would enable USCENTCOM to shorten conflicts while minimizing collateral damage.

BLAIR E. HANSEN
Brigadier General, USAF
Deputy Commander

**SDB I Hardware
Attaches to
Composite Case**

New Technology
- Composite Case Warhead
- MNX-1209 Explosive (DIME*)
- Blast Only



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





Laser Joint Direct Attack Munition (LJDAM)



- 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



Sensor Fuzed Weapon
DoD Value Engineering Award



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



B-2 Shelter
Jacobs Master Builder Award



Wind Corrected Munitions Dispenser
Outstanding AFMC Contracting Team Award



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



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



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

