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2009 Munitions Executive Summit
"Re-Shaping the Munitions Enterprise"

New Orleans, LA

February 3 - 5, 2009

Conference Agenda

MONDAY, FEBRUARY 4, 2009

PEO-Ammo Welcome –BG Wyche
US Government Keynote – LTG James H. Pillsbury, USA, Deputy CG, Army Material Command
Industry Keynote Address –Mr. Edgar Fossheim, President & CEO, Nammo Group

Keynote Speaker – Mr. James McAleese, Principal, McAleese & Associates, P.C.
Warfighter Perspective – MSgt Mike West, USAF, AF Special Operations Command

PEO Missiles & Space – Mr. Mike Hartwell, Deputy Program Executive Officer, Missile and Space

Joint Ordnance Commanders Group Panel
- ***COL Steven G. Lavoye, USAF, AF/A4LW (Pentagaon)***
- ***RDML James P. McManamo, Director, DON Weapons and Ordnance Safety (SEA 00V) and NAVSEA Deputy Commander for Surface Warfare (SEA 21)***
- ***BGen Michael M. Brogan, Commander, Marine Corps Systems Command***
- ***Mr. Jyuji D. Hewitt, Deputy to the Commander, HQ, Joint Munitions Command***

PEO Acquisition Panel
- ***Mr. Chris Grassano, PM Maneuver Ammunition Systems***
- ***COL Ole Knudson, Project Manager Conventional Ammunition Systems***
- ***COL Andre Kirnes, Project Director Joint Services***
- ***COL Ray Nulk, Project Manager-Close Combat Systems***
- ***Mr. William (Bill) Sanville, Project Director For Non-Standard Ammunition Product Directorate***

ICAP Report – Mr. Mark DeYoung, ICAP Industry Chair

Commodity Spotlight – Mr. Gregory L. Crawford, Steel Market Development Institute

TUESDAY, FEBRUARY 5, 2009

OSD Perspective – Mr. Anthony J. Melita, OUSD, Deputy Director, Land Warfare and Munitions
USASAC Update – Mr. Rick Alpaugh, Deputy to the Commanding General, USASAC

US Army Munitions Requirements
- ***COL Richard Mason, Chief, DA G3 Munitions***

- ***Mr. Don Chrans, Army G8/FDX Munitions Division***
- ***Ms. Susan Carlson, Deputy Chief of Staff, G-4, Headquarters, Department of the Army***
- ***Mr. Jeffrey C. Brooks, Deputy Director for Ammunition, Munitions Systems Directorate, Office of the Assistant, Logistics and Technology***

ARDEC Perspective Initiatives – Mr. Barbara Machak, Associate Technical Director, ARDEC

Congressional Budget Perspective – D. Ladd, CEO, Robison International

Industrial Base Panel

- ***COL Barnett, IV, Commander, Pine Bluff Arsenal***
- ***Mr. Michael H. Yoh, Executive Vice President, Day & Zimmermann Inc.***
- ***Mr. David Siggers, Spectra-Tech***

Wall Street Perspective – Mr. Pierre Chao, Managing Partner, Renaissance Strategic Advisor

2009 Munitions Executive Summit

February 3-5, 2009

Ritz-Carlton Hotel

New Orleans, LA

Vision

America's leading Defense Industry Association promoting National Security

Mission

- *ADVOCATE: Cutting-edge technology and superior weapons, equipment, training, and support for the War-Fighter and First Responder*

- *PROMOTE: A vigorous, responsive, Government - Industry National Security Team*

- *PROVIDE: A legal and ethical forum for exchange of information between Industry and Government on National Security issues*

2009 Munitions Executive Summit

February 4, 2009 - Morning

- ❑ **8:00** Welcome/Admin Remarks – T. Bagniefski
- ❑ **8:15** PEO-Ammo Welcome – BG Wyche
- ❑ **8:30** US Government Keynote – LTG Pillsbury
- ❑ **9:30** Industry Keynote Address – E. Fossheim
- ❑ **10:00** Break
- ❑ **10:20** Keynote Speaker – J. McAleese
- ❑ **10:50** Warfighter Perspective – MSgt West
- ❑ **11:30** MES Awards
- ❑ **11:45** Lunch

2009 Munitions Executive Summit

February 4, 2009 – Afternoon

- **12:45** PEO Missiles & Space – M. Hartwell
- **1:15** Joint Ordnance Commanders Group Panel
  BG Wyche, Col Lavoye, RDML McManamon, BGen Brogan, J. Hewitt
- **2:40** Break
- **3:00** PEO Acquisition Panel
  J. Sutton, C. Grassano, COL Knudson, COL Kirnes, COL Nulk, W. Sanville
- **4:30** ICAP Report – M. DeYoung
- **5:00** Commodity Spotlight – G. Crawford
- **5:30** Hosted Reception

2009 Munitions Executive Summit

February 5, 2009

- **7:45** Administrative Remarks – T. Bagniefski
- **7:50** OSD Perspective – A. Melita
- **8:50** USASAC Update – R. Alpaugh
- **9:20** US Army Munitions Requirements
  COL Mason, D. Chrans, S. Carlson, J. Brooks
- **10:00** Break
- **10:20** ARDEC Perspective Initiatives – B. Machak
- **10:45** Congressional Budget Perspective – D. Ladd
- **11:10** Industrial Base Panel
  COL Kirnes, COL Barnett, M. Yoh, D. Siggers
- **11:40** Wall Street Perspective – P. Chao
- **12:20** Closing Remarks / Adjournment

SUMMARY

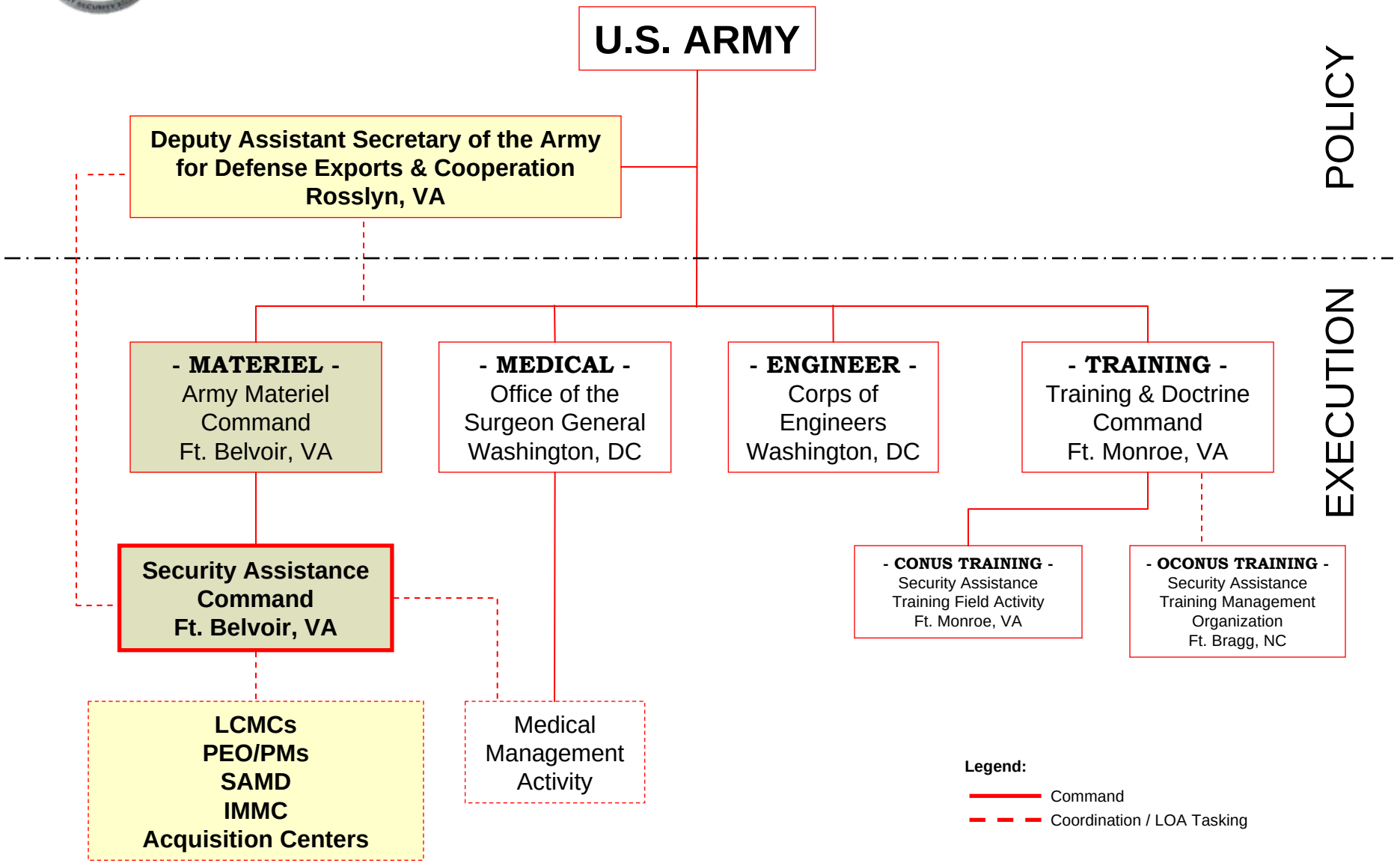
- Electronic surveys will be sent to your email addresses immediately after this Summit
- Attendees will be sent a link to the proceedings within two weeks

Please join us next year!
The 2010 MES will be held February 8-10 in San Diego at the Loews Coronado Bay

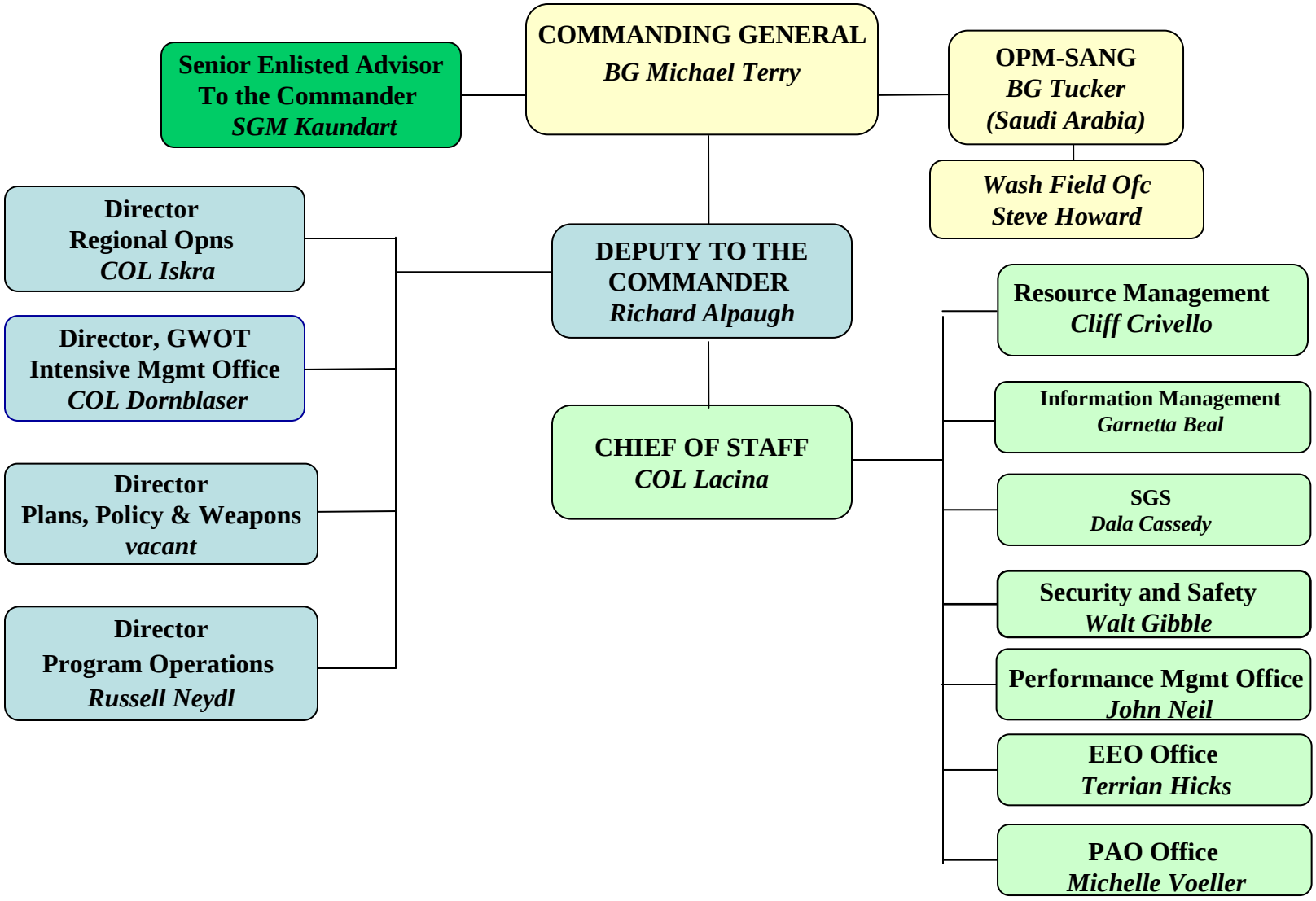
Army Security Assistance Overview
MUNITIONS EXECUTIVE SUMMIT
5 FEB 09

Presented by Rick Alpaugh, Deputy to the Commanding General, USASAC

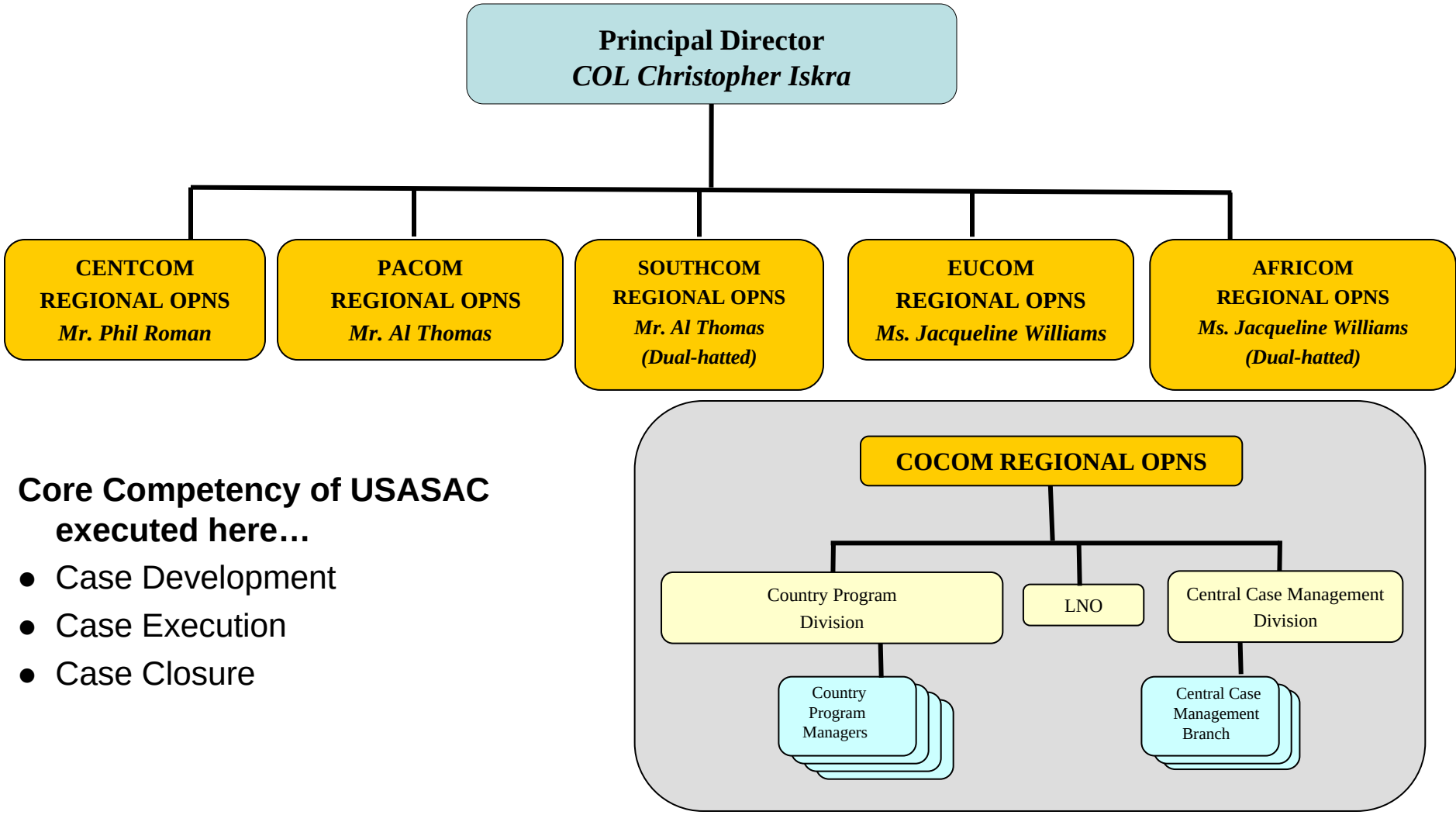
U.S. Army Organization for Security Assistance



United States Army
Security Assistance Command



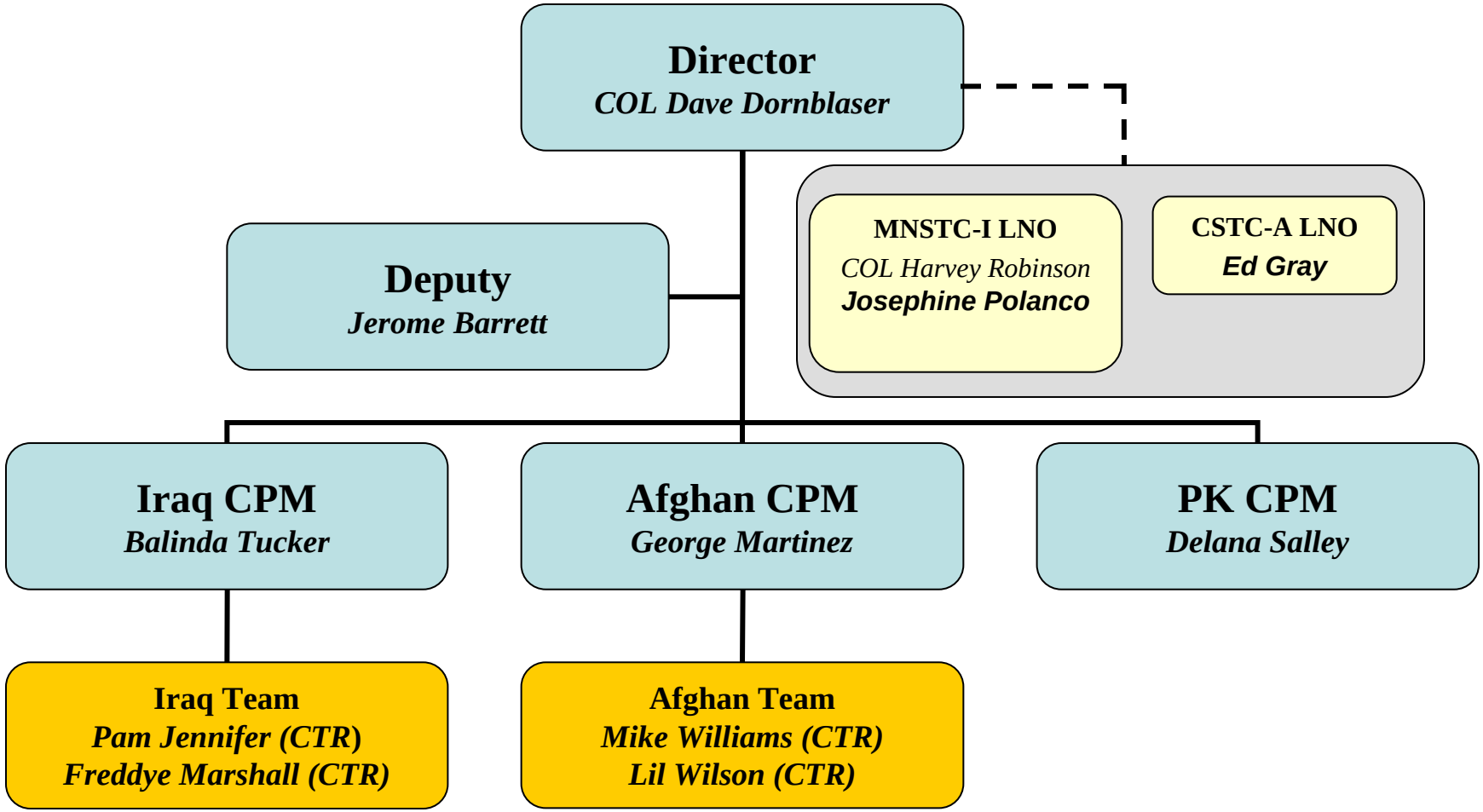
Regional Operations Directorate



Core Competency of USASAC executed here…

- Case Development
- Case Execution
- Case Closure

GWOT Intensive Management Office



AMC Security Cooperation

USASAC-Army's Face To The World

Managing 4333 cases valued at $82.6B with an undelivered value of $29.6B

- **FY 94-04 $3.6B average annual sales; FY 05/06 >$5B; FY 07 >$9B; FY 08 sales >$14.5B ($5.4 in support of Iraq/Afghanistan)**
- **Interface with 119 Security Assistance Offices World Wide**
- **USASAC LNOs embedded with COCOM HQs**

Army FMS is a link to 140 different Armies, 47 Air Forces, 26 Navies and 26 other country entities.

USASAC - PACOM REGIONAL OPERATIONS

PACOM AREA OF OPERATIONS

- **33 Countries (18 with active Cases)**
- **858 open cases**
- **$9.5B total program value**
- **$4.6B undelivered value (M&S)**
- **44K requisitions processed in FY08**

PACOM ACTIVITIES

Taiwan: Politically High Visibility
- **PAC-3 – 4 Firing Units and 330 Missiles**
- **30 - AH-64, Apache**
- **UH-60M Blackhawk-Congressional Notification**

Singapore:
- **HIMARS – 16 Firing Units**
- **8 - CH-47 stateside basing**
- **20 - AH-64 Apache**

India:
- **12 - FF Radar and Mini-Depot**

Philippines: Coalition Support
- **2,200 - Harris radios**

Australia: Coalition Support
- **59 - M1 Abrams Tank**
- **CH-47F - Congressional Notification**
- **M777A2 - Congressional Notification**
- **54 - Excalibur and AFATDS**

USASAC – SOUTHCOM REGIONAL OPERATIONS

SOUTHCOM AREA OF OPERATIONS

- **38 Countries (28 with active Cases)**
- **465 open cases**
- **$1.8B total program value**
- **$1B undelivered value**

SOUTHCOM ACTIVITIES

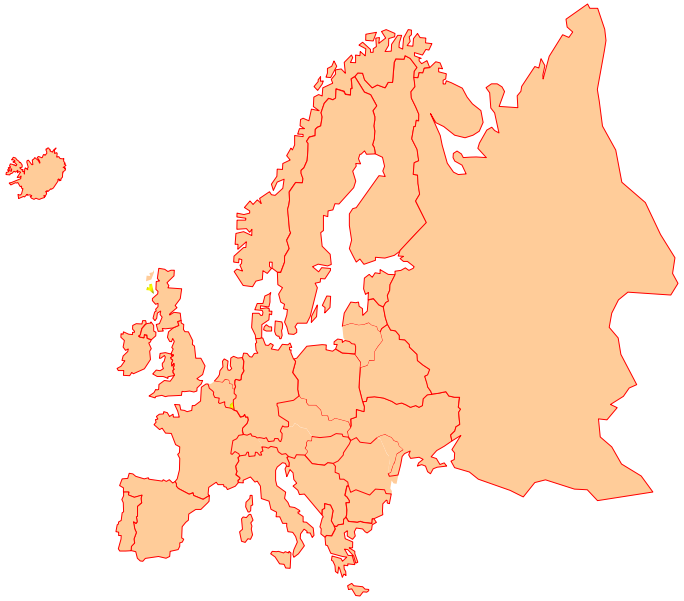
Brazil:
- **30 - UH-60L, Blackhawk**

Colombia:
- **15 - UH-60L, Blackhawks**
- **360 - Assorted small arms (Numerous Cases)**
- **214 - NVDs**

Chile:
- **Avenger**
- **M109A5 Howitzers**
- **Firefinder radar**

Cases are in development and require Congressional Notification

USASAC – EUCOM REGIONAL OPERATIONS



EUCOM AREA OF OPERATIONS

- 52 Countries (40 with Active Cases)
- 6 International Organizations
- 1466 Active Cases
- $12.09B Total Program Value
- $3.8B Undeliverable Value
- 54K Requisitions Processed FY08

EUCOM REGIONAL ACTIVITIES

Netherlands: Coalition Support
- 240 - Hellfire Missiles
- 30 – AH-64D Apache
- 11 - CH-47D
- 32 Fire Units - Patriot

United Kingdom: Coalition Support
- 423 - Javelin

Israel:
- 29 – AH-64A Apache
- 10 – Ah-64D Apache
- 500 - Hellfire Missiles

Greece:
- 20 – AH-64A Apache
- 15 - CH-47D
- 36 - MLRS
- 6 Fire Units - Patriot
- 750 - Hellfire Missiles

Germany:
- 19 Fire Units - Patriot
- 2429 – Stinger (Block I)

USASAC – CENTCOM REGIONAL OPERATIONS

CENTCOM AREA OF OPERATIONS

- 17 Countries (All with Active Cases)
- 784 Open Cases
- $53.0B Total Program Value
- $19.2B Undelivered Value
- 48K Requisitions Processed FY08

CENTCOM ACTIVITIES

Saudi Arabia:

12 - AH-64(A to D) Upgrade
315 - M1A2S Upgrade
OPM FSF

Egypt:

250 - M1A1- Coproduction Program
Increment 11 & 12

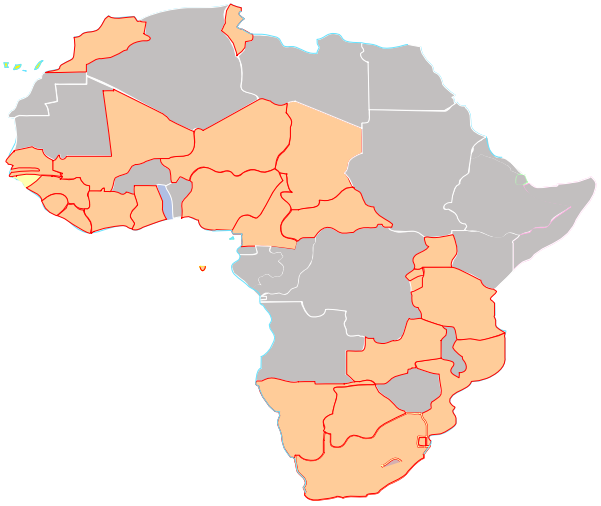
Kuwait:

16 - AH-64D Apache
6 - Patriot Configuration III Radar Upgrade

UAE:

30 - AH-64A (A to D)Upgrade
20 Launchers - HIMARS/ATACMS
40 - UH-60M
9 Fire Units - Patriot

USASAC – AFRICOM REGIONAL OPERATIONS



AFRICOM AREA OF OPERATIONS

- 56 Countries (33 with Active Cases)
- 165 Active Cases
- $328.16M Total Program Value
- $154.6M Undelivered Value
- 9 Cases Under Development - $27.69M
- 2K Requisitions Processed in FY08

AFRICOM ACTIVITIES

Morocco:
- 60 - M109A5 Howitzers
- Track Vehicle Rebuild Facility

Tunisia:
- 10 – UH-1H HUEY

Djibouti:
- 45 - HMMWVs

Kenya:
- 22 - HMMWVs
- 6964 – M4A1 Carbine Rifles

USASAC - Intensive Management Office

- 3 Countries
- 456 Active Cases
- $13.1B Total Program Value
- 109 Cases Under Development ($4.7B)
- 1,326± New Requisitions Processed Monthly (Avg)

DIRECTORATE ACTIVITIES

- **Regional Assessment:** Program Fielding, Force Modernization and Sustainment
- **Actual/Projected FMS:** FY08 $6.4/FY09 Projected $7B - $2.1B 1st QTR
- **Iraq:** Force Generation, Force Modernization, Sustainment and Logistics Capacity Building for both Ministry of Defense and Ministry of Interior
- **Afghanistan:** Force Generation for expansion of Army and Police Forces, Force Modernization of Army Air Corps; training and logistical support
- **Pakistan:** Support for Ministry of Defense in modernization of conventional capabilities: provision of materiel to Ministry of Defense and Ministry of Interior for counterterrorism capabilities.

USASAC – Iraq Major Programs

$4.1B Program
$3.2B Iraq National Funds

Major Weapons Systems

- M1A1 Abrams Tank: 140 Active; 140 Proposed: $667M - $2.5B
- Armed Scout Helicopter (Bell 407): 27 Active; 26 proposed: $450M - $1B
- Stryker Infantry Carriers: 281 Active; 119 Proposed:$605M - $1B
- Armored Security Vehicle: 80: $115M
- M16A4: 140K
- Mi-17 Helicopters: 22
- M1114 HMMWV: 8500

USASAC – Afghanistan Major Programs

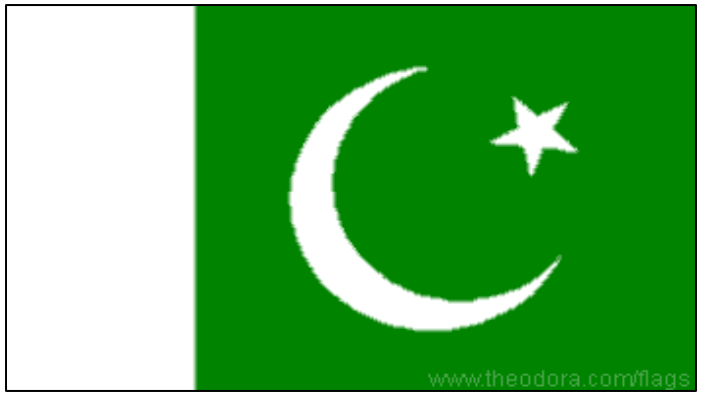
$8.5B Program

Major FMS Support

- M1151/M1152 HMMWV: 6500
- Small Arms: 15K Machine Guns, 50 Mortars, 3K Grenade Launchers (Former Eastern Bloc). 33K M16A2
- 23K Ford Ranger Pick Ups, 4K Medium Tactical Vehicles (Navistar 5T), 1,200 Heavy Trucks
- Ammunition (220K standard rounds & 310K non-standard rounds).
- Training Support Contract: $800M over 5 years
- Mi-17 Helicopters: 10

USASAC – Pakistan Major Programs

$550M Program



Major Weapons Systems

- M109A5 Howitzers: 115
- AH-1F Attack Helicopters: 8
- M113A2 Armored Personnel Carriers: 550
- Frontier Corps Equipment; $100M
  - Command & Control : $48M
  - Troop Equipment: $35M
  - Support Vehicles: $17M
- TOW II Missiles: 121

FMS AMMO SALES

- 500% sales increase ($600M) FY 04-08
- 35% ammo hardware buys in FY 08
- 10% small cal buys in FY 08

- **Reduces Army's unit cost**
- **Facilitates stockpile mgt**
- **Enables interoperability w/ Allied and Coalition partners**
- **Implements Combatant Commander proactive engagement programs**

Leverages/sustains critical Industrial Base capabilities

CHALLENGES

- VELOCITY VS CAPACITY VS QUALITY
- NON-STANDARD AMMUNITION
- TRANSPORTATION
- PROVIDING VALUE TO THE ARMY ENTERPRISE

Strength in Cooperation

USASAC VISION

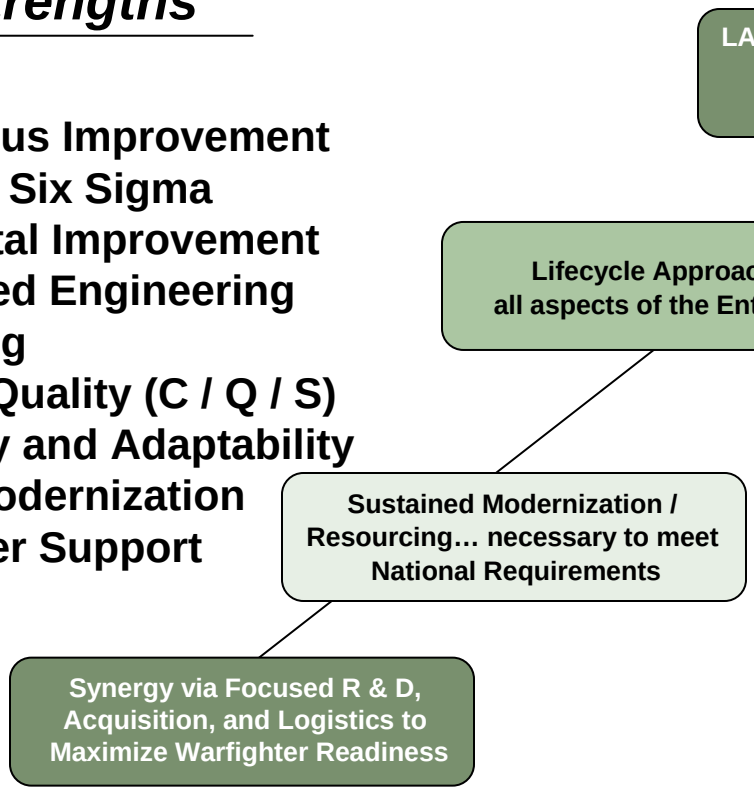
- We are a performance driven organization that values its workforce.
- We are recognized as an agile, proactive and value added organization responsive to our international and domestic partners.
- We are an organization that is equally capable of operating in both wartime and peacetime.
- We are a meaningful, contributing member of the Army Enterprise.

- Enterprise Excellence -

*Mission: "To execute **integrated** munition & lethality systems **life cycle management** through a **team of world class technology, acquisition and logistics professionals** who provide effective, available, and affordable munitions and lethality for the Joint Warfighter."*

Strengths

- Safety
- Continuous Improvement
  - Lean Six Sigma
  - Capital Improvement
  - Valued Engineering
- Partnering
- Product Quality (C / Q / S)
- Flexibility and Adaptability
- GOCO Modernization
- Warfighter Support



Road Ahead

- Communications
- Efficiencies
  - Rate Control
  - Energy
  - Valued Engineering
- Strategic Planning
  - Known's / Unknowns
  - Process Synch / Optimization
  - ARFORGEN
- Metrics
- GOGO Modernization

2009 Munitions Executive Summit

Re-Shaping the Munitions Enterprise

"Responding to Evolving Requirements"

My Take

- We are…
  - Collectively making a difference
  - Fighting a smart and adaptive enemy…but we are better; complacency is not an option
- The teams' collaboration and teamwork are saving Soldiers', Sailors', Airmen's and Marines' lives on the battlefield
- Adapting to "Enterprise Approach" serves as a forcing function to be…
  - Resourceful
  - Efficient while being effective

Right Place, Right Time, at the Right Cost

MARINE CORPS SYSTEMS COMMAND

EQUIPPING THE WARFIGHTER TO WIN

MUNITIONS EXECUTIVE SUMMIT

PEO Cross-Service Panel

BGen Michael M. Brogan

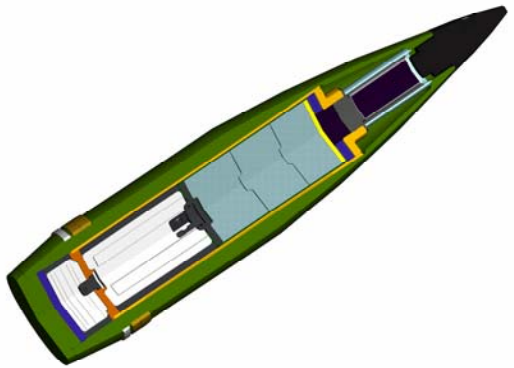
Commander, Marine Corps Systems Command

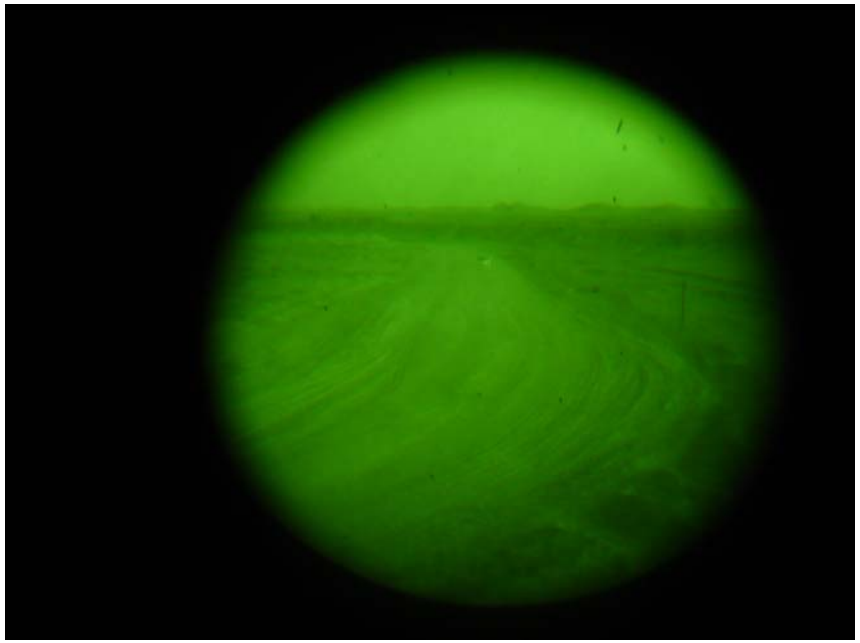
4 February, 2009

Industry Support

- **Production Pipeline**
  - 331 orders = $2.1B

- **Industry Responsiveness**
  - 155mm Infrared Illuminating Projectile
    - USMC Urgent Need Spring'08
    - In Theater by June'08





Industry Support

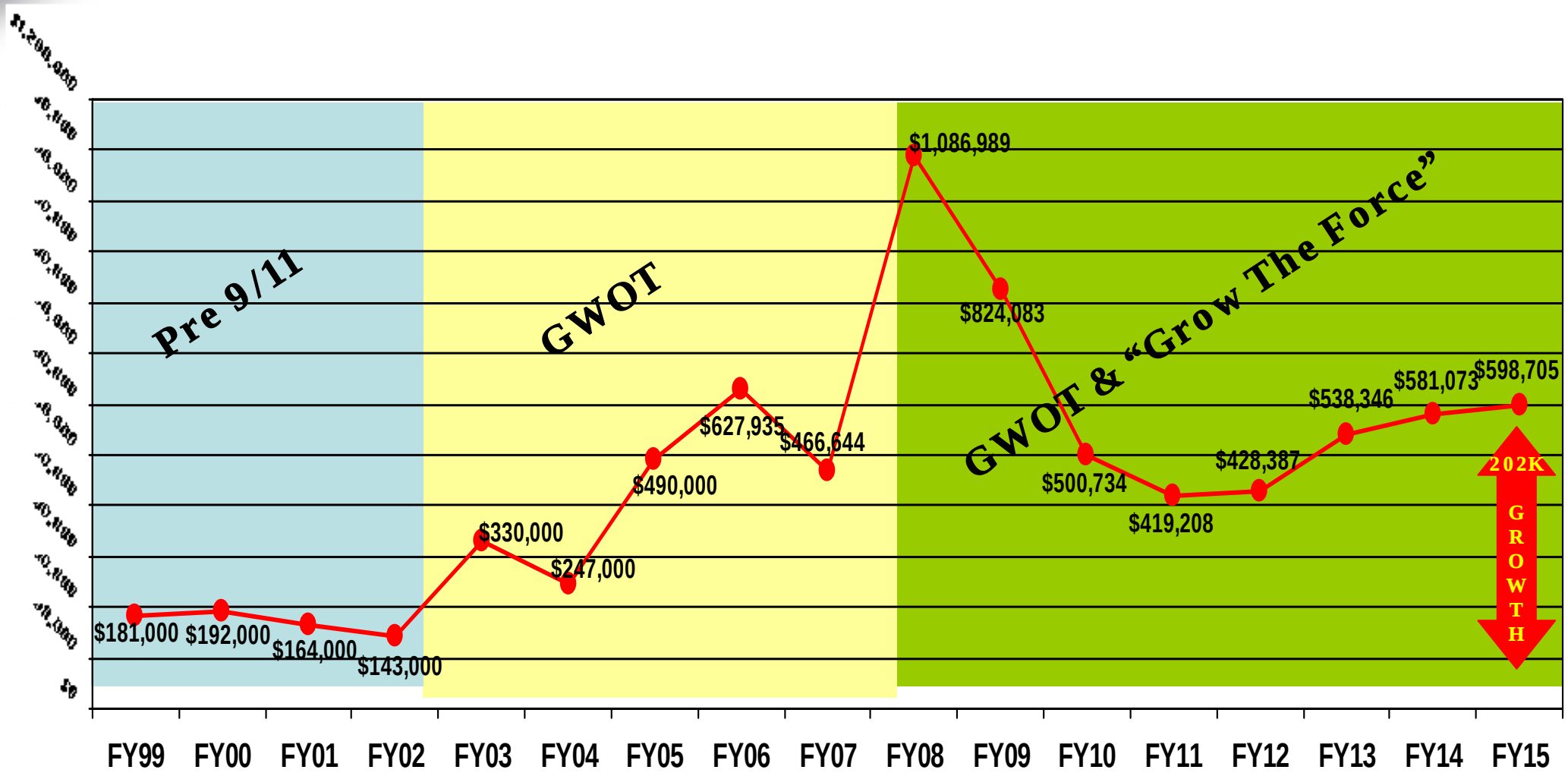
- **Industry Partnering – Mortar Primer Sensitivity**
  - **Problem**
    - Increasing Sensitivity of the Federal 150 primer used in 81mm mortar
    - Same primer used in Federal shotgun shells
    - Concern driven by mortar use on the LAV if dropped on metal deck

  - **Solution**
    - Formation of comprehensive IPT
    - ATK/Federal; American Ordnance; POCAL; ARDEC; PEO Ammo (PM CAS); NSWC Crane, PM Ammo (USMC)
    - New primer design that meets USG needs
    - To be incorporated into all ignition cartridges

  - **Results**
    - Mitigates the probability of injury
- **Customer & War Fighter needs met**

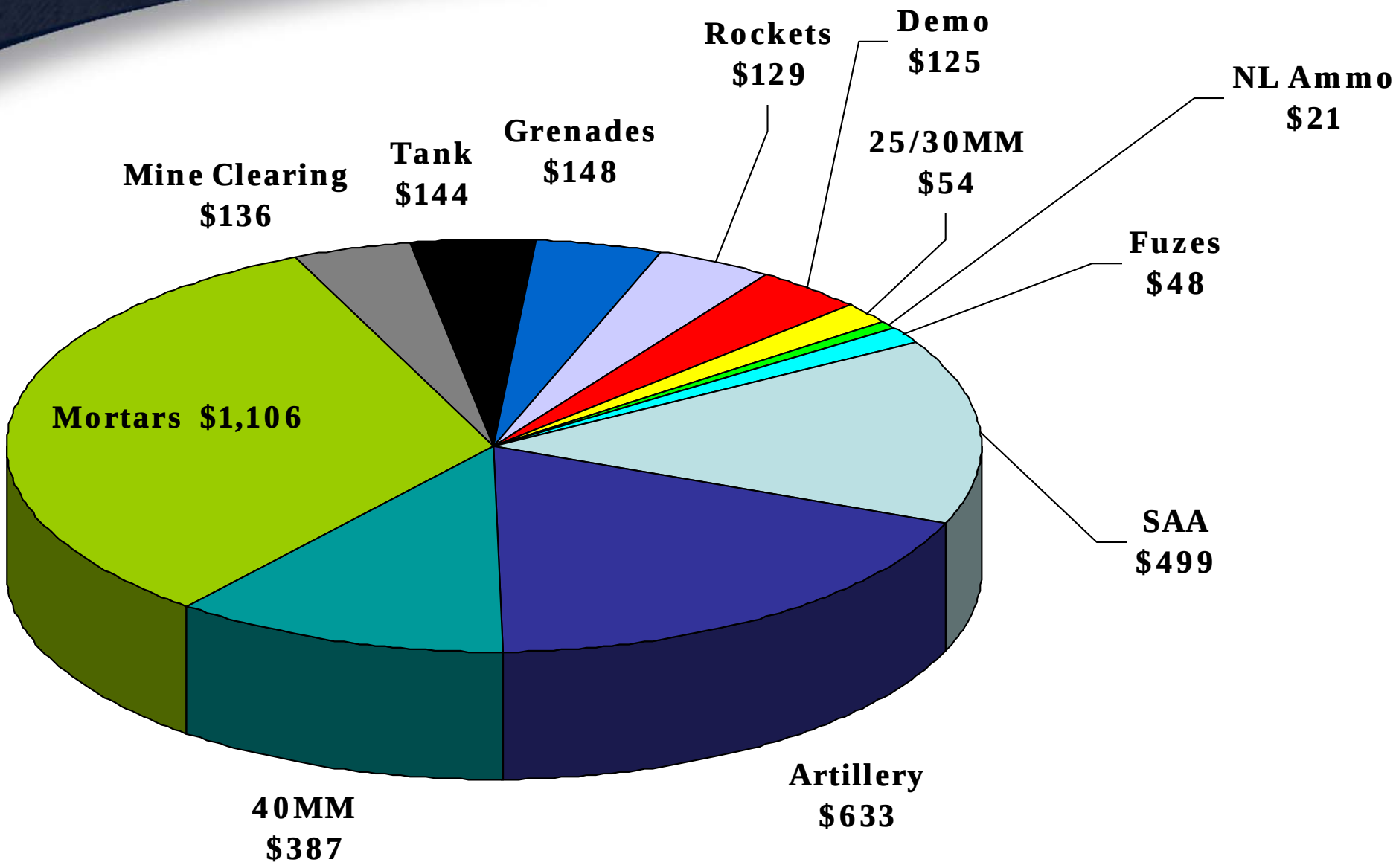
USMC Munitions Outlook
FISCAL

USMC AMMUNITION INVESTMENT FY99-FY15



USMC Munitions Outlook

FISCAL

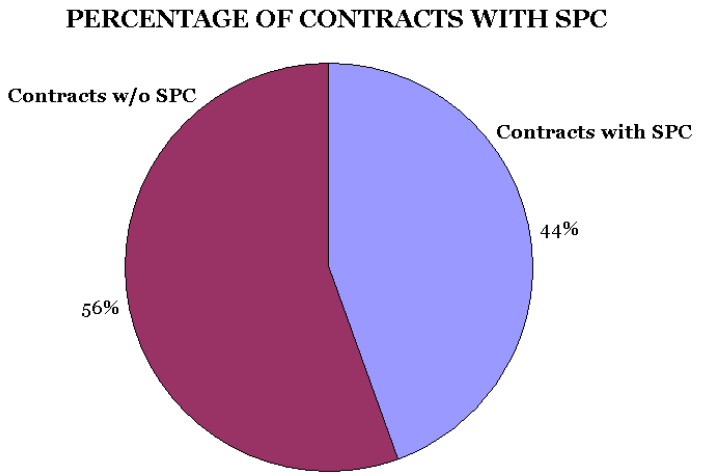


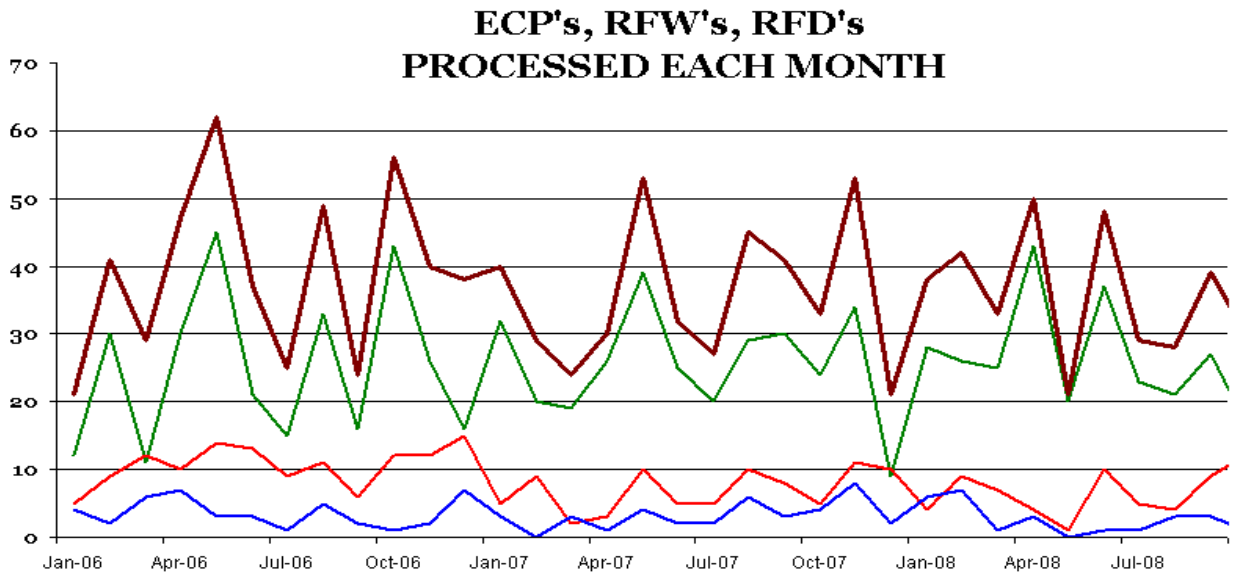
FY08-FY13 Procurement Breakout = $3.6B

(PRESBUD 09)

USMC Munitions Outlook
QUALITY

- **Quality**
  - **Continuous and…**



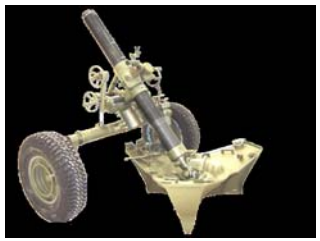


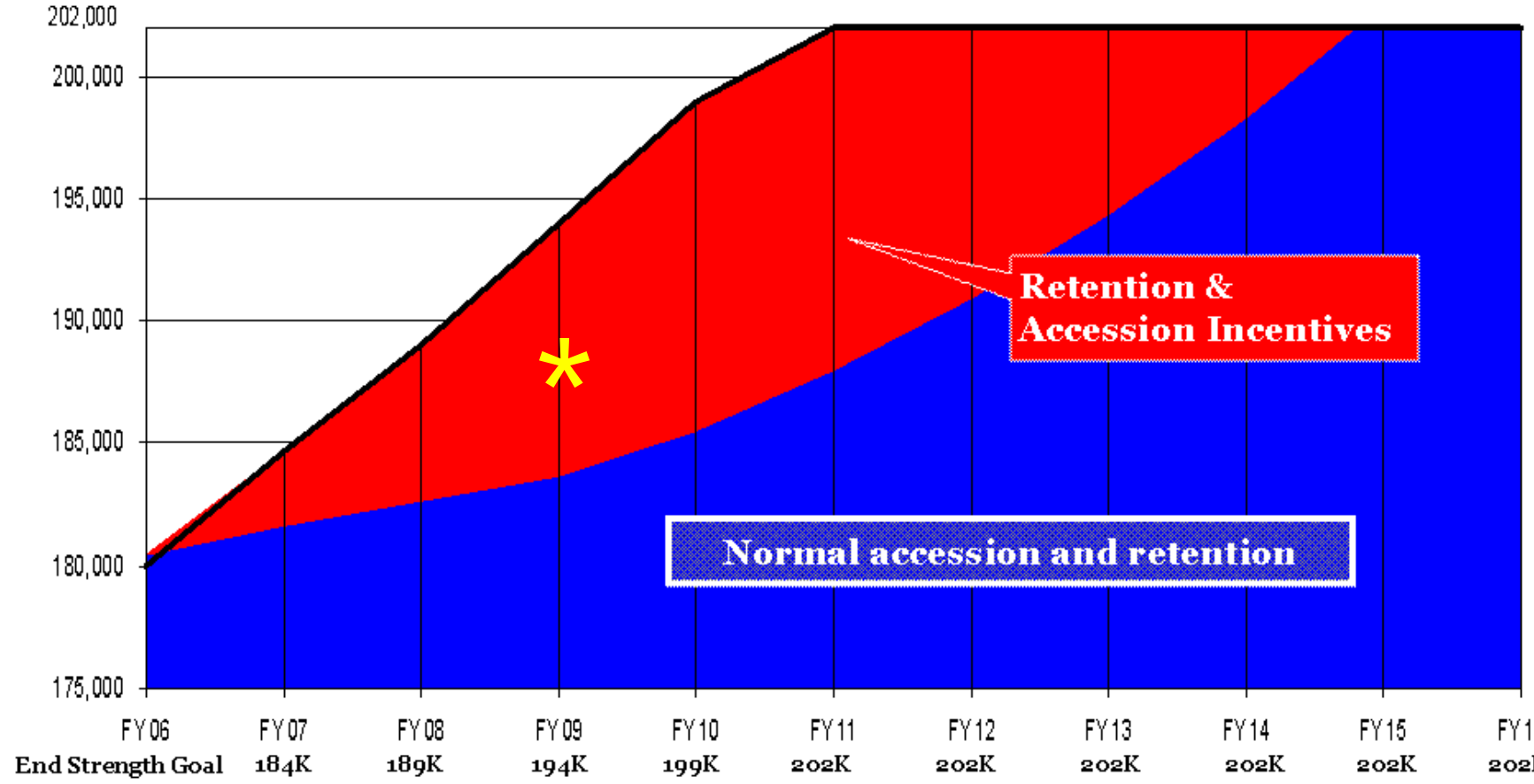
	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
ECP	12	30	11	30	45	21	15	33	16	43	26	16	32	20	19	26	39	25	20	29	30	24	34	9	28	26	25	43	20	37	23	21	27	17	25	45
RFD	5	9	12	10	14	13	9	11	6	12	12	15	5	9	2	3	10	5	5	10	8	5	11	10	4	9	7	4	1	10	5	4	9	12	3	6
Totals	21	41	29	47	62	37	25	49	24	56	40	38	40	29	24	30	53	32	27	45	41	33	53	21	38	42	33	50	21	48	29	28	39	30	34	53
RFW	4	2	6	7	3	3	1	5	2	1	2	7	3	0	3	1	4	2	2	6	3	4	8	2	6	7	1	3	0	1	1	3	3	1	6	2

… Sustained Improvement

USMC Munitions Outlook

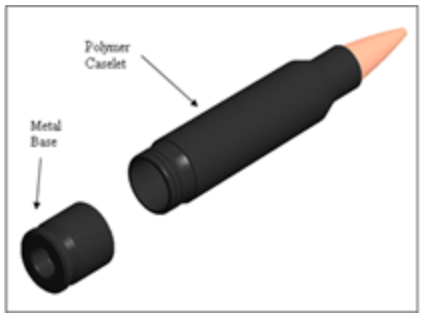
- **Challenges**
  - USMC 202k Growth 2 Years Ahead of Schedule
  - Going "precise" costs!

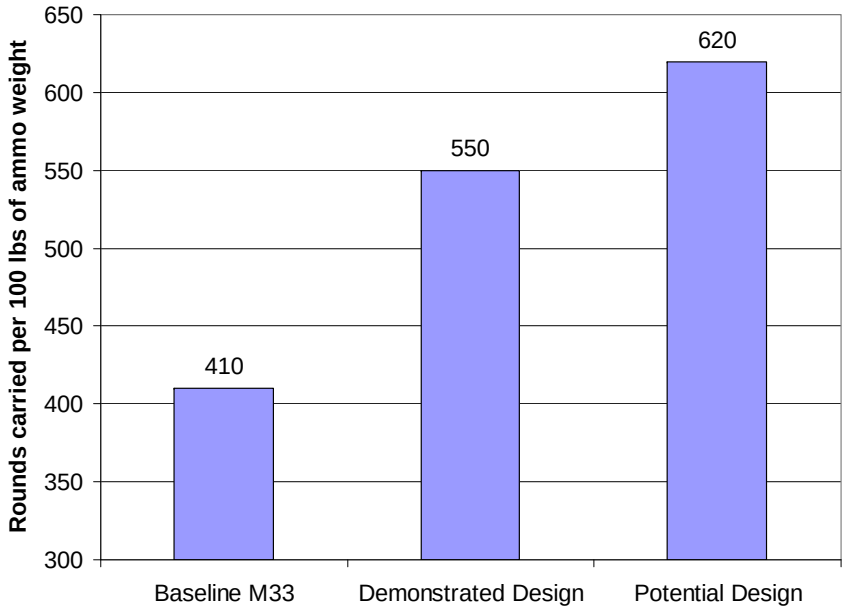




USMC Munitions Outlook

- **Light-Weight Polymer-Based Ammunition**
  - Two component design: Polymer Caselet & Brass Base
  - Benefits (all calibers)
    - Weight savings: 23-25% demonstrated
    - 28-35% indicated (design goal)
    - Same or lower cost in full production
  - Calibers in development: 5.56mm, 7.62mm and .50cal





Systemic Issues – USG

- Unstable funding profiles
- Requirements fluctuation
- Alignment of Procurements & Requirements
- Joint Ordnance Commanders awareness

Road Ahead

- **Changing Environment**
  - New Administration
  - Industries tolerance for risk and flexibility
- **The Key to Success**
  - Collaboration
  - Open and Frank Communication

Summary

- USMC continued reliance on Industry
- Single Manager for Conventional Ammunition
- Thank you

US Army Munitions Requirements
-- ASAALT/PEO Perspective

2009 NDIA Munitions Executive Summit

February 5, 2009

Jeffrey C. Brooks
Deputy Director for Ammunition
Munitions Systems Directorate
Office of the Assistant Secretary of the Army
Acquisition, Logistics, and Technology
703-604-7227, jeffrey.brooks@us.army.mil

Version 5.3.2 (8 December 2008)

Integrated Defense Acquisition, Technology, and Logistics Life Cycle Management System

DoD Decision Support Systems Effective Interaction Is Essential

Planning, Programming, Budgeting, & Execution Process
DEPSECDEF Directive DoD 7045.14-R

Joint Capabilities Integration & Development System
CJCSI 3170.01G

Defense Acquisition System
DoDD 5000.01 / DoDI 5000.02

For space systems, see National Security Space Acquisition Policy 03-01

Following the Materiel Development Decision, the Milestone Decision Authority may authorize entry into the acquisition process at any point, consistent with phase-specific entrance criteria and statutory requirements

This chart is a classroom aid for Defense Acquisition University students. It provides a notional illustration of the interfaces among the three major decision support systems used to develop, produce, and field a system for national defense. Defense acquisition is a complex process with many more activities than shown here and many concurrent activities that cannot be properly displayed on a two-dimensional chart. Supporting information is on the back of this chart. For more information, see the Acquisition, Technology, and Logistics Knowledge Sharing System (http://ates.dau.mil).

Materiel Solution Analysis Phase

Complete Analysis of Alternatives to assess materiel solutions, identify key technologies and estimate life cycle costs. Identify materiel solution to capability need. Complete Technology Development Strategy.

MS A

Technology Development Phase

Reduce technology risk, determine and mature the appropriate set of technologies to integrate into a full system, demonstrate critical technology elements on prototypes, and complete preliminary design. Identify an affordable program or increments of militarily useful capability, demonstrate the technology in a relevant environment, and identify and assess manufacturing risks. Provide for two or more competing teams producing prototypes of the system and/or key system elements prior to or through Milestone B.

MS B

Engineering & Manufacturing Development

Develop a system or increment of capability; complete full system integration, develop affordable and executable manufacturing process; ensure operational supportability; reduce logistics footprint; implement human systems integration; design for producibility; ensure affordability; protect critical program information; and demonstrate system integration, interoperability, safety, and utility.

Post-PDR A

Integrated System Design

Post-CDR A

System Capability & Manufacturing Process Demonstration

MS C

Production & Deployment Phase

Achieve operational capability that satisfies mission needs.

Low-Rate Initial Production

FRP DR

Full-Rate Production/Deployment

IOC

FOC

Operations & Support Phase

Execute a support program that meets materiel readiness and operational support performance requirements and sustains the system in the most cost-effective manner. Overlaps Production and Deployment Phase.

Life Cycle Sustainment

Disposal

Decision Points/Milestones

MDD

Strategic Guidance

Joint Operations Concepts
Concept of Operations
Operations Plans

Capabilities-Based Assessment

Joint Capabilities Integration and Development System - Acronyms
CDD – Capability Development Document
CPD – Capability Production Document
DCR – DOTMLPF Change Recommendation
DOTMLPF – Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities
ICD – Initial Capabilities Document
ICO – Initial Capabilities Document
IOC – Initial Operational Capability
JROC – Joint Requirements Oversight Council
MOA – Military Utility Assessment
NCOW-RM – Net-Centric Operations Warfare Reference Model
KIP – Key Interface Profile
KPP – Key Performance Parameter
KSA – Key System Attributes

Joint Capabilities Integration and Development System (need-driven)

ICD

JROC Component Validation and Approval

DCR

Joint Operations Concepts
Concept of Operations
Automated Standards Profile
Capability Roadmap

Draft CDD

Threshold/objective tradeoffs – Revised Performance Attributes

Joint Staff Certifications
J1 – Joint manpower; J2 – Intelligence; J3 – Operational suitability, sufficiency, and supportability; J4 – Facilities, sustainment, and energy efficiency; J5 – ITS/NCO interoperability and supportability; J7 – System training; J8 – Weapons safety

Service/JROC Validation & Approval

CDD

KPPs

MUA/Final Demo Report w/ Joint Concept Technology Demonstration and qualified prototype projects

CPD

Validated and approved CDD & CPD for each increment of evolutionary acquisition

Information Support Plan

Materiel Availability KSA

Ownership Cost KSA

System Threat Assessment
Force Protection KPP
Survivability KPP

Selectively Applied
System Training KPP
Energy Efficiency KPP

NCOW-RM
Architectural Products
Net-Ready KPP
Global Information Grid APN
Information Assurance

Oversight and Review

DAB/ DSAB/ ITAB

MDA

ADM

Exit Criteria

PSR

Exit Criteria Met

Cringer-Cohen Act – Compliance (all IT) – Certification (MAIS)

MS A Cert.

MS B Cert.

Cost-Type Contract Determination (if applicable)

APB

Post-CDR Report

Post-PDR Report

Increment II

Increment III

Total Life Cycle Systems Management

Technology Development Strategy
- Rationale for evolutionary or single-step to full capability
- How materiel solution will be divided into increments
- Limits on number of prototypes
- Preliminary acquisition strategy with cost, schedule, performance goals for entire R&D effort
- TD phase cost, schedule, performance goals & exit criteria for each planned increment
- Known & probable CPI & countermeasures
- Time-phased workforce assessment
- Data management strategy
- Summary of CAIG-approved cost & software data reporting plans for his technology development phase
- Consideration of international cooperative opportunities
- Net-centric data strategy

Oversight and Review Acronyms
ADM – Acquisition Decision Memorandum
AoA – Analysis of Alternatives
APB – Acquisition Program Baseline
CDR – Critical Design Review
DAB – Defense Acquisition Board
DSAB – Defense Space Acquisition Board
ESOH – Environment, Safety, and Occupational Health
EVM – Earned Value Management
FRPDR – Full Rate Production Decision Review
IBR – Integrated Baseline Review
ITAB – Information Technology Acquisition Board
LRIP – Low Rate Initial Production
MAIS – Major Automated Information System
MDA – Materiel Decision Authority
MDD – Materiel Development Decision
MOSA – Modular Open Systems Approach
PDR – Preliminary Design Review
PCCBA – Post Critical Design Review Assessment
PSR – Program Support Review
TLCSM – Total Life Cycle Systems Management

Purpose of LRIP:
- *Complete manufacturing/tooling development*
- *Establish initial production base*
- *Easy to production rate*
- *Produce systems for IOT&E*

Acquisition Strategy
- Program Structure
- Acquisition Approach
- Capability Needs
- Test & Evaluation
- Risk Management
- Resource Management
- Systems Engineering
- Interoperability
- Information Technology
- Research & Technology
- Information Assurance
- Product Support
- Human Systems Integration
- ESOH – MOSA
- Business Considerations
- Best Practices
- Relief, Exemptions, and Waivers
- Earned Value Management
- Corrosion Prevention
- Data Management
- Life Cycle Sustainment
- Military Equipment Valuation

Contracting

Study Contracts

AoA Study Guidance

AoA Study Plan

AoA

TLCSM

Acq Plan

Source Selection Plan

Draft RFP

RFP

Technology Development Contract

Engineering & Manufacturing Development Contract

LRIP Contract

Production Contract

IBR

EVM Surveillance

Post-Production Software Support Contracts

Sustainment Contracts

Major Products

Preliminary Integrated Architecture

Best Materiel Approach(es)

Materiel Solution

Prototypes

System Performance Spec

Initial Product Baseline

Production Representative Articles

Initial Product Baseline (verified)

Low-Rate Initial Production Systems

Final Production Baseline

Full-Rate Production Systems

Post-Deployment Review

Logistics/ Sustainment

Define Supportability Objectives

Evaluate Product Support Capabilities

Refine Supportability Objectives/ Constraints

Develop Initial Product Support Strategy
Initiate Product Support BCA
(Define Ground Rules & Assumptions)

Set Product Support Strategy

Product Support Plan
- Statutory/Regulatory
- Source of Support
- Legacy Considerations
- Conduct Product Support BCA

Product Support Elements
- Supply Support
- Maintenance
- Manpower & personnel
- Training
- Support Data

Demonstrate Product Support Capability
- Footprint Reduction
- Supply Chain Management
- Product Support Elements
- Finalize Product Support BCA

Product Support Package/PBL Implementation
- Product Support Elements
- Support and Cost Baseline
- Contract for Sustainment (organic and commercial)

Product Support/PBL Management
- Public-Private Partnering
- PSA Modifications
- Assessment of PSSP KPAs
- Supply Chain Management
- Continuous Tech Refreshment
- Obsolescence Management
- Configuration Control
- Data Management

Operations and Sustainment
- Spiral Operations
- Criteria
- Training

Pre-IOC and Post IOC Supportability Assessments

Performance-Based Logistics (PBL) Strategy (Preferred Product Support Approach)

Performance-Based Agreements

Business Case Analysis

Product Support Integrator

Product Support Provider

Technical & Logistics Acronyms
AoA – Alternative Systems Review
ADTR – Assessment of Operational Test Readiness
BCA – Business Case Analysis
BLRIP – Beyond Low Rate Initial Production
CDR – Critical Design Review
CI – Configuration Item
DT&E – Developmental Test & Evaluation
EOA – Early Operational Assessment
FOT&E – Follow-On Test & Evaluation
FRP – Full Rate Production
FRPDCA – Future Mods Effects & Criticality Analysis
FOT&E – Follow-On Test & Evaluation
FTA – Failure Tree Analysis
IOT&E – Initial Operational Test & Evaluation
ISR – In-Service Review
ISP – Information Support Plan
ITR – Initial Technical Review
LFT&E – Live Fire Test & Evaluation
LOFA – Level of Repair Analysis
MTA – Maintenance Task Analysis
OA – Operational Assessment
OTRR – Operational Test Readiness Review
PESHE – Programmatic Environment, Safety & Occupational Health Evaluation
PDR – Preliminary Design Review
PCA – Physical Configuration Audit
PRR – Production Readiness Review
PSA – Post-Deployment Performance Review
RAM – Reliability, Availability & Maintainability
SFR – System Functional Review
STA – System Threat Assessment
SVR – System Verification Review
TEMP – Test & Evaluation Master Plan
TRA – Technology Readiness Assessment
TRR – Test Readiness Review

Defense Acquisition System (event-driven)

MDD

A

B

Post-CDR A

C

FRP DR

Technical

Systems Engineering
Test and Evaluation
Supportability

INPUTS
- ICD
- AoA Plan
- Exit Criteria
- Alternative Maintenance & Logistics Concepts

OUTPUTS
- Draft System Requirements
- TEMP
- SEP
- System Safety Analysis
- Support and Maintenance Concepts and Technologies
- Inputs to: *Draft CDD* *AoA* *TDS* *Cost/Manpower Est.*

ITR

ASR

SRR

SFR

PDR

CDR

Post-PDR A

Post-CDR A

PRR

FCA

SVR

Interpret User Needs, Analyze Operational Capabilities & Environmental Constraints

Analyze/Assess Concepts Versus Defined User Needs & Environmental Constraints

Develop Concept Performance (& Constraints) Definition & Verification Objectives

Assess/Analyze System Concept's Performance

Decompose Concept Performance Into Functional Definition & Verification Objectives

Assess/Analyze System Concept Versus Functional Capabilities

Assess/Analyze Enabling/Critical Components Versus Capabilities

Develop Component Concepts, i.e., Enabling/Critical Technologies, Constraints, & Cost/Risk Drivers

Economic Analysis & CCE (MAIS Only)

POE/CCE

Develop System Part (& Constraints) Specs & Enabling/Critical Tech & Prototypes Verification Plan

Demo/Model Integrated System Versus Performance Spec

Develop System Functional Specs & Verification Plan to Evolve System Functional Baseline

Demo System & Prototype Functionality Versus Plan

Develop Enabling/Critical Technologies, Update Constraints, & Cost/Risk Drivers

Demo Enabling/ Critical Components Versus Plan

Develop System Functional Specs & Verification Plan to Evolve System Functional Baseline

Evolve Functional Performance Specs Into System Allocated Baseline

Evolve CI Functional Specs Into Product (Build to) Documentation and Inspection Plan

Fabricate, Assemble, Code to "Build-to" Documentation

Integrated DT&E, LFT&E & EOAs Verify Performance Compliance to Specs

Individual CI Verification DT&E

System DT&E, LFT&E & CAIs Verify System Functionality and Constraints Compliance to Specs

Combined DT&E/OT&E/LFT&E Demonstrate System to Specified User Needs and Environmental Constraints

Production Qualification Testing

AOTR

OTRR

Independent IOT&E

Full-Up System Level LFT&E

JITC Interoperability Certification Testing

J-6 System Validation

BLRIP Report to Congress

LFT Report to Congress

FOT&E

Disposal

Most Acceptable

Least Acceptable

Recycle/Reuse

Refurbishment

Disposal

Analyze Deficiencies To Determine Corrective Actions

Verify and Validate Production Configuration

Modify Configuration (Hardware/Software/Specs) To Correct Deficiencies

Monitor and Collect All Service Use Data

Analyze Data to Determine Root Cause

Determine System Risk/ Hazard Severity

Develop Corrective Action

Assess Risk of Improved System

Integrate and Test Corrective Action

Implement and Field

In-Service Review

Process Change – Hardware/Support

Material Change

Cost Aerosyms
CARD – Cost Analysis Requirements Description
CCE – Component Cost Estimate
ICE – Independent Cost Estimate
MDAP – Major Defense Acquisition Program
MAIS – Major Automated Information System
POE – Program Office Estimate
PMO – Program Management Office
RDT&E – Research, Development, Test & Evaluation

CARD | POE | CCE | ICE → Affordability Assessment

MDAP/MAIS

optional

MDAP

Full Funding in FYDP

LFT&E (Program Alternatives)

(with alternate LFT&E Plan)

Cost $

Cost Estimation Methods

Parametric

Analogy

Engineering

Actual Costs

PMO POM Input

PMO Budget Estimate

Types of Funds

RDT&E – Advanced Technology Development

RDT&E – Advanced Component Development and Prototypes

RDT&E – Systems Development & Demonstration

RDT&E – Management & Support

Procurement

Operations and Maintenance

Appropriated Funds To Support Contracts

Planning, Programming, Budgeting, and Execution Process (biennial-calendar-driven)

On Year

Off Year

Military Departments and Defense Agencies

Office of the Secretary of Defense and Joint Staff

White House

POM/Budget Formulation
Changes To/In Year

August

POM/Budget Submit
Changes To/In Year

September - November

Issue Resolution

PDM(s)

ISSUES

Guidance for Development of the Force
Off Year Optional
December / February

Joint Programming Guidance
Off Year Optional
April / May

FYDP updated

PBD Cycle
October - November

Final PBDs
November

MBI
December

DoD Budget

OMB
January

President's Budget to Congress
February (1st Monday)

FYDP updated

National Military Strategy

National Defense Strategy

National Security Strategy

Fiscal Guidance

Planning, Programming, Budgeting, and Execution Acronyms
FYDP – Future Years Defense Program
NSS – Major Budget Issues
OMB – Office of Management and Budget
PBD – Program Budget Decision
PDM – Program Decision Memorandum
PMO – Program Management Office
POM – Program Objectives Memorandum

DoD Testimony

DoD Appeals

Allocation

Apportionment

Congress
- Budget Committees
- Authorization Committees
- Appropriation Committees
- Authorization/ Appropriation Acts Passed

February - September

For a single copy of this chart, send a request to daupubs@dau.mil

Send recommendations to improve the content of this chart to waltchart@dau.mil

MISSION

Develop and Procure Conventional and Leap-Ahead Munitions to Increase Combat Power to our Warfighters

It’s the Budget System - PPBES

Planning – G3

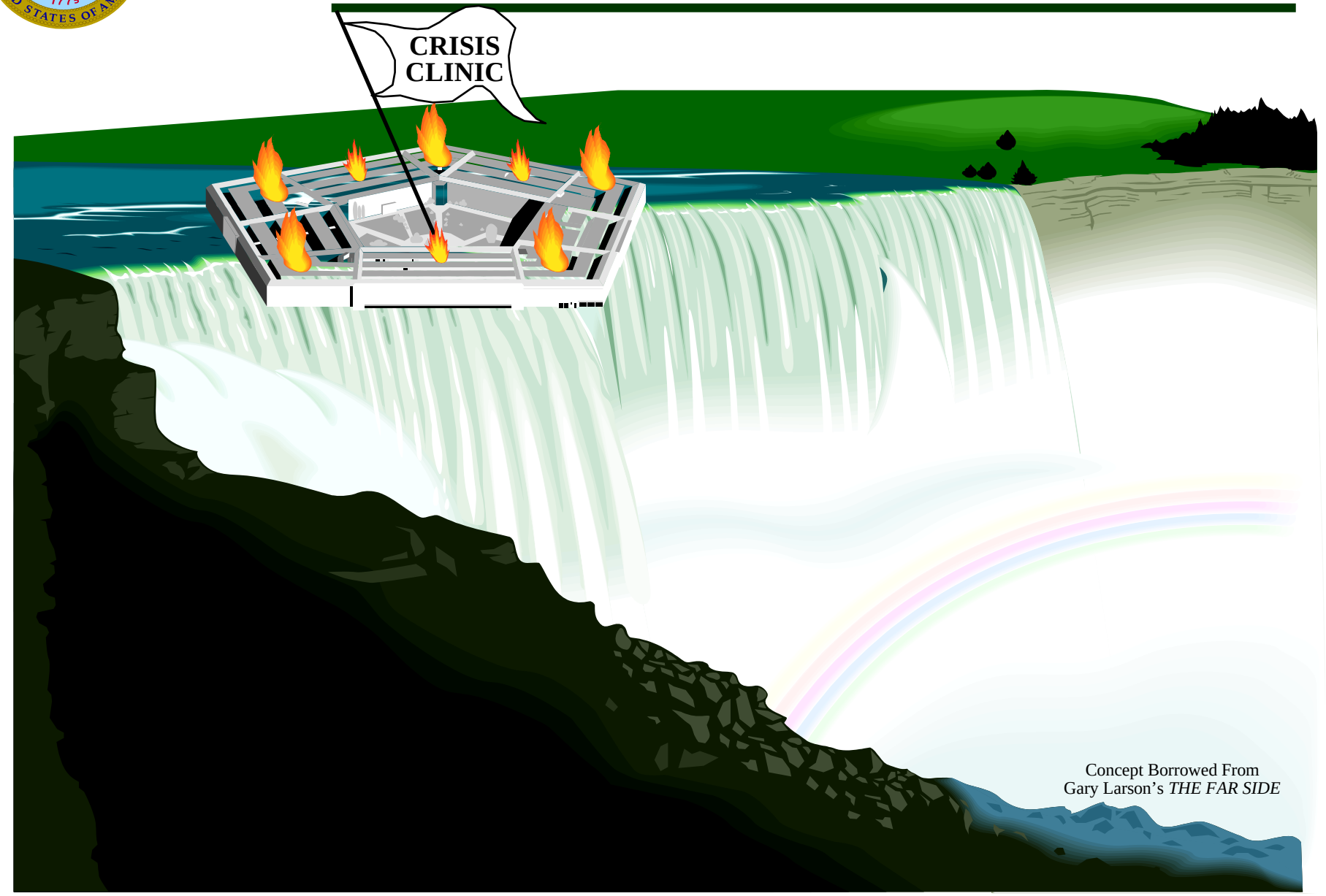
Programming – G8

Budgeting – ABO

Execution – ASAALT & G4

- ✓ **Distinct Responsibilities**
- ✓ **Day-to-Day Interaction & Support**

FOCUS ON


CRISIS
CLINIC
Concept Borrowed From
Gary Larson's *THE FAR SIDE*

ASA(ALT)

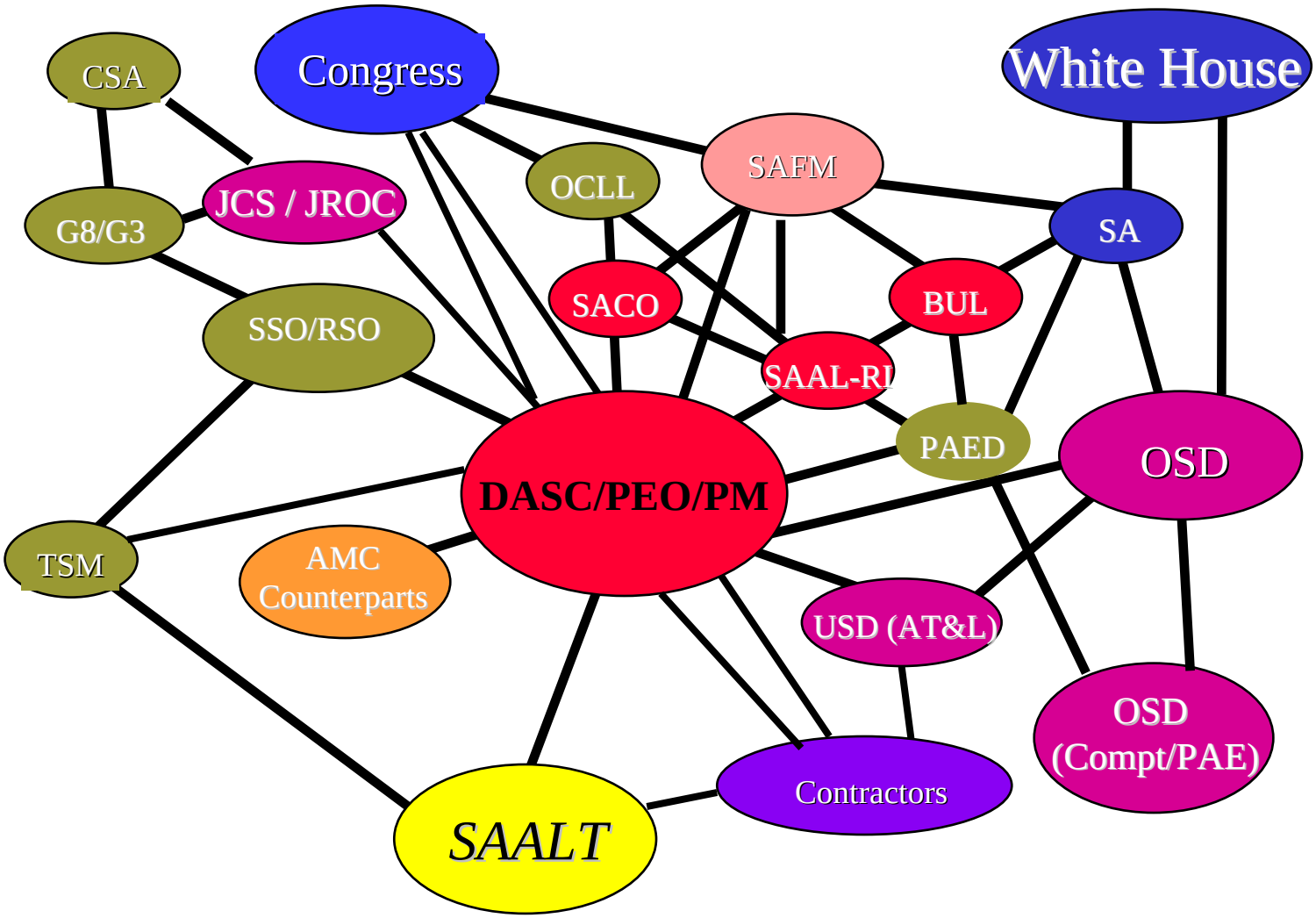
The Assistant Secretary serves as the:

- Army Acquisition Executive
- Senior Procurement Executive
- Science Advisor to the Secretary
- Senior research and development official for the Department of the Army
- Principal responsible for all Department of the Army matters related to acquisition policy & logistics.

Mission:

- Execute the acquisition function and the acquisition management system of the Department of the Army.
- Advise the Secretary on all matters relating to acquisition and logistics management.
- Oversee the Army Industrial Base and Industrial Preparedness Programs.
- Ensure the production readiness of weapon systems.
- Exercise the procurement and contracting functions, the delegation of contracting authority, and the designation of contracting activities.
- Serve as the Army's Single Manager for Conventional Ammunition.

Interactions



PERSPECTIVE

350+ PAA Items of Ammunition

- **Small Arms Ammunition – 12ga, 9mm, 5.56mm, 7.62mm, .50 cal, Non-Lethal, SESAMS, Tracer, Sniper, Frangible.**
- **Medium Caliber Ammunition – 20mm, 25mm, 30mm, 40mm.**
- **Mortar – 60mm, 81mm, 120mm (HE, Smoke, Illum – VL/IR).**
- **Tank – 105mm & 120mm (KE, HEAT, Multipurpose, HEP, Training, Canister)**
- **Artillery – 75mm, 105mm, 155mm (HE, DPICM, RAP, Smoke, Illum – VL/IR, Practice, Excalibur, Propelling Charges, Fuzes & Primers).**
- **Pyrotechnics – Simulators, Flares, Obscurants, Signaling, Impulse Cartridges.**
- **Demolitions – C4, TNT Blocks, Demo Kits, APOBS, Blasting Caps, Initiators & Igniters.**
- **Shoulder-Fired Rockets – AT4, M72 LAW, BDM.**
- **Grenades – Hand, Training, Smoke, Vehicle Obscurant, Rifle Entry.**
- **Mines – Claymore, Volcano, various AP/AT, Spider (& IMS).**

- **RDTE (PGK, MRM, IMS, A/GSTAMIDS), OPA (MFCS, LWHMBC), WTCV.**

Many Unique and Diverse Items

PEO Ammunition

PM Maneuver Ammunition Systems

- PM Large Caliber
- PM Small & MediumCaliber
- PM Medium Cannon Caliber

PM MAS equips soldiers, mounted and dismounted with all calibers of direct-fire ammunition for Army's Current, Stryker and Future Forces.

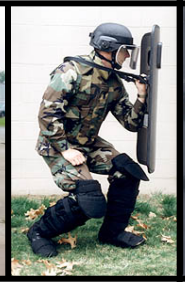
PM Combat Ammunition Systems

- PM Excalibur
- PM Mortars

PM CAS equips solders with all tube-launched, indirect fire munitions, and mortar weapon systems for Army's Current, Stryker, and Future Forces.

PM Close Combat Systems

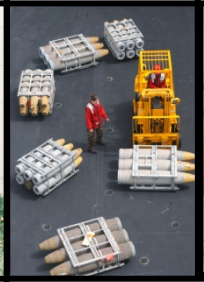
- PM Countermine and EOD
- PM Intelligent Munition Systems
- PM IED Defeat/Protect Force



PM CCS equips soldiers with networked assured mobility, force protection, and close battle systems for the Army's Current, Stryker and Future Forces.

PD Joint Services

- PM Demil
- Industrial Base
- SMCA -- Bombs/Navy Gun



PM JS integrates the SMCA mission; equips Services with Bombs and Navy Ship Gun ammunition; implements SMCA Industrial Base and Demil responsibilities.

Life Cycle Management Command

Picatinny (AMC)

Picatinny (ASA(ALT))

Rock Island (AMC)

TECHNOLOGY:

Technology Dev.
RDT&E 6.1, 6.2 & 6.3
Pgm./Budget / Receive Funds
Life Cycle Engineering Support

SUPPORT FROM PEO-AMMO / JMC

ACQUISITION:

Systems Dev.
Acq. Strategy
Hardware Prod.
Components for Renovation (Maint. Spt.)
APE (Maint. Spt.)
RDTE
Industrial Base

LOGISTICS / SUSTAINMENT

Demilitarization/Disposal

SUPPORT FROM JMC / ARDEC

ACQUISITION:

Industrial Base

LOGISTICS/SUSTAINMENT

Receipt / Issue
Storage / Distribution Mgmt.
Inventory / Accountability
Safety / Security
QA (ASRP/Surveillance)
Maintenance
Transportation
OMA Pgm. /Budget / Receive Funding

SUPPORT FROM ARDEC / PEO-AMMO

SUMMARY

- **Ammunition is a team effort**
- **Many small, unique items**
- **Focus on the Warfighter**
- **Life Cycle Responsibilities**
- **World-wide Management**

Army ALT Magazine, Jan – Mar 2008: http://asc.army.mil/altmag/

Unclassified

Munitions Executive Summit

5 Feb 09

Ms. Susan Carlson
Munitions Division
Deputy Chief of Staff, G-4
Headquarters, Department of the Army

AMERICA'S ARMY: THE STRENGTH OF THE NATION™

MISSION

- Provide Army Staff responsibility and oversight for policy, plans, and resources for:
  - Conventional ammunition
  - Missiles
  - Toxic chemical storage
  - Ammunition surveillance
  - Demilitarization
  - Explosives safety and environmental compliance

- Specifics:
- Distribution of the Army's munitions stockpile.
- Perform ammunition and missile stockpile management functions.
- Develop policy for and monitor ammo surveillance and environmental compliance. Oversight on emerging missile, ammo and ammo information Mgt systems.

AMERICA'S ARMY: THE STRENGTH OF THE NATION™

Ammunition Readiness

- What the program does:
  - Provides National level management, procurement and sustainment of conventional ammunition for all Services (SMCA)
  - Provides for transportation, maintenance, ammo logistics RDT&E, Army ammo safety and management of Army ammunition and management of ammunition in the Pacific theater
  - Demilitarization of obsolete/excess conventional ammunition for all Services and the development of new demil technologies
  - Safe, secure, and environmentally compliant storage of the Nation's stockpile of toxic chemical munitions pending disposal

AMERICA'S ARMY: THE STRENGTH OF THE NATION™

New Demilitarization Law Effective FY2007
Resource Recovery and Recycling (R3)

BEFORE

1. Installations execute demilitarization.
2. Salvageable material sold.
3. Proceeds sent to US Treasury.

AFTER

1. Installations execute demilitarization.
2. Salvageable material sold.
3. PM-Demil reinvest proceeds into R3 Programs.

THE LAW

The Law allows the Army to sell recyclable munitions materials resulting from demil and to reinvest the proceeds into demil Resource Recovery and Recycling (R3).

THE BENEFIT

Estimate $2-3M annually to support Demil R3 Program execution, RDTE and APE.

AMERICA'S ARMY: THE STRENGTH OF THE NATION™

Challenges

- Funding
  - OMA
    - Taking Risk in Surveillance, Stockpile Mgmt
      - Limits flexibility to redistribute
      - Increases depot release time
  - PAA - Demil
    - Growing demil stockpile creates storage inefficiencies
    - Postpones Demil to out years, more expensive
    - Reduces ability to efficiently and effectively store munitions and increases time needed to outload
- Distribution Management
  - Planning/Coordination with TRANSCOM as the Distribution Process Owner
  - Asset distribution/Visibility

AMERICA'S ARMY: THE STRENGTH OF THE NATION™

One Thing Remains Constant

The Soldier –
the Centerpiece of the Army
Living the Warrior Ethos –
on duty protecting the Nation
and the society they serve.

AMERICA'S ARMY: THE STRENGTH OF THE NATION™

Thank you for all you do to support our Soldiers

FEBRUARY 5, 2009

NDIA Munitions Executive Summit Conference 2009

RE-SHAPING THE MUNITIONS ENTERPRISE
THE VIEW FROM WALL STREET

RENAISSANCE STRATEGIC ADVISORS

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THE MACRO ENVIRONMENT

The fiscal crisis ("the black swan appeared")

- **Started as a banking/liquidity crisis, now spreading into the general economy**
    - **The liquidity crisis showing signs of abating**
    - **The economic slowdown just starting**
- **Started as a US problem, now spreading globally**

- **Key question:**
    - **Catalyst for fundamental change (let's get serious about fixing fundamental problems) or catalyst for status quo (now is not the time, deficits so big who cares if we add more)**

THE MACRO ENVIRONMENT

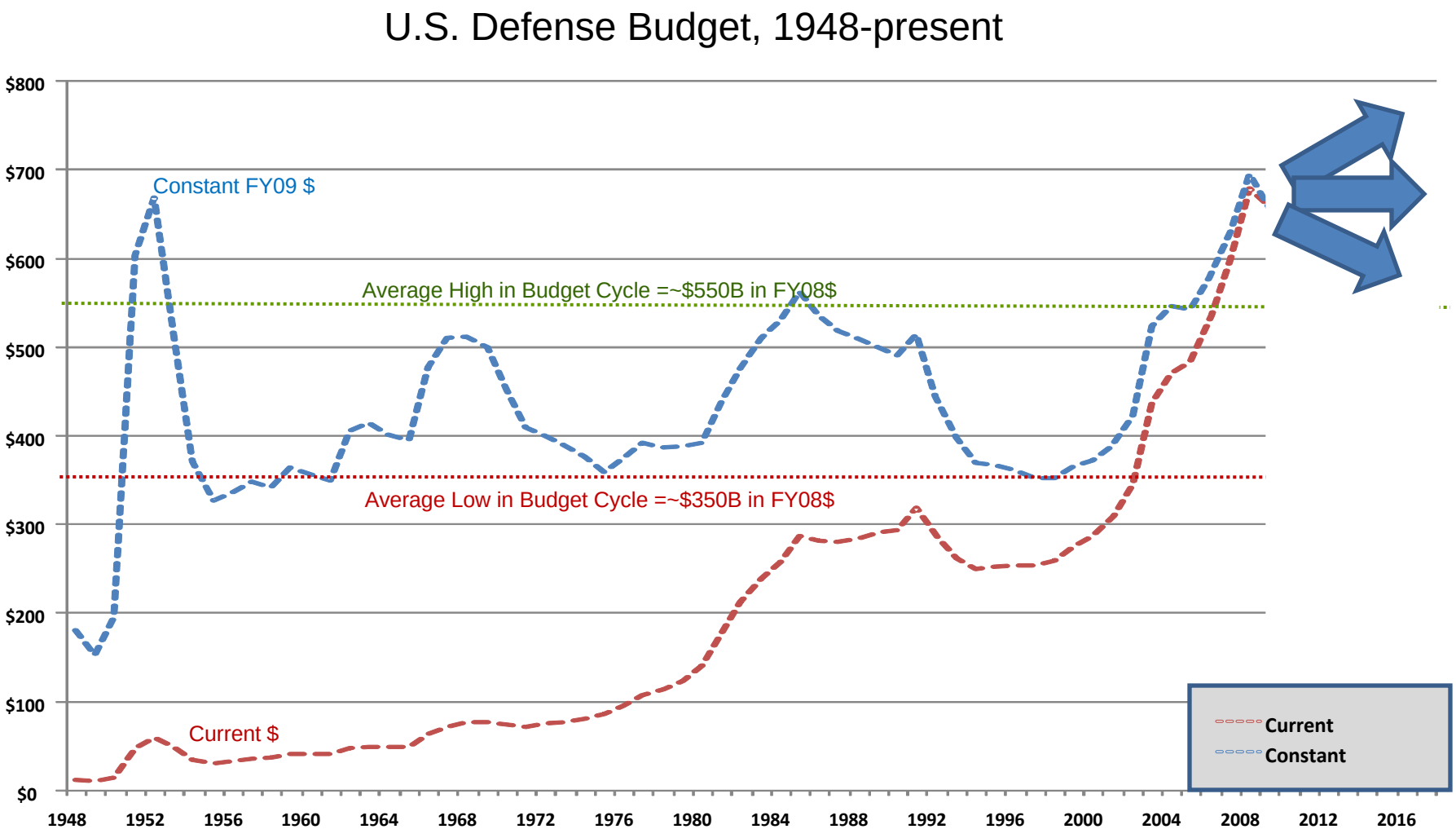
Second order consequences of the fiscal crisis

- **Slowing economies and collapsing commodity prices as drivers of global instability**

- **China relationship**

- **Fundamental rethink of role of government in economy?**

US DEFENSE BUDGETS



Source: DoD, RSAdvisors Analysis

US DEFENSE BUDGET ISSUES

- 2010 slightly up, how big are the supplementals?
- Impact of the 2009 QDR
- How much will change given the economic slowdown (catalyst for change or catalyst for status quo)
- All the trade-offs that have been discussed for last few years still present
  - Reset vs recap vs modernization
  - People vs things
  - Fight of today vs fight of tomorrow

US DEFENSE MARKET

"Bar-bell" Shaped Markets

"Slice" #1

The Long War: rapid acquisition, Off the shelf/short development, quick response is key, COCOM centric

Dissuade: very long cycle, Technology development, platform oriented but limited production, service centric

"Slice" #2

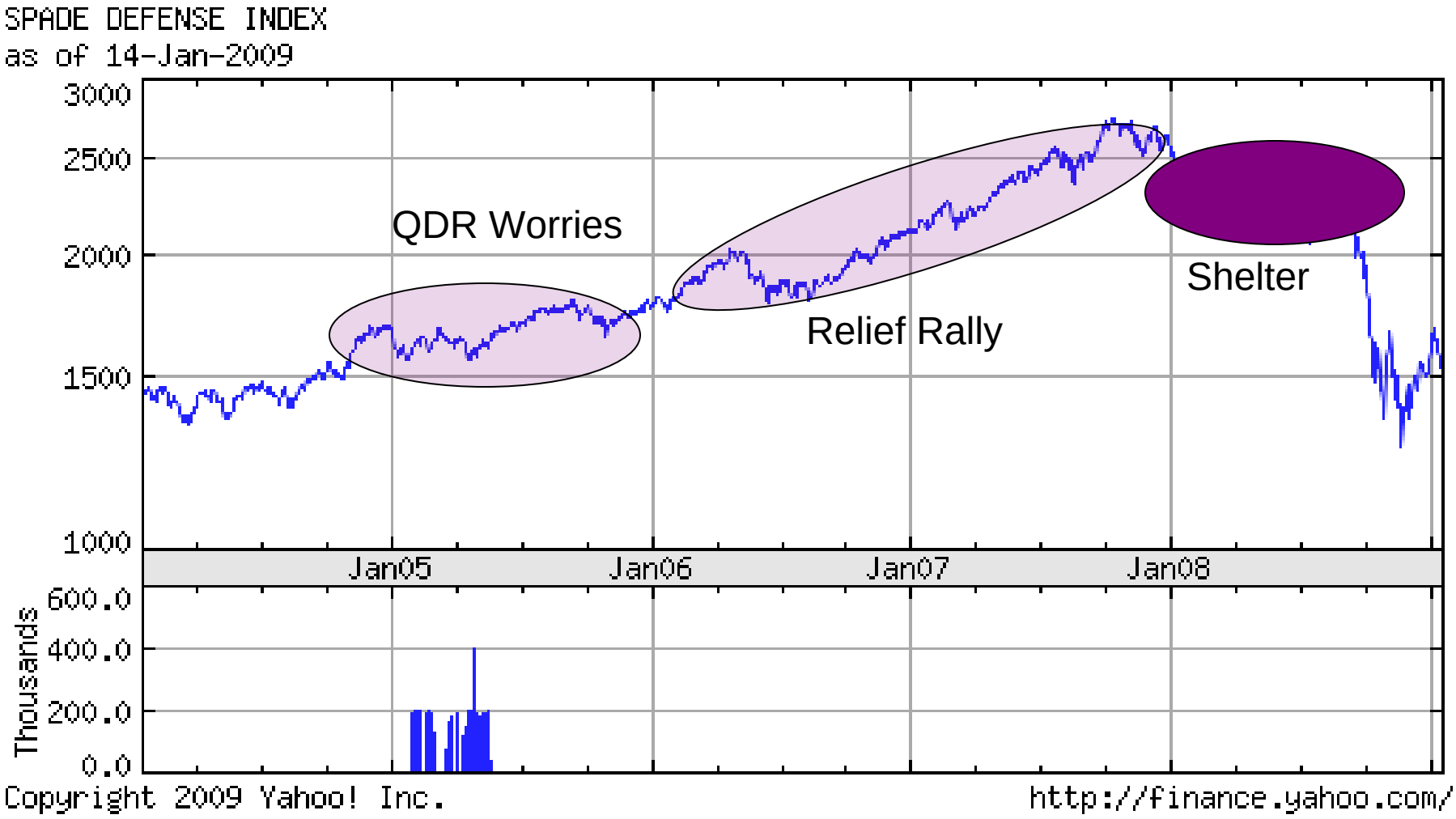
Reset/Retrofit: Install "black boxes" in existing equipment to plug into network, maintenance/repair

Transformation: Desire for large, horizontally integrating networks, leverage the IT revolution

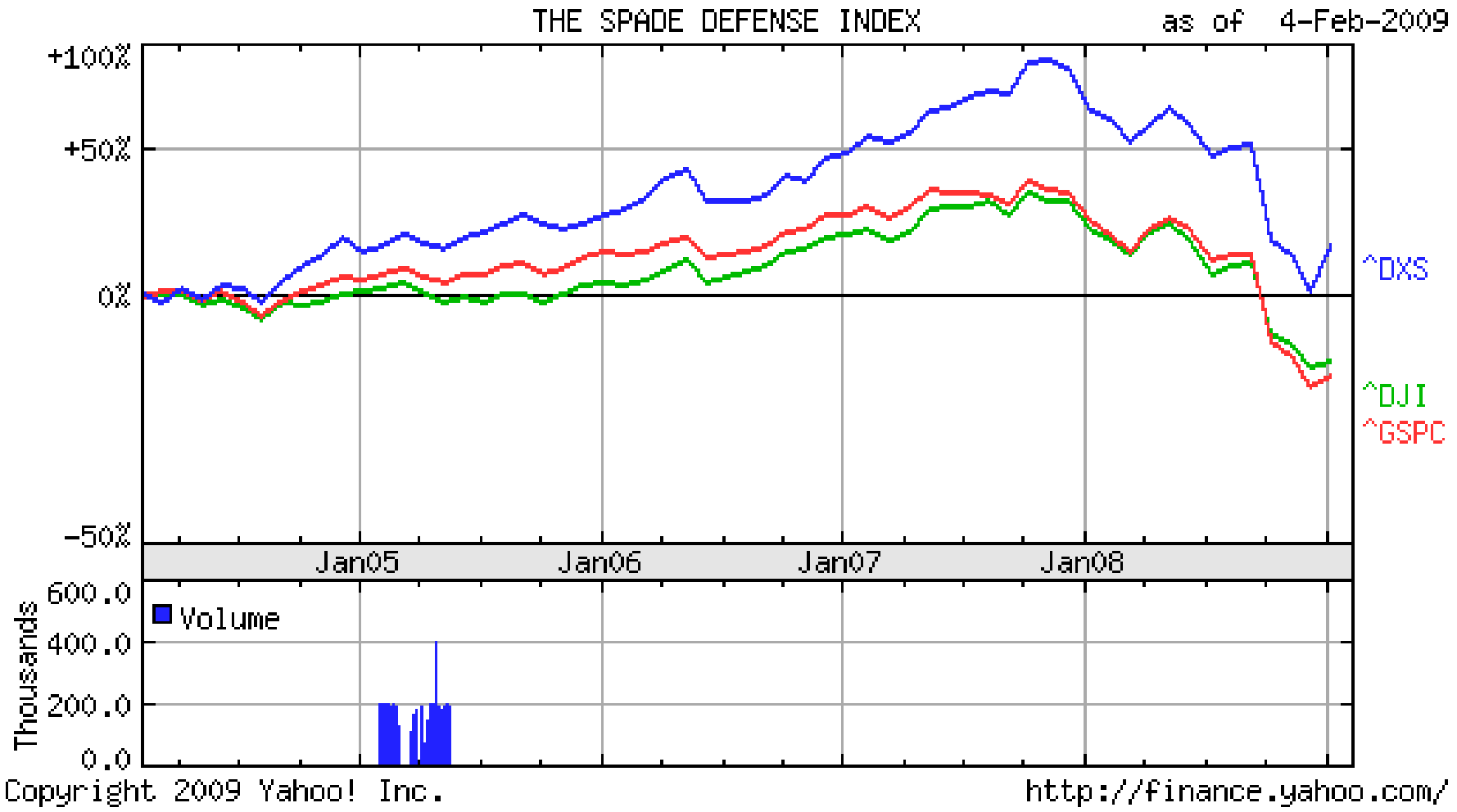
Strategic Question: How Do You Organize to Address

Is it one or two industrial bases? Can they be the same suppliers?

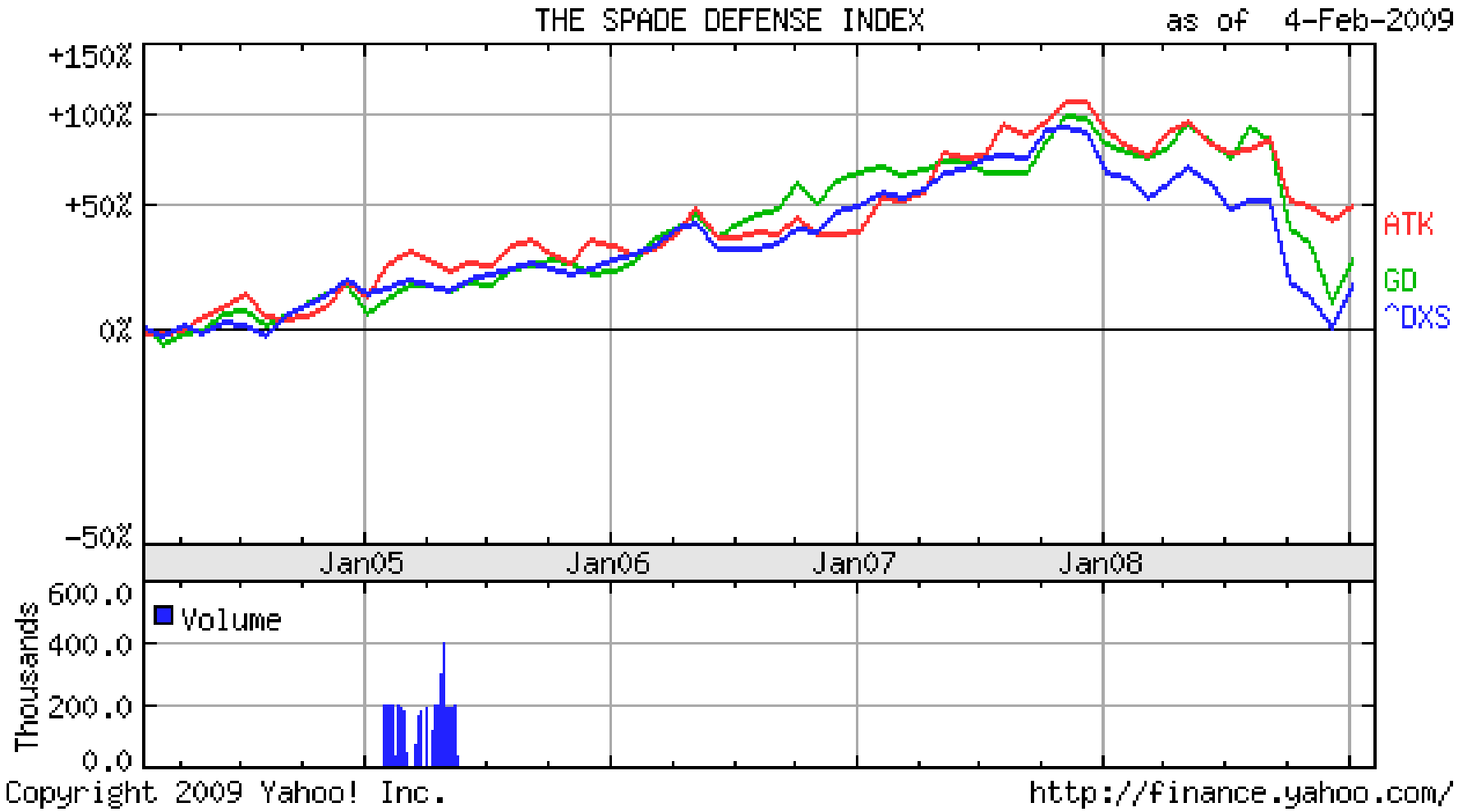
THE VIEW FROM WALL STREET



DEFENSE HAS CONTINUED TO OUTPERFORM THE MARKET



CO'S WITH EXPOSURE TO THIS MARKET HAVE HELD UP



VALUATIONS BUILDING IN A SIGNIFICANT DOWNTURN

Market Value to EBITDA

	Current	Year End 2006	Year End 2004	Cycle Range
Alliant Tech	6.6x	8.6x	10.7x	
General Dynamics	5.4x	9.1x	8.7x	
Defense Average	5.9x	8.7x	9.3x	4 - 10x

Sources: JPMorgan, Credit Suisse, Cowen

INVESTOR ISSUES

- What will happen to budgets
- What will happen to supplementals and who has exposure
- Pension accounting
- Where will the industry find growth
- How will it deploy cash
- Will “acquisition reform” hurt margins

MULTI-DISCIPLINARY

FOCUSED

EXPERIENCED

TRUSTED

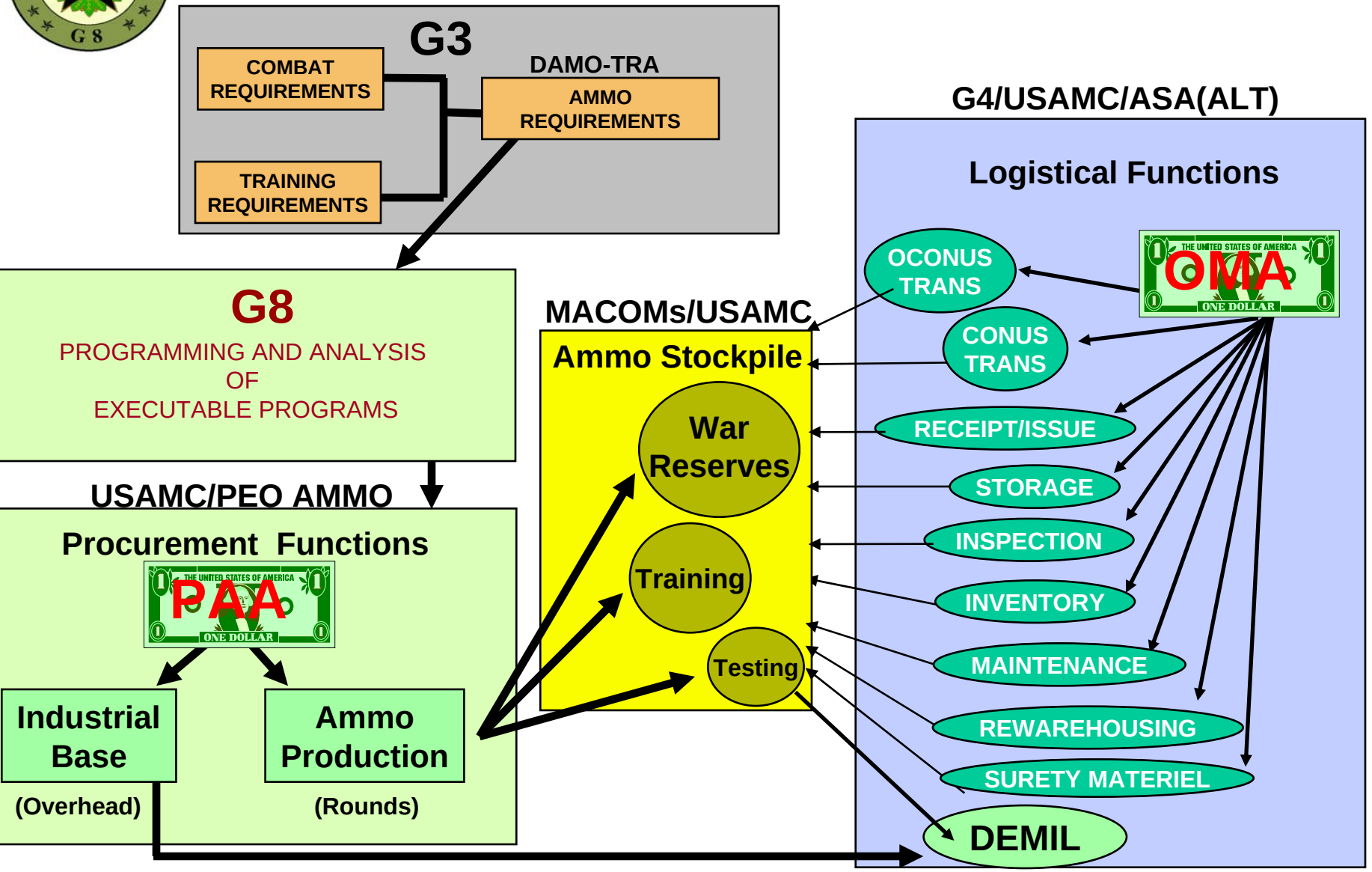
RENAISSANCE
STRATEGIC ADVISORS

AMMO FUNDING 101

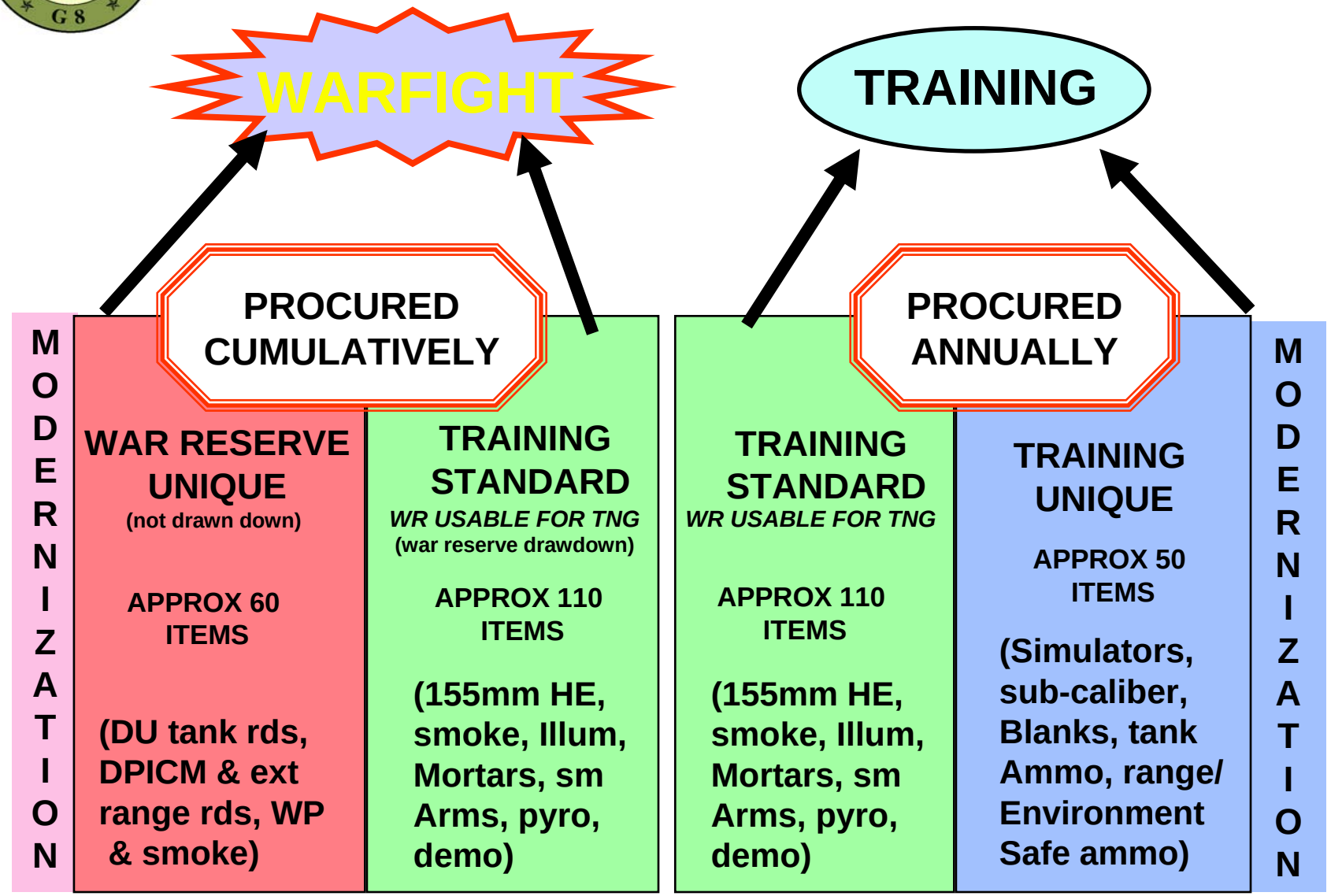
Mr. Don Chrans
Army G8 / FDX Munitions Division

February 2009

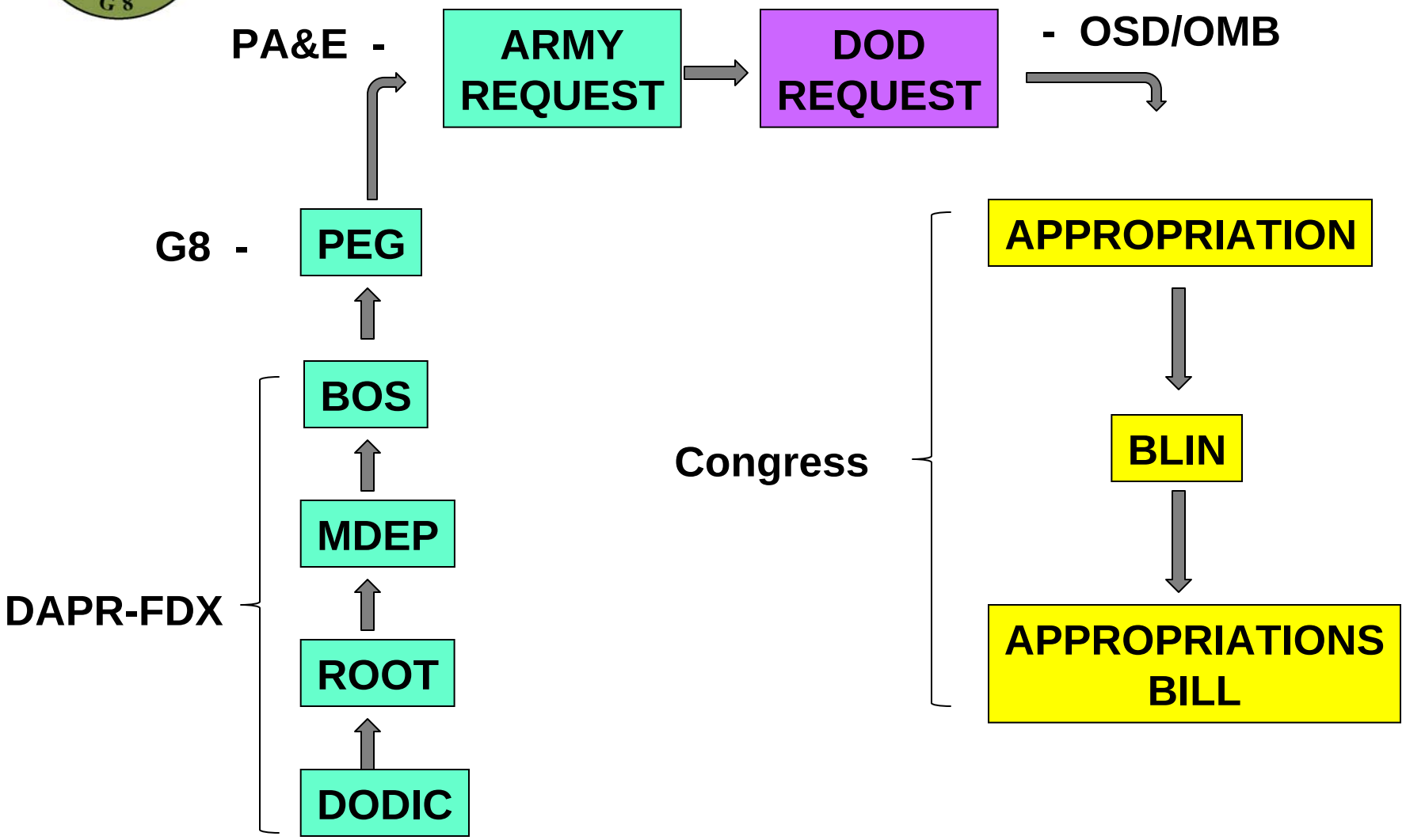
How Ammo Works



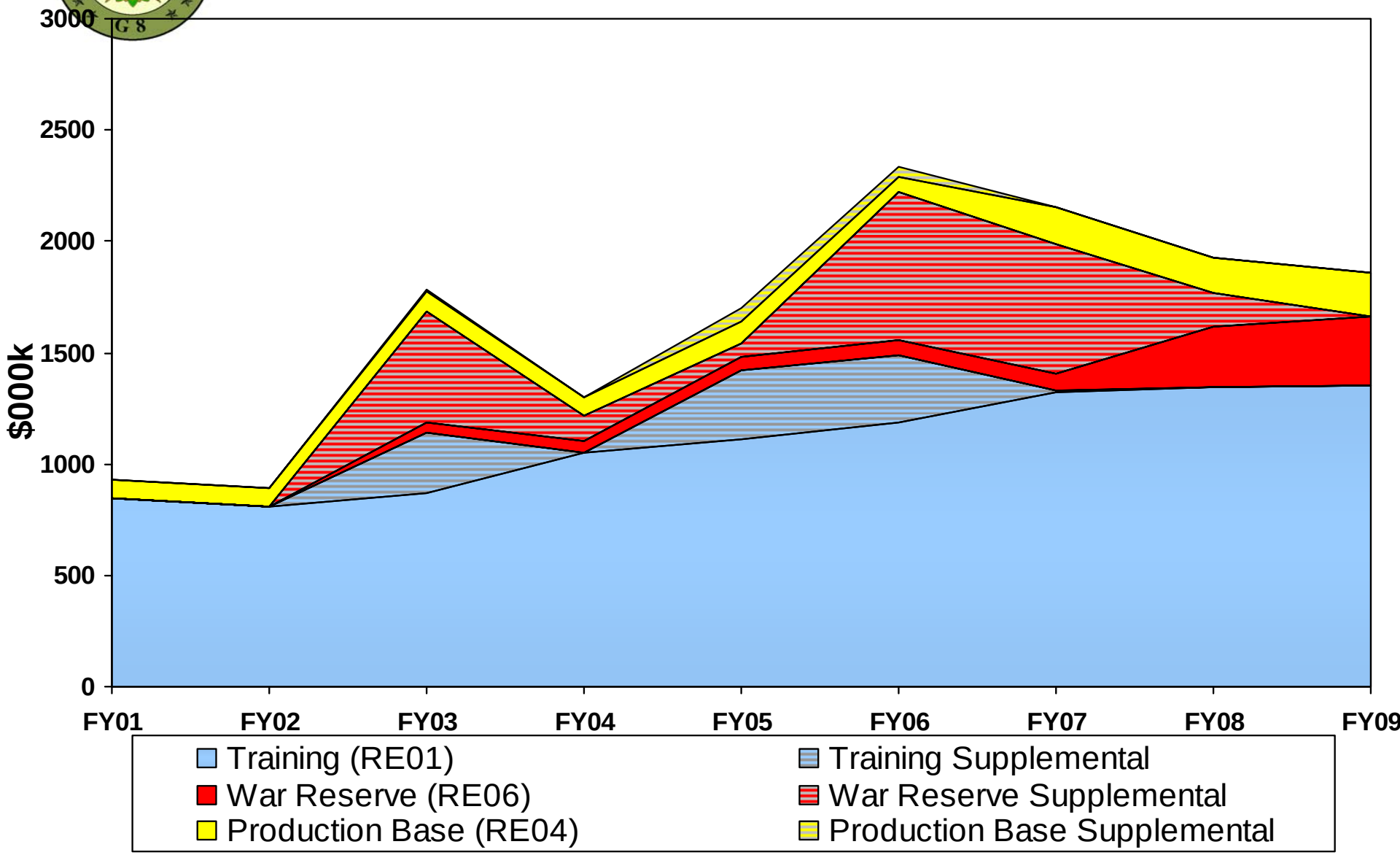
Ammunition Categories



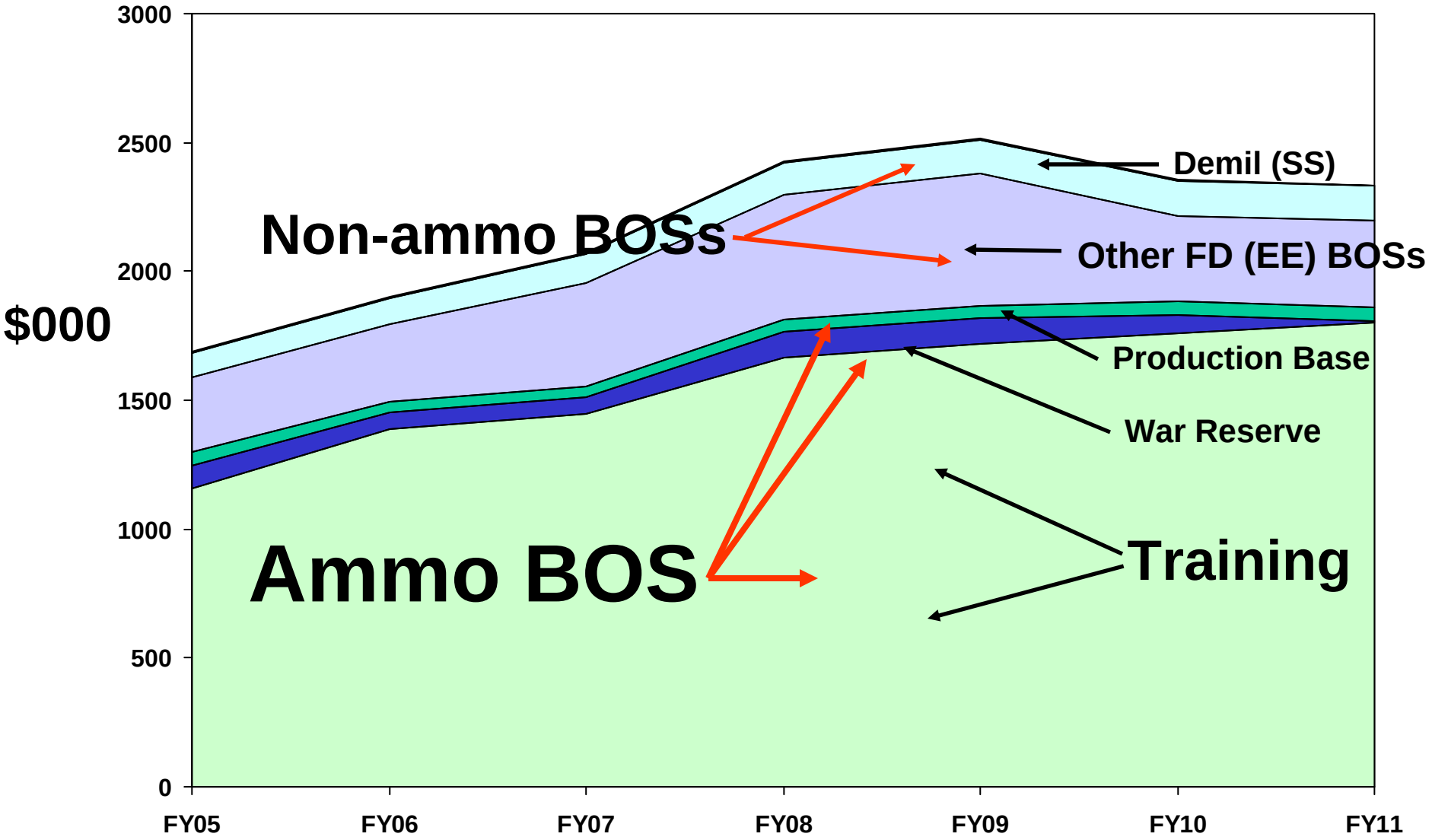
Terminology Differences



AMMO FY01-09 Funding by MDEP
Ammunition BOS - PAA



Total Ammunition (PAA) Picture



AMMO FUNDING
FY08 Base Budget

	Root	Request	Appropriated	Delta	Reason for Delta
BASE	AIRCRAFT LAUNCHED AMMO	21,759	21,759	0	
	AMMO PRODUCTION BASE	155,506	173,706	18,200	Provision of Industrial Facilities 18,200
	AMMUNITION SUPPORT	41,744	44,944	3,200	Ammunition Peculiar Equipment
	APL-A	51,876	51,876	0	
	ARTILLERY AMMO	197,040	197,040	0	
	AVIATION FLARES	166,387	166,387	0	
	DEMOLITIONS	30,945	34,145	3,200	Magneto Inductive Remote Activation transferred from OPA
	EXCALIBUR	28,781	28,781	0	
	GRENADES	72,392	76,392	4,000	Smoke Grenades
	HYDRA ROCKET	137,861	137,861	0	
	MEDIUM CALIBER AMMO	237,747	237,747	0	
	MGS-STRYKER AMMO	6,112	6,112	0	
	MINES	7,313	7,313	0	
	MORTAR AMMO	171,887	173,487	1,600	60mm practice M769
	NON-LETHAL AMMO	2,992	2,992	0	
	PROTECTIVE SYSTEMS	22,249	22,249	0	
	SHOULDER FIRED ROCKETS	29,453	31,853	2,400	Bunker Defeat Munition
	SIGNAL MUNITIONS	29,718	29,718	0	
	SMALL CALIBER AMMO	441,217	441,217	0	
	SPECIAL AMMUNITION	13,715	13,715	0	
	TANK MAIN GUN AMMO	141,337	141,337	0	
	TANK-ABRAMS AMMO	47,289	47,289	0	
Grand Total		**2,055,320**	**2,087,920**	**32,600**	

AMMO FUNDING
FY09 Base Budget

	Root	Request	Appropriated	Delta	Reason for Delta
BASE	AIRCRAFT LAUNCHED AMMO	79,066	75,766	-3,300	30mm Unjustified Cost Growth
	AMMO PRODUCTION BASE	201,106	207,526	6,420	Projects at HSAAP, SCAAP, RFAAP, and Blue Grass
	AMMUNITION SUPPORT	41,449	41,449		
	APL-A	52,000	52,000		
	ARTILLERY AMMO	177,598	179,198	1,600	155mm all types
	AVIATION FLARES	74,696	74,696		
	DEMOLITIONS	28,886	32,086	3,200	Rapid Wall Breaching Kit (RWBK)
	EXCALIBUR	34,220	34,220		
	GRENADES	71,608	77,208	5,600	Thermite Grenades, Smoke Grenades
	HYDRA ROCKET	142,521	142,521		
	MEDIUM CALIBER AMMO	308,064	306,364	-1,700	25mm Unjustified Cost Growth
	MGS-STRYKER AMMO	7,662	7,662		
	MINES	7,452	7,452		
	MORTAR AMMO	193,177	201,577	8,400	Various Rounds, $1.2M 105mm HEP
	PGK	15,633	15,633		
	NON-LETHAL AMMO	3,324	3,324		
	PROTECTIVE SYSTEMS	17,869	17,869		
	SHOULDER FIRED ROCKETS	29,638	29,638		
	SIGNAL MUNITIONS	34,688	34,688		
	SMALL CALIBER AMMO	444,782	436,169	-8,613	.50 cal all types, Unjustified Cost Growth
	SPECIAL AMMUNITION	6,843	6,843		
	TANK MAIN GUN AMMO	125,151	125,151		
	TANK-ABRAMS AMMO	34,031	34,031		
Grand Total		2,131,464	2,143,071	11,607	

Ammo Procurement Summary

Ammo Funding is a Balancing Act

- **Training**
  - **Provide enough ammo for units to train**
  - **Buy enough ammo to replenish what is expended**

- **War and Operations**
  - **SUSTAIN SOLDIERS IN CURRENT OPERATIONS**
  - **Replenish stocks expended in operations**
  - **Build/Replenish War Reserve stocks**
  - **Modernize stocks in the process**

- **Industrial Base**
  - **Replace/Upgrade/Repair organic capabilities**
  - **Transition to efficiency upgrades**
  - **Ramp down production to avoid sharp changes**

- **Challenge is to adapt to change while minimizing impacts**

American Iron and Steel Institute

Commodity Spotlight: North American Steel Industry

Gregory L. Crawford
NDIA 2009 Munitions Executive Summit
New Orleans, LA
February 4, 2009

The New Steel

American Iron and Steel Institute

North American Steel Industry

- Globally Competitive
- Strategically Aligned: Defense, Economy
- Leader in Technology Deployment
- Investment in Market Development
- Sustainable/Environmentally Responsible

North American Steel Industry

<u>Integrated Mills</u>

- Basic Oxygen Furnace
- Iron Ore-Based
- Centralized
- Flat-Rolled Sheet

<u>Mini-Mills</u>

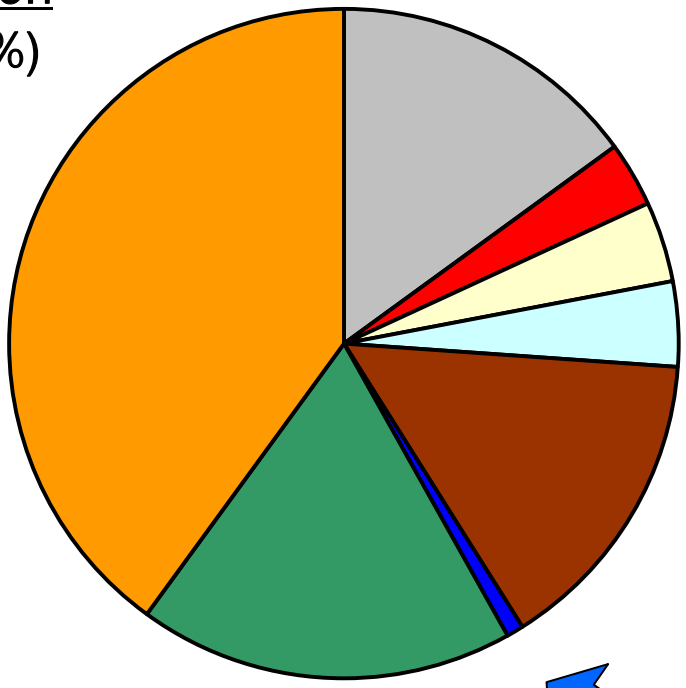
- Electric Arc Furnace
- Scrap-Based
- Regional
- Long, Heavy Shapes

AISI's member companies represent 75% of U.S. raw steel production.

North American Steel Mills

American Iron and Steel Institute

Steel-Consuming Markets



All Others (15%)

Construction (40% - 45%)

Appliances, Office Furniture (2.5%)

Containers (4%)

Energy (4%)

122 MT/Year Including 20% Imports

Industrial Equipment (15% - 18%)

Autos (18% - 20%)

Defense (<1%)

Source: C. Plummer, Metals Strategies Inc.

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Steel Applications: National Security

I. Homeland Security

- Transportation (Bridges, Roads, Airports, Rail)
- Energy Distribution
- Water Distribution
- Public Health/Safety
- Commerce

II. Military

- Armored Vehicles
- Ships/Aircraft
- Weaponry/Projectiles and Other Ordnance
- Logistical Support

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Steel Applications: Major Defense Procurement

Abrams Tanks (M1)	22 tons each
Stryker Light Armored Vehicle	8 tons each
Bradley (M2)	6 tons each
Aircraft Carrier	50,000 tons each
Submarine (Trident)	10,000 tons each
LPD Amphibious Force Ship	12,000 tons each
Guided Missile Destroyers (DDG)	500 tons each

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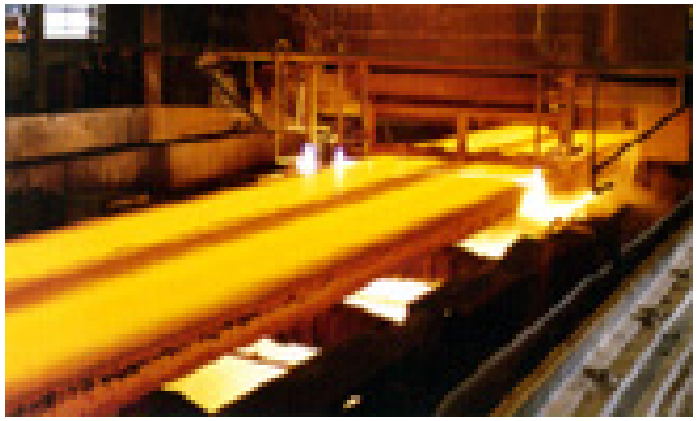
Steel Demand: Munitions

- Capabilities of Steel Producers in the U.S.
  - Rounds (≤ 9”), RCS (≤ 8”)
- Grades:
  - Mild Steel Grades: 1046, 1045
  - Alloy Grades: 4130, 4140, 4340, 4135
  - High Carbon Grades: HF-1, 52100
- Processing:
  - Tighter Tolerances
  - Improved Surface Qualities
  - Hot Forging
  - Spherodizing

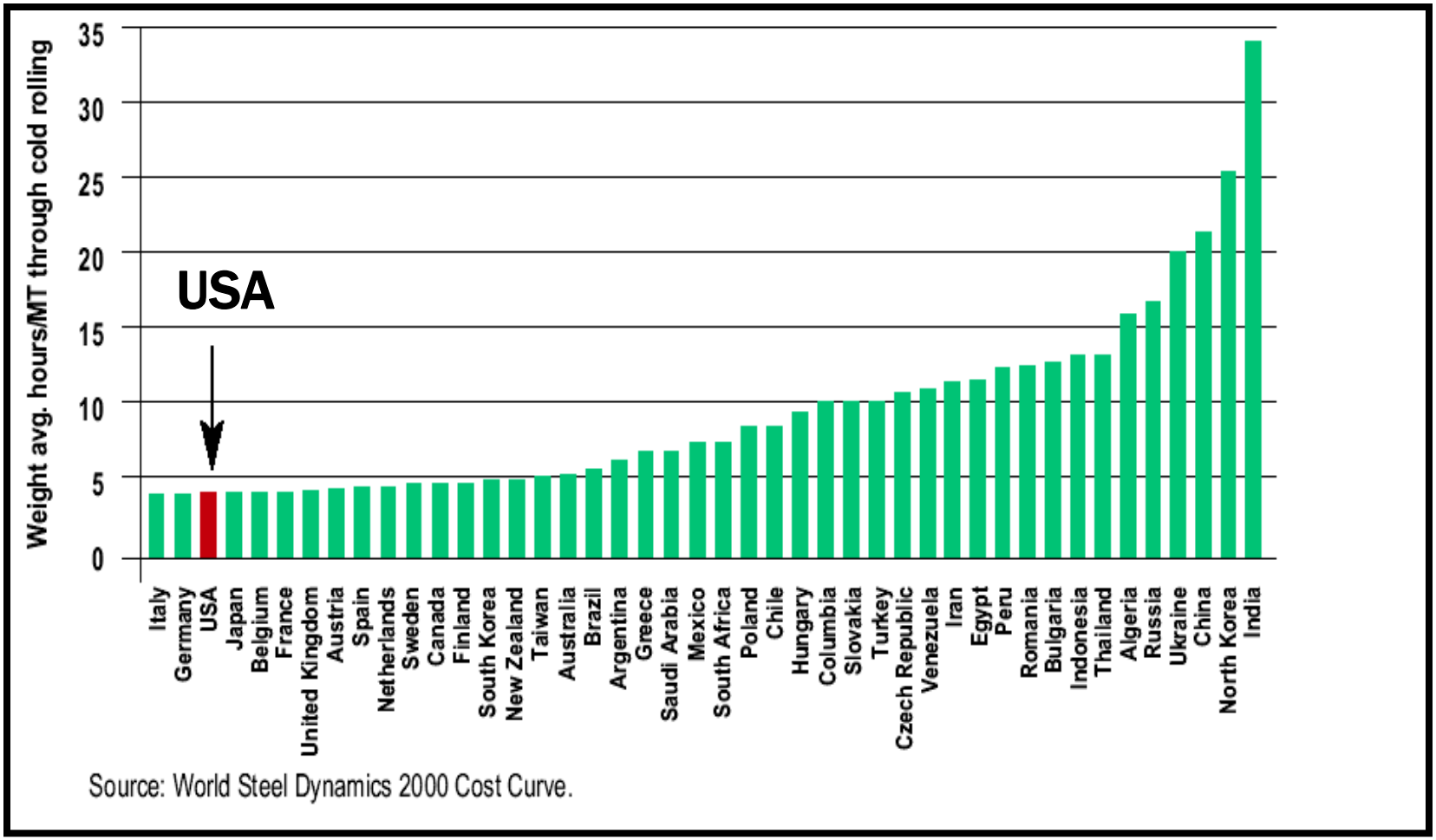
Steel Investment: >$60 Billion since 1990



- Quality
- Productivity
- Cost
- Energy/Environment

Productivity: More Than Tripled Since 1980s

USA Steel Industry Labor Efficiency



USA Steel Mill Employment: 125,000

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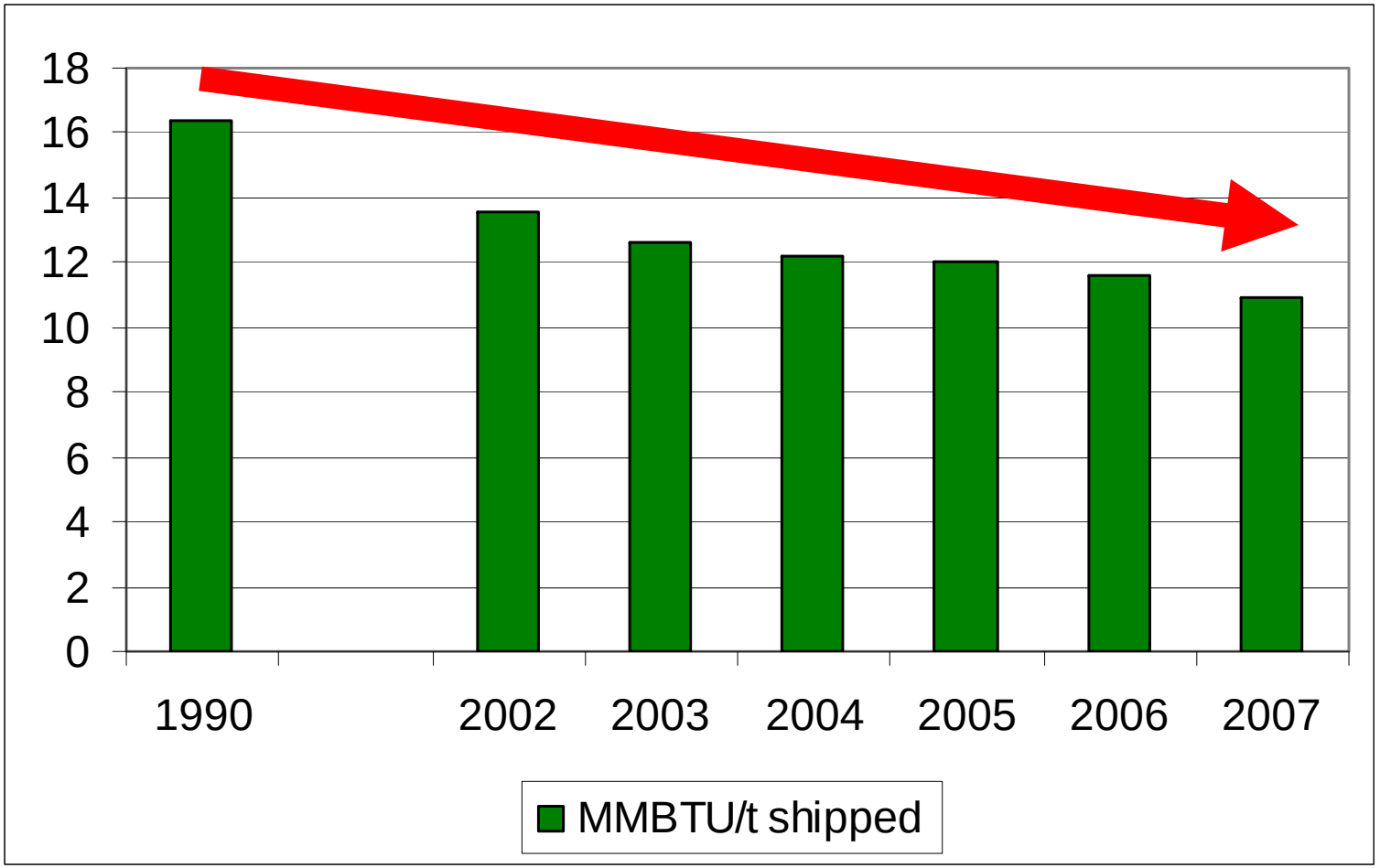
Steel Industry: Reduction in Energy Use



- 33% Less Energy Use Since 1990
- 19% Less Energy Use Since 2002

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Steel Industry: Environmentally Responsible

- Air and Water Emissions: 90% Reduction
- Kyoto Target: >7% GHG Reduction, 1990-2012
- Steel Scrap Recycled in U.S. in 2007: 78.2% (over 82 million tons, highest ever)
- www.sustainable-steel.org

Steel Recycling Institute

STEEL THE EnviroMetal

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Steel Technology And Manufacturing

- DoE R&D “Roadmaps”
- Material Properties (AHSS)
- Third-Generation Steels
- Coatings Technologies
- Competing Materials

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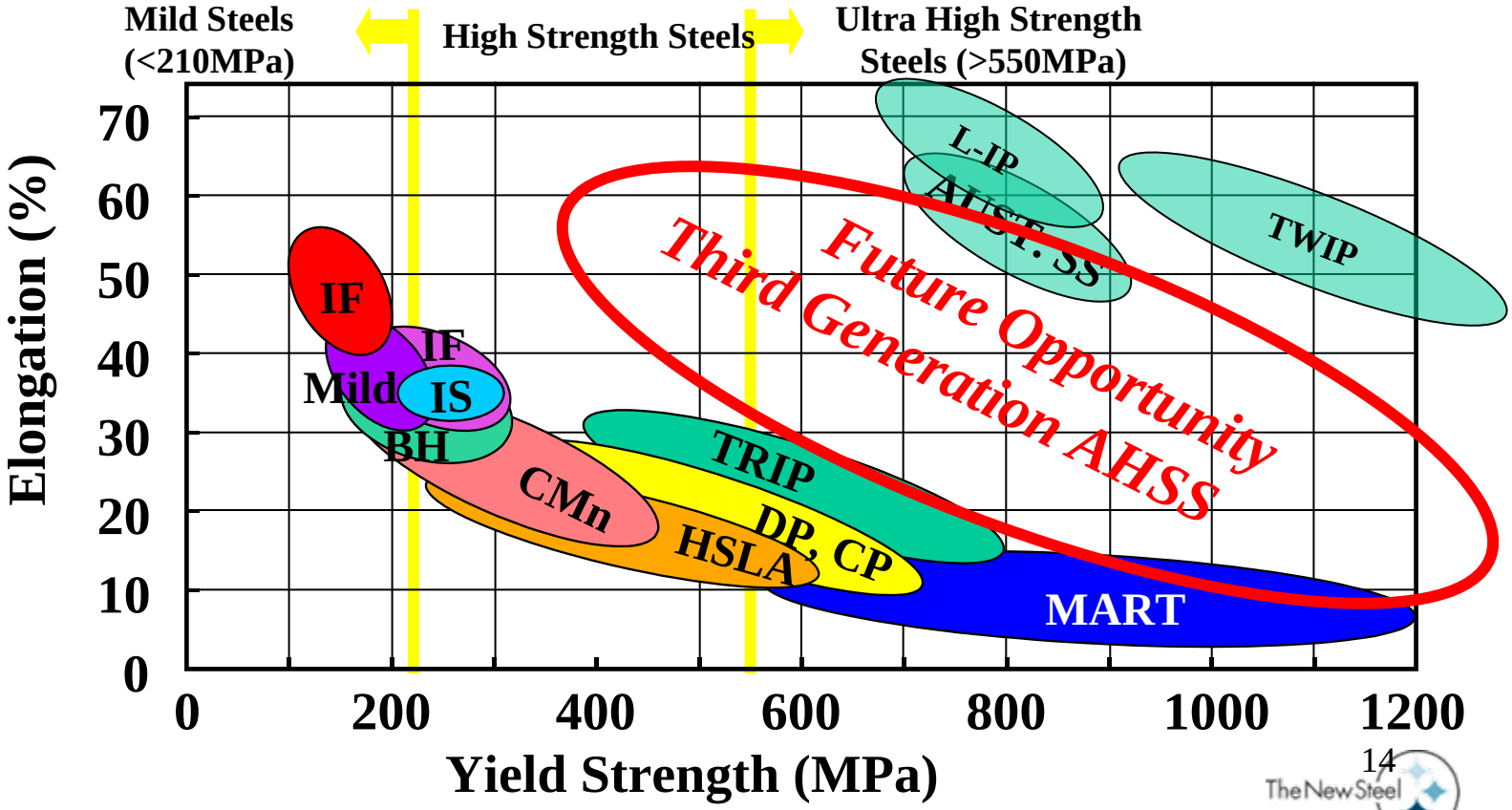
Today's Steel Products

- Durability, Strength, Composites
- Over 2,000 Steel Specifications
- Automotive = 50% New Products



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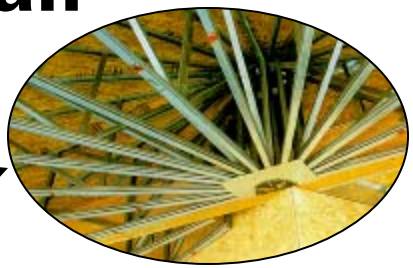
Steel Market Development Strategic Plan



- Competing Materials
- Protecting Investment

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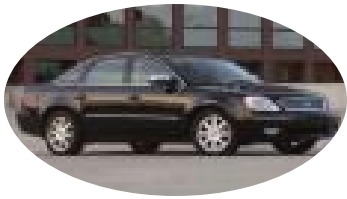
Steel and Defense Industries Collaboration – Tactical Vehicle

IMPACT – U.S. Army (TACOM)

IMPACT

Objectives:

- Commercial-Based Tactical Truck
- Develop Near-Term, Low-Cost Fuel Economy/Environmental Technologies
- Achieve 25% Weight Reduction



Ford

U.S. Army/Ford/AISI

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Steel and Defense Industries Collaboration – High-Performance Steels

Transportation Infrastructure

Partnership - HPS for Bridges

- U.S. Navy
- FHWA
- AISI

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Major Challenges Facing Steel Industry and DOD

- Cost of Raw Materials
- Access to Capital
- Mergers/Acquisitions
- Import Share/Surges
- Impact of China et al.
- Global Demand
- Exchange Rates
- Mil Specs/Technology/Procurement

Trade

Climate Change

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Globalization of Steel Industry

- Foreign Investment/Ownership
- USA Mergers and Acquisitions
  - ArcelorMittal (Luxembourg)
  - Severstal (Russia)
  - Evraz (Russia)
  - SSAB (Sweden)
  - Gerdau Ameristeel (Brazil)
- Domestically Incorporated
- Regional Market Priority

American Iron and Steel Institute

Global Demand: Raw Materials

Cost Drivers Impacting Steel Prices

- Scrap (300%, China Demand)
- Coke (Import, W.V. Coal Mine)
- Iron Ore (China Demand)
- Energy Costs (78% Increase Since 2002)

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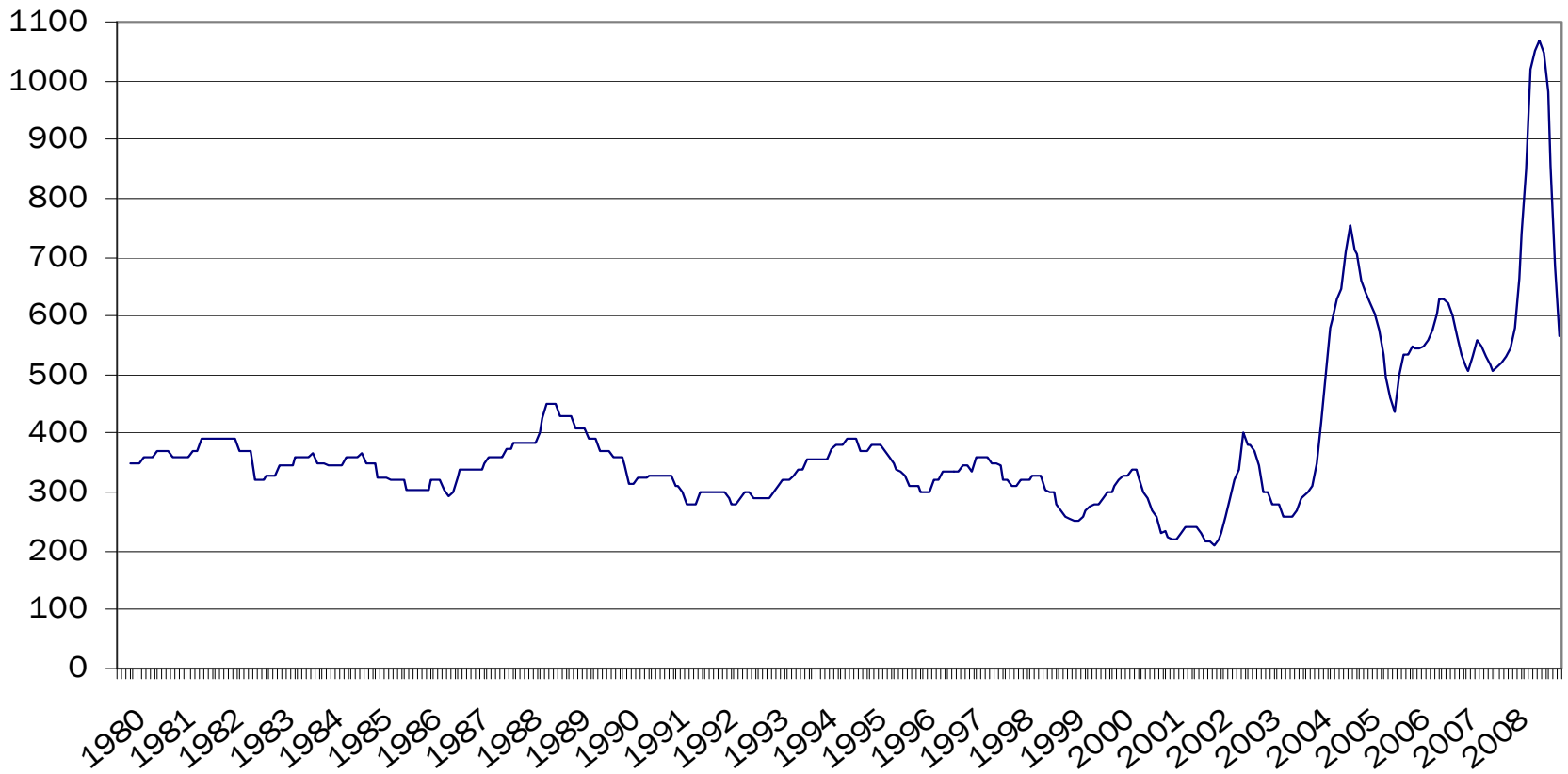
Purchasing Magazine Transaction Price for Steel, Hot-Rolled Sheet, Midwest Market Average, $/Ton January 1980 - December 2008



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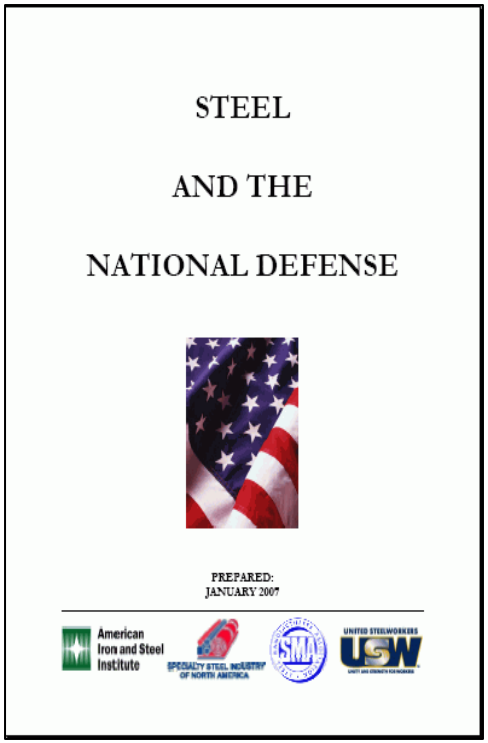
Steel and Defense Industries: Working Together

- National Defense
- Economic Stability
- Homeland Security
- Domestic Preference
- <u>Buy American</u>
  - Domestic Incentive
  - Production Disruption
  - Availability/“Kick Out Clause”



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American Iron and Steel Institute

Commodity Spotlight: North American Steel Industry

Gregory L. Crawford
gcrawford@steel.org
www.steel.org

NDIA 2009 Munitions Executive Summit
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February 4, 2009

The New Steel

ICAP – Industrial Committee of Ammunition Producers

MISSION

To serve as a forum for interested NDIA members and other concerned parties to review and discuss issues, policies, and procedures in the ammunition arena and to examine industry and government initiatives relating to the ammunition life cycle.

- **Nine Sectors Represented on The ICAP:**

Demilitarization

GOCOs

Propellants & Explosives

Small/Medium Caliber Warheads & Rockets

Fuzes/Timers

Large Caliber/Bombs

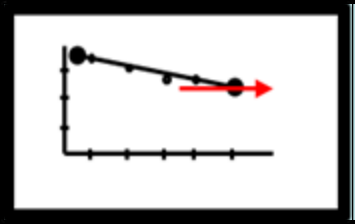
Pyrotechnics, Electronics & Sensors,

ICAP SOFT LANDING SUB-COMMITTEE CHARTER

ACHIEVE A BROAD BASED RECOGNITION THAT A CAPABLE, COMPETENT AND RESPONSIVE U.S. MUNITIONS BASE IS AN ESSENTIAL WARFIGHTER SUPPORT COMPONENT OF NATIONAL SECURITY. SUPPORT THE CONTINUED SUSTAINMENT OF THE "OBJECTIVE" MUNITIONS INDUSTRIAL BASE, TO INCLUDE BOTH COMMERCIAL AND GOVERNMENT OWNED SECTORS.

- **ADVOCATE DEFINING THE STRUCTURE AND SIZE OF THE BASE WHICH IS DERIVED FROM ANTICIPATED FUTURE REQUIREMENTS ON AN ONGOING AND SURGE BASIS.**

- **SUPPORT PROGRAMS AND RESOURCES TO SUSTAIN THE BASE, PROVIDE FOR REQUIRED MODERNIZATION, ALLOW FOR EQUILIBRIUM AND MITIGATE AGAINST A CRASH OF THE BASE.**



ICAP SUB-COMMITTEE

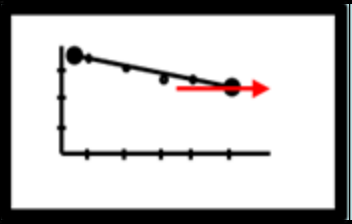
MIBTF

EBOD
A. CATANI
R. HARRIS
B. HOLMES
M. WILSON
M. DeYOUNG
D. CHURCH
M. CATIZONE
R. PALASCHAK

R. HARRIS – CHAIRMAN
B. BATES
B. HOLMES
J. HEWITT
R. PALASCHAK
J. SUTTON

MIBTF CONSTITUENCY

ICAP CONSTITUENCY

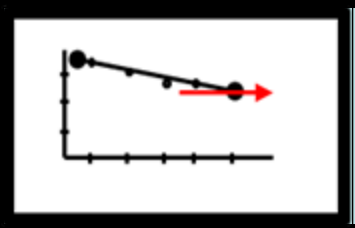


AMMUNITION INDUSTRIAL BASE
"SOFT LANDING" SUB-COMMITTEE (SLSC)

Soft Landing Sub-Committee

OBJECTIVES

- EARLY AWARENESS OF THE ISSUE.
- FACILITATE SHORT AND LONG-TERM STRATEGIES TO MITIGATE A PRECIPITOUS DROP IN AMMUNITION PROCUREMENT BUDGETS AND THE RESULTANT AFFECT ON THE INDUSTRIAL BASE.
- FOSTER A COMMUNICATION LINKAGE FOR THE VARIOUS COMPANIES, COMMANDS AND ORGANIZATIONS IN THE AMMUNITION INDUSTRIAL BASE WITH RESPECT TO THE "SOFT LANDING."



EARLY AWARENESS OF THE ISSUE

ACTIONS COMPLETED TO DATE:

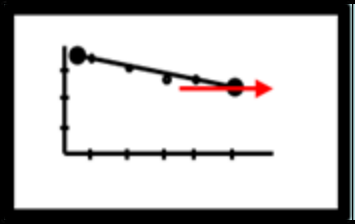
1. **MIBTF WHITE PAPER PREPARED BY R. PALASCHAK ENTITLED "ENSURING A CAPABLE, COMPETENT AND RESPONSIVE U.S. MUNITIONS INDUSTRIAL BASE."**

2. **NDIA ACTIONS:**

   a. INCLUDED IN NDIA TOP ISSUES 2007, 2008, 2009.

   b. ARTICLE IN JUNE 2007 NATIONAL DEFENSE MAGAZINE "MUNITIONS INDUSTRIAL BASE: TROUBLE ON THE HORIZON" BY B. HOLMES AND R. SERAPHIN.

   c. ARTICLE IN MAY 2008 NATIONAL DEFENSE MAGAZINE "DEFENSE INDUSTRIAL BASE: PLANS NEEDED TO ENSURE SOFT LANDING."

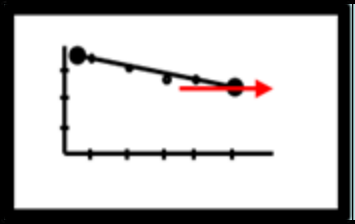


EARLY AWARENESS OF THE ISSUE

3. A SERIES OF BRIEFINGS HAVE OCCURRED BY RICH PALASCHAK OF THE MIBTF.

- GENERAL GRIFFIN (29 JULY 2008)
- BG WYCHE (7 OCTOBER 2008)
- ICAP (9 OCTOBER 2008)
- EXECUTIVE COMMITTEE JOCG (16 DECEMBER 2008)
- LTG PILLSBURY (14 JANUARY 2009)
- JOCG (5 FEBRUARY 2009)

4. CURRENTLY WORKING WITH AUSA's INSTITUTE OF NATIONAL SECURITY STUDIES IN PREPARATION OF A LAND WARFARE ESSAY ON THE AMMUNITION INDUSTRY SOFT LANDING.

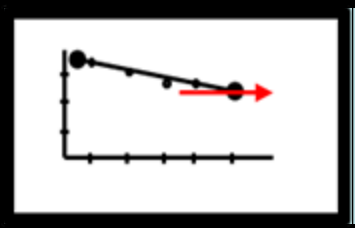


FACILITATE SHORT AND LONG-TERM STRATEGIES

- **THE COMMITTEE RECOMMENDED THAT THE INDUSTRIAL BASE SOURCING STUDY (IBSS) SUPPORTED BY THE INDUSTRIAL BASE ASSESSMENT TOOL (IBAT) BE USED TO DEFINE THE OBJECTIVE MUNITIONS INDUSTRIAL BASE.**

- **THESE STUDIES ARE NOW BEEN COMPLETE.**

- **THE UTILIZATION AND ADVOCACY OF THIS CONCEPT (Including Congressional Support) TO MAINTAIN A RESPONSIVE AND CAPABLE AMMUNITION INDUSTRIAL BASE IS AN ONGOING EFFORT.**



FOSTER COMMUNICATION ON THE ISSUE

- **THE FOLLOWING QUOTE WAS PROVIDED BY LTG LAWRENCE P. FARRELL (RET), PRESIDENT OF THE NDIA, IN THE MAY 2008 ISSUE OF NATIONAL DEFENSE:**

"The Industrial Committee of Ammunition Producers (ICAP) has created a "Soft Landing Sub-Committee," which joined forces with the Joint Munitions Command and Program Executive Office for Ammunition to study the issue in depth and to devise both short and long-term strategies to deal with the coming budget reductions. The Subcommittee has thus far fostered improved communication between companies in this sector and government."

"We should applaud this initiative. It is an example of how other sectors in the industrial base should respond. If the U.S. military is to remain in the lead on the battlefield, the nation must retain the industrial capacity to continue to produce the best systems in the world. Technology is our edge. That requires critical industrial skills, world-class design teams, top notch production facilities and processes."

Munitions Executive Summit Conference 2009

By Edgar Fossheim
President & CEO
Nammo Group

Industry Keynote

- Nammo, A Special Solutions Provider
- The Market
- Why is USA important?
  - Is Nammo important to the US?
- The Nammo Approach
  - Examples of present and future Nammo products in the US
- Future Needs
- How will the Munitions Business Develop?

PRECISION PEOPLE TECHNOLOGY

Nammo, A Special Solutions Provider!

”Our way to success is to ensure that the soldiers on the battlefield have the best ammunition available to be successful

Our focus is always

Accuracy and superior terminal effects!”

Nammo

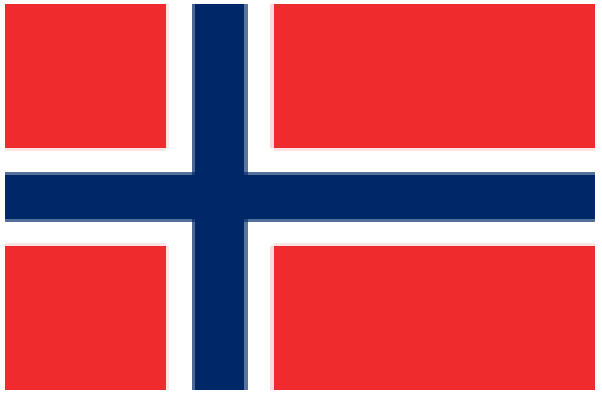
Nammo Intro

PRECISION PEOPLE TECHNOLOGY

Ownership

- 50% - 50% between:

MINISTRY OF TRADE AND INDUSTRY



Patria

Nammo

PRECISION PEOPLE TECHNOLOGY

Nammo In Brief

- 1800 Employees
- 17 Production Facilities in 6 Countries
- Sales approx. 500 Million USD
- 71% Export outside Finland, Sweden and Norway (2007)
- 38% Sales to North America (US/Canada)
- Core Business:
  - Ammunition, Shoulder Fired Weapon Systems, Rocket motors, Demilitarization

PRECISION PEOPLE TECHNOLOGY

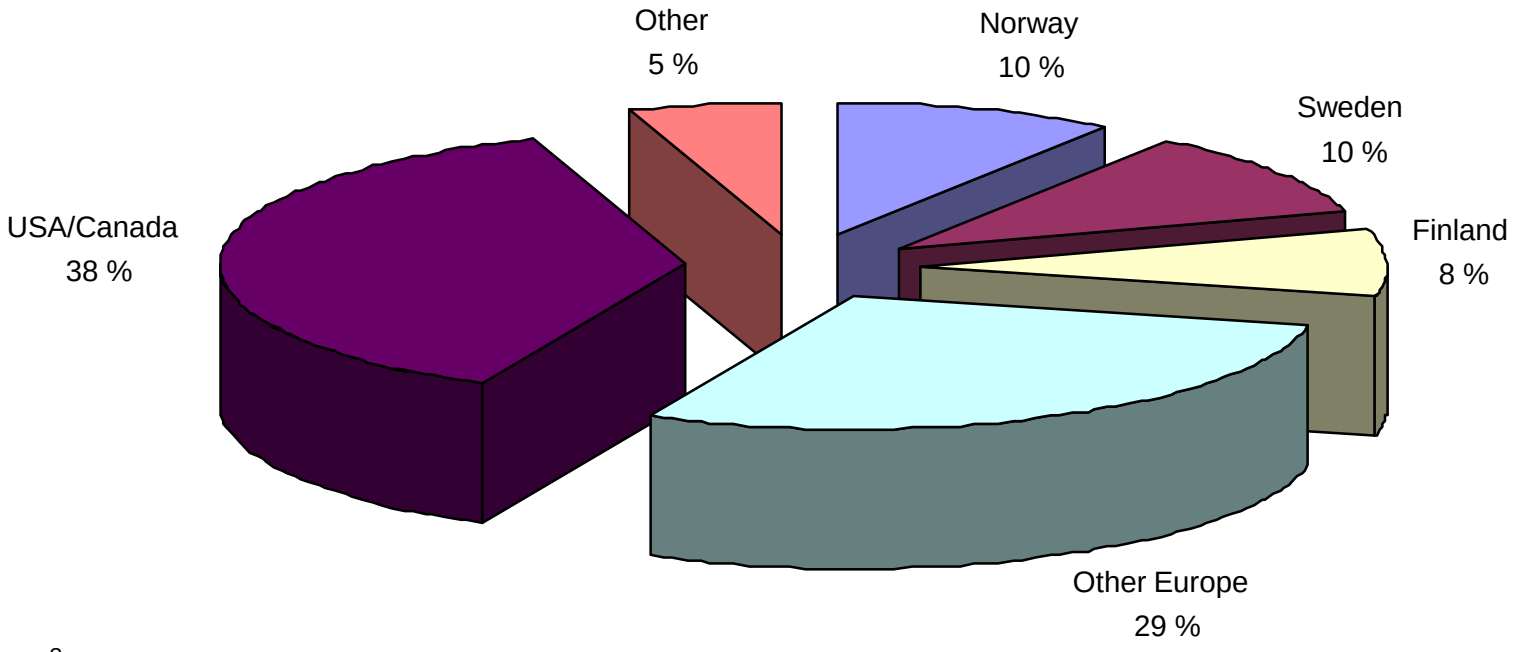
How do we like to operate?

PRECISION PEOPLE TECHNOLOGY

Sales

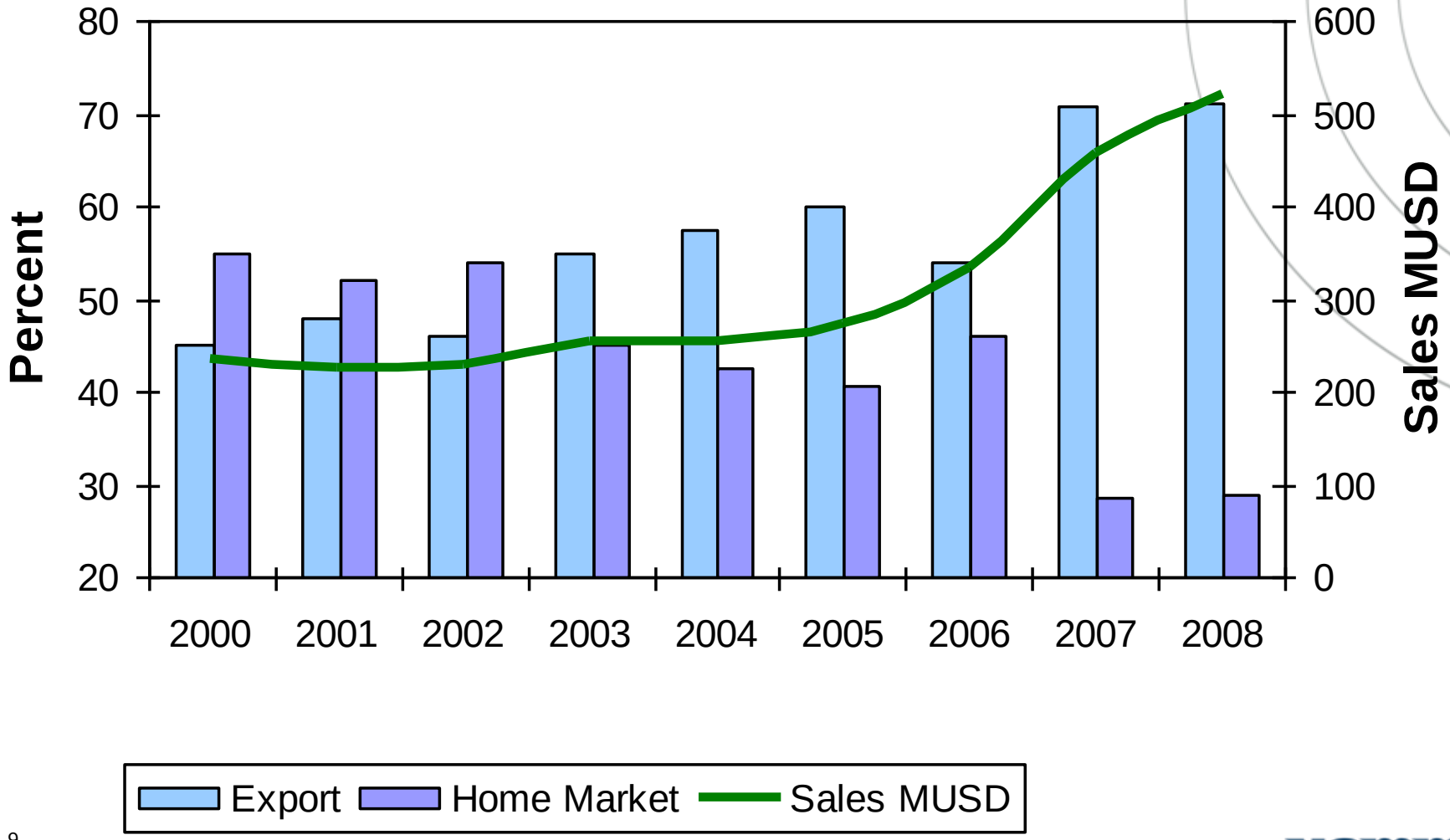
Total 500 MUSD

Distribution 2007



PRECISION PEOPLE TECHNOLOGY

Sales and Home Market / Export



PRECISION PEOPLE TECHNOLOGY

Strong Position in The Nordic Home Market

- Fundamental for new product developments
  - Governmental funding for R&D
  - Major new Joint Nordic Programs for Artillery and Mortar Systems
- A Total Supplier of Small Caliber
- Dominant in Medium and Large Caliber
- Major Player in Missile Programs
- Demilitarization
- Life Cycle Support

PRECISION PEOPLE TECHNOLOGY

Worldwide Cooperation and Alliances

KONGSBERG

Nammo

PRECISION PEOPLE TECHNOLOGY

Obstacles and Hurdles to Overcome

- Several levels of regulatory compliance
  - National Export Regulations
    - Controlling which technology can be exported and to which country
  - International Traffic in Arms Regulations (ITAR)
    - Controlling the import and export of defense articles
  - Special Security Agreement (SSA)
    - Required for a US Company operating under foreign ownership
  - Technical Assistant Agreement/Manufacturing License Agreement
    - Time consuming and complicated
  - Intellectual Property Rights (IPR)
    - Risks for both parties
- In spite of all this, why is it still worthwhile…

PRECISION PEOPLE TECHNOLOGY

"There is at least one thing worse than fighting with allies
– And that is to fight without them“

Sir Winston S. Churchill

Nammo

Why is USA important?

- Biggest and most important market in the world
- A market where the customer and the industry communicates at an equal level
- Leader in implementation of new technologies
- A great reference in the world market

PRECISION PEOPLE TECHNOLOGY

The Nammo Approach

- Focus on High End Niche Products
- Close Dialog with the Users
- FCT Programs
- A Partner with US Industry

  - Not necessarily a competitor

PRECISION PEOPLE TECHNOLOGY

The Nammo Approach

- Acquisition of US companies to achieve;
  - Local Presence – Closer to the Customer
  - Part of the "US Team"
  - Working from inside US regulations
  - Onshore production - Security of Supply
  - In-house Knowledge of a Major Customer and his Acquisitions Systems
- Selling to the US from the outside compared to from the inside
  - Two completely different approaches!

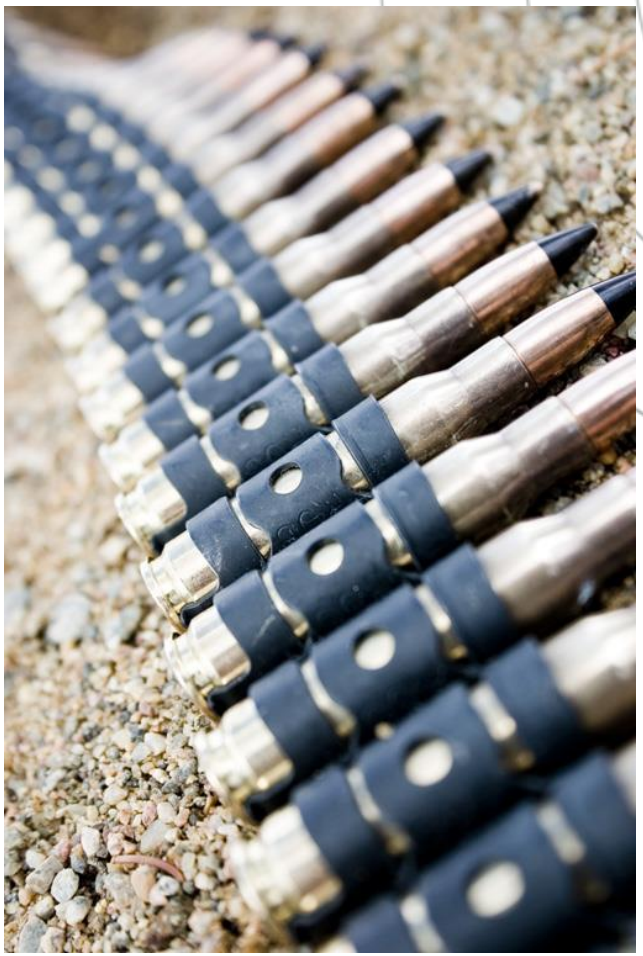
Nammo Talley

PRECISION PEOPLE TECHNOLOGY

Nammo

Examples of Present and Future Nammo Products in the US

- **5,56 and 7,62 AP Ammunition**
- Lapua .338 Sniper Ammunition
- .50 cal (12,7) MP Ammunition
- APEX Ammunition
- 30mm APFSDS
- 40mm HV GL Ammunition (Air Burst)
- 57mm Naval Ammunition
- Shoulder fired weapon systems
  - M72 Family
  - BDM
  - SMAW
- 70mm MPP
- 120mm IMHE
- Rocket Motors (ESSM, Sidewinder etc.)
- Demilitarization



PRECISION PEOPLE TECHNOLOGY

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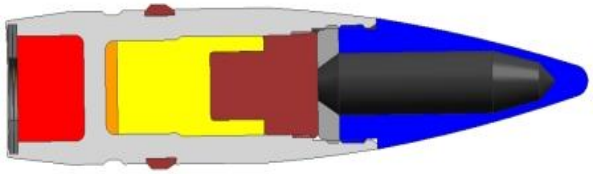

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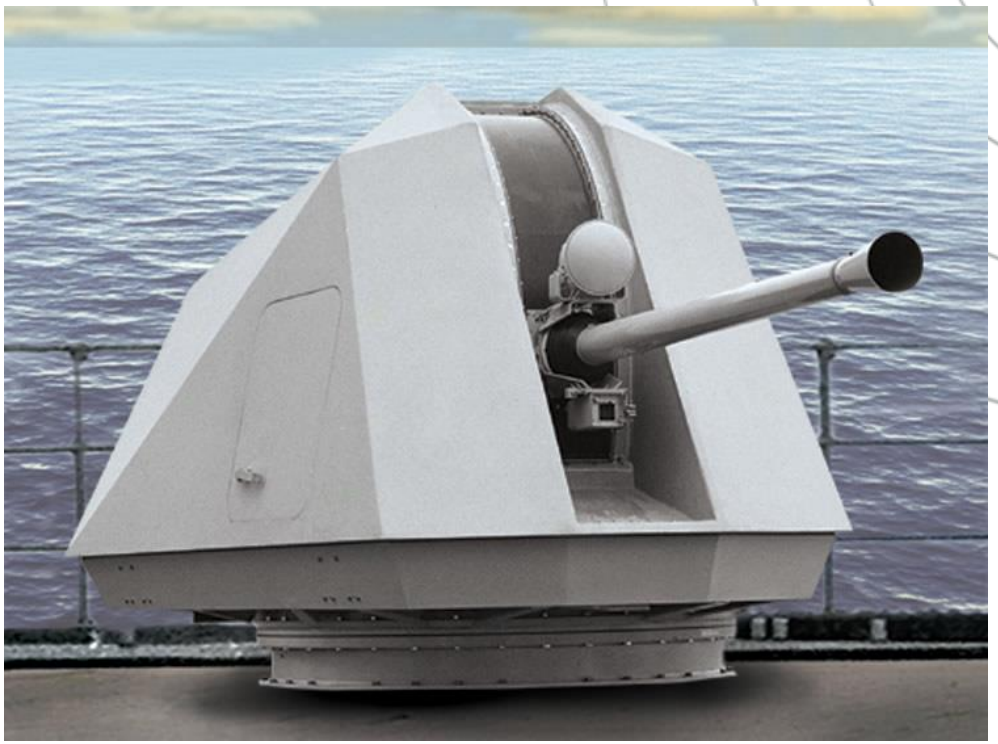

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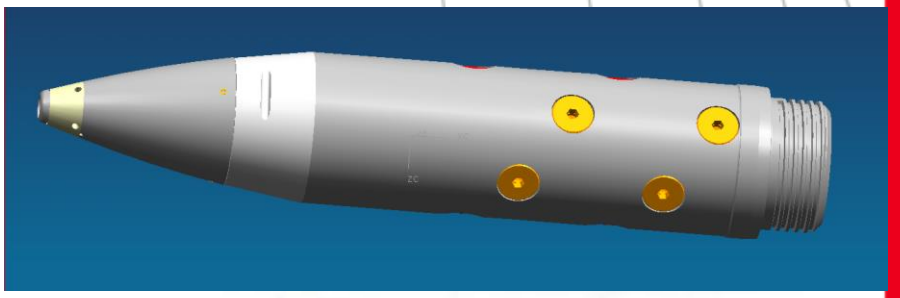

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- **120mm KE-TP / 120mm IM HE-T**
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PRECISION PEOPLE TECHNOLOGY

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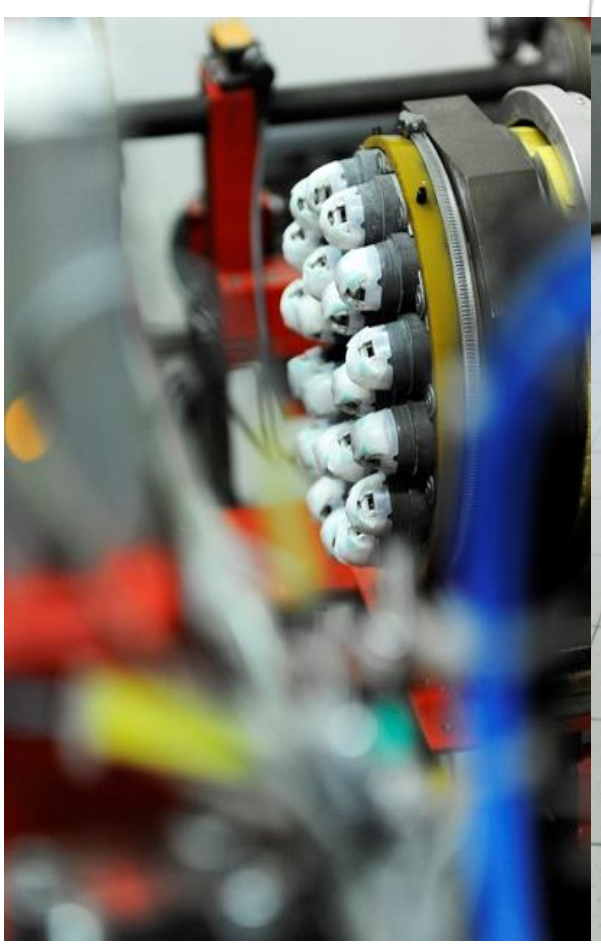


PRECISION PEOPLE TECHNOLOGY

Future needs

- Today’s ammunition is really high tech!
- ”Looks the same, but new materials and compositions inside”
- From large to small Quantities, to High Quality and often Tailor-made Solutions
- Capabilities must address:
  - Insensitive Munitions (IM)
  - Collateral Damage
  - Transportability
  - National and NATO requirements in combination
  - Interoperability
  - Environment
  - Storage
- Development is usually evolutionary and not necessarily revolutionary!
- Smart and Affordable Solutions Will be the Winner!

PRECISION PEOPLE TECHNOLOGY

How will the Munitions business develop?

- Continue to Consolidate? Thus building Big System Houses?
  Or…
- Maintain Independent Ammunition Houses?
- One door policy - Constraining the customer to one system
  Or…
- The choice of selecting the best ammunition supplier
- We think:
  - Initially tempting to follow ”one door policy”

  But..
  - Maybe inflexible and costly in the long run

Therefore we believe there is plenty of room for Independent Ammunition Houses!

PRECISION PEOPLE TECHNOLOGY

- Paramount for NAMMO to continue the close cooperation with our customers

- To make sure that NAMMO never comes close to the statement of the present Canadian Chief of Staff Gen. Walter Natynczyk:

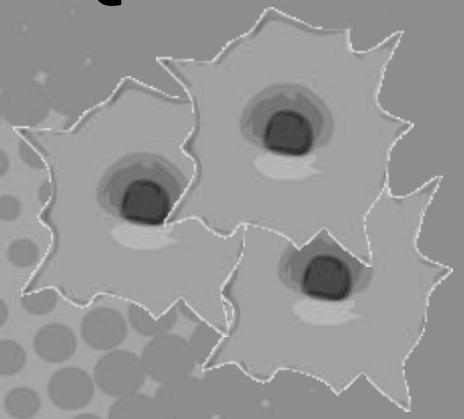
PRECISION PEOPLE TECHNOLOGY

"The further you work from the sound of the guns, the less you understand"

Canadian Chief of Staff Gen. Walter Natynczyk

PRECISION PEOPLE TECHNOLOGY

Questions?



Nammo

Project Manager Maneuver Ammunition Systems

NDIA
2009 Munitions Executive Summit

DISTRIBUTION STATEMENT A.
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Other requests shall be referred to the:
Office of the Project Manager for Maneuver Ammunition Systems
ATTN: SFAE-AMO-MAS, Picatinny, NJ 07806-5000

Chris Grassano
PM Maneuver Ammunition Systems

FY09 Prioritized Goals & Focus Areas

PROJECT MANAGER 09 STATED GOALS

- **Support Warfighters (GWOT)**
  - Production / Fielding
  - Logistics
  - Training
- **High Performing, Agile & Ethical Workforce**
  - Grow People & Teams
    - Training (CLPs & DAV Certification)
    - Skills
  - Effective Management
    - System & Family Approach
    - Integrated Acquisition Lifecycle
    - War Reserve Management
- **Enhance Organic/Commercial Strategic Capabilities**
  - Shape Industrial Base Capacities to Meet Requirements
  - Modernize & Maintain Future Viability
  - Identify/Establish Alternate Sources
- **Develop & Field Capability Improvements**
  - Large Cal Strategy
  - Airburst fuzing
  - Small Cal RDT&E
  - FCS Support
  - Lethality

Small Caliber

- **Support Warfighter**
  - Meet Scheduled Production Goals
  - DDI Improvement Effort
- **High Performing Workforce**
  - Maintain 100% Training and Certification
- **Enhance Strategic Capabilities**
  - Lake City Modernization Program
  - Lake City New Contract
- **Field Capability Improvements**
  - Green Ammunition Program
  - Develop Future Small Caliber Strategies
  - Flash Suppression

Medium Caliber

- **Support Warfighter**
  - Meet War Reserve and Training Requirements
- **High Performing Workforce**
  - Staff, Train, Develop, Certify & Recognize Workforce
- **Enhance Strategic Capabilities**
  - Mature Contractor/Customer Partnerships
  - M789 Second Source
  - Develop and Mature MC Industrial Base
- **Field Capability Improvements**
  - Refine Joint Vision Strategy
  - Lead FCS 30mm Efforts
  - Lead 30X113 Product Improvements

Large Caliber

- **Support Warfighter**
  - Safety for Training Rnds – Adv Case Syst & Charcoal
  - Value Engineering Initiatives
- **High Performing Workforce**
  - Achieve 100% Training/Certifications
- **Enhance Strategic Capabilities**
  - Maintain DU Industrial Base
  - Develop Alternate 105mm Case Source
- **Field Capability Improvements**
  - M829E4 Acquisition Documentation for MS-B and RFP
  - Requirements Approval – AMP/AKE CDD Through JROC
  - Development of 105mm Strategy
  - Execute MRM SDD

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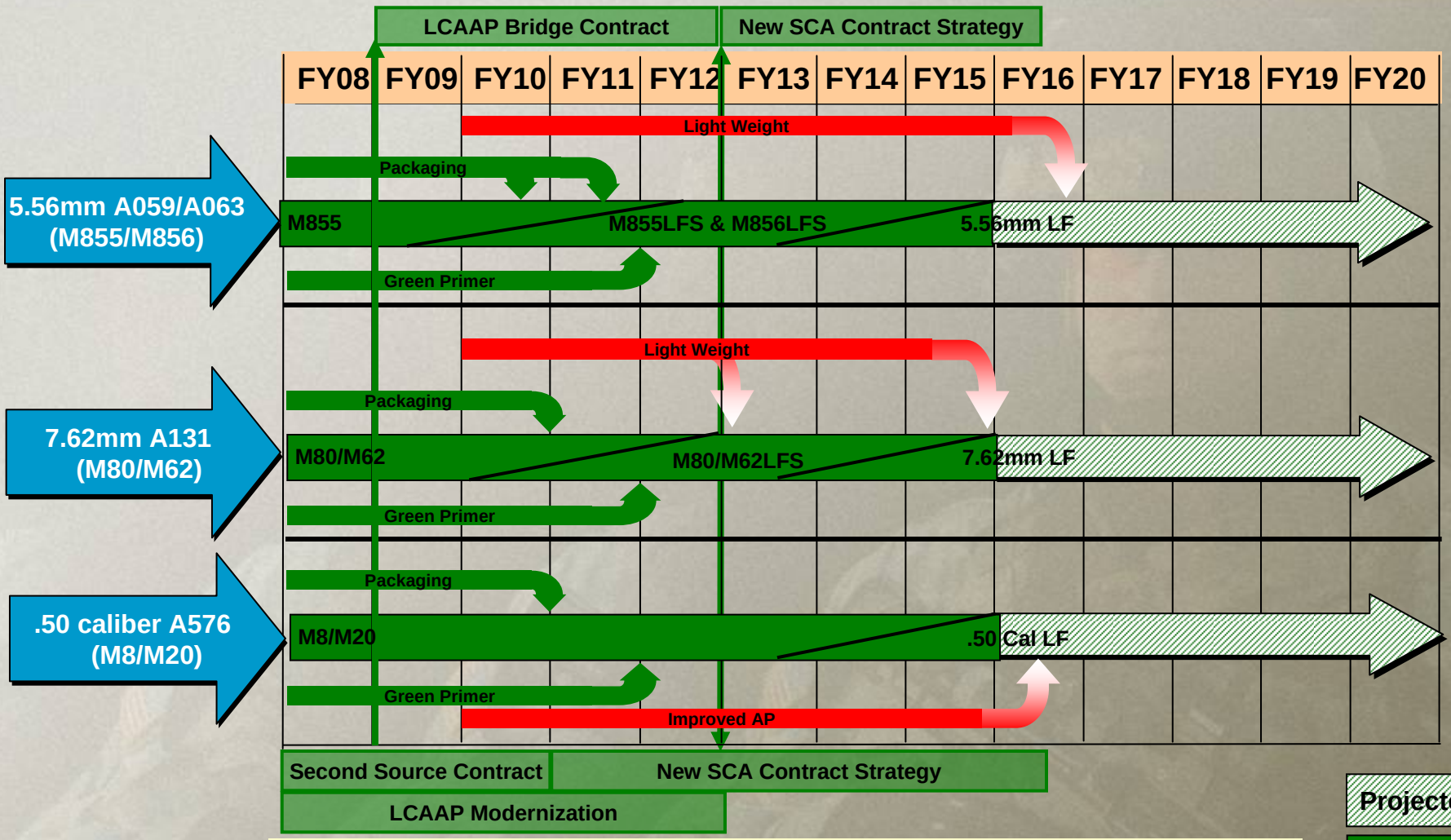
Small Caliber Roadmap



- Propellant / Tracer Efforts Ongoing
  - Flash Reduction (end of FY09 Across Calibers)
  - Velocity improvements, Temperature Sensitivity Reduction (FY10-12)

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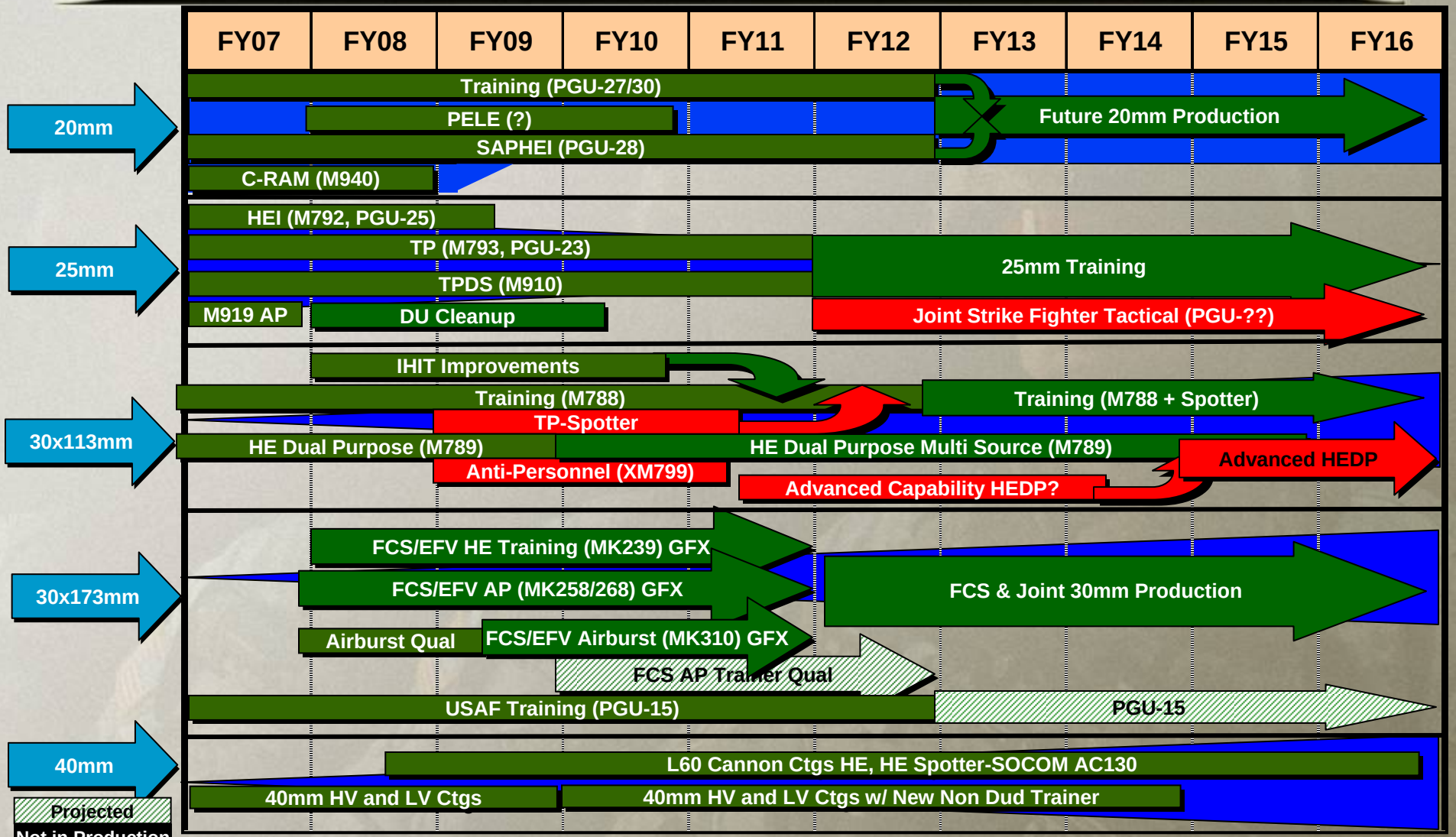
Medium Caliber Roadmap



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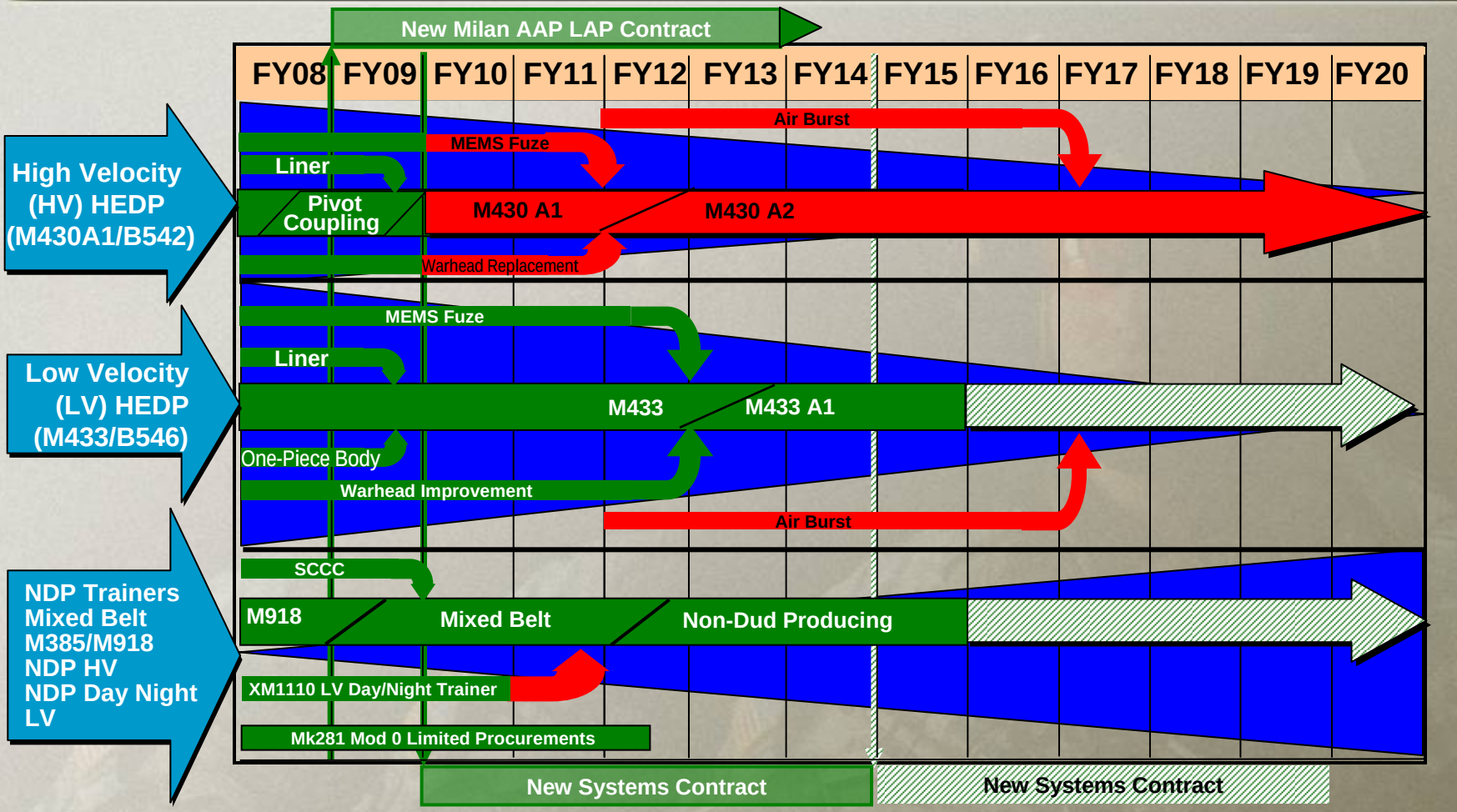
40mm Roadmap



- **Ammo Suite Satisfies ALL EXISITING 40mm Tactical Requirements**

Projected

Funded

Unfunded

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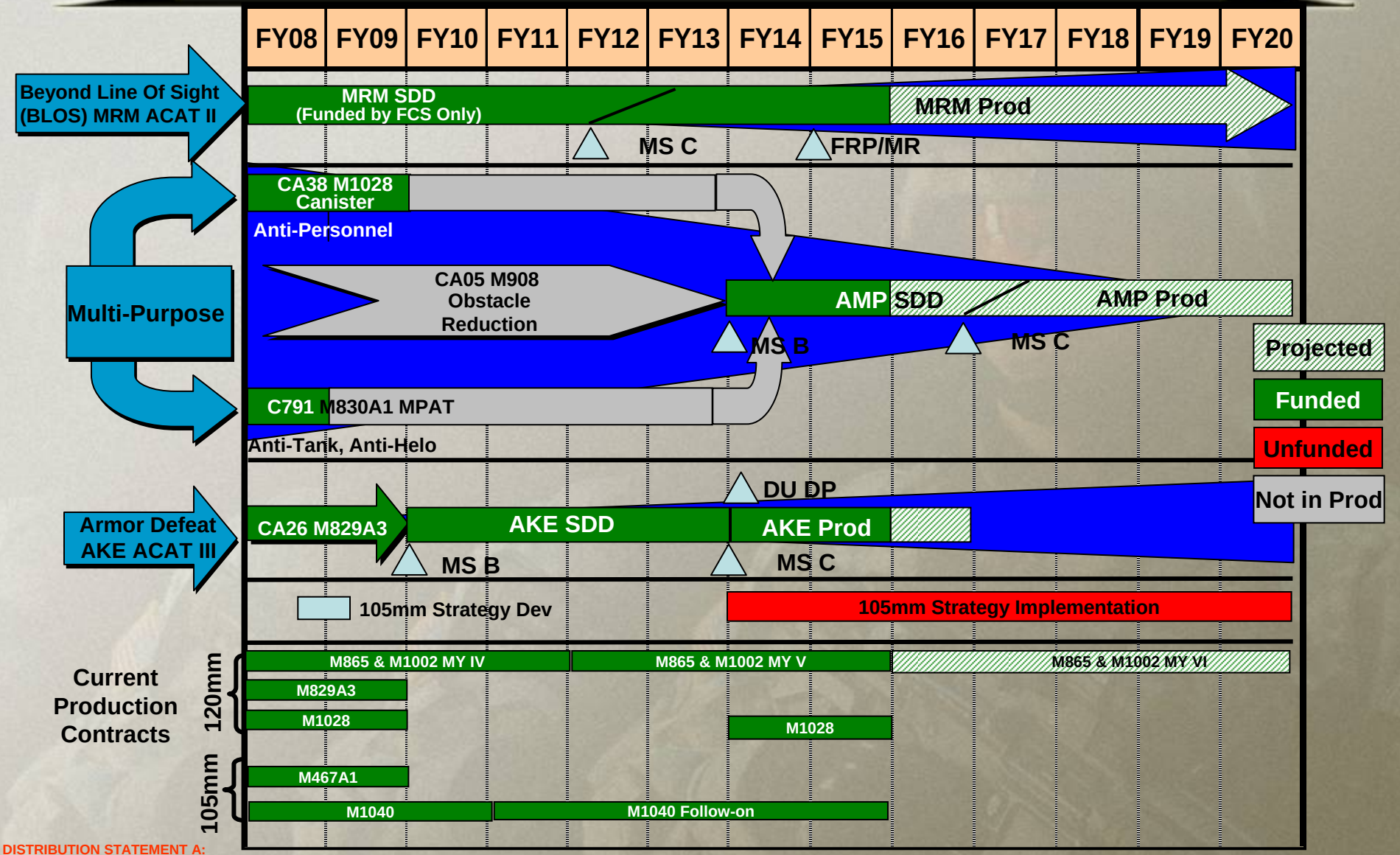
Large Caliber Roadmap



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What Can Industry Do

- Avoid the need for REAs
  - Ensure all contract terms are clearly understood up-front
  - Request EPA's up-front
  - Ensure TDP is clear and make recommendations when needed
  - Risk needs to be shared
  - Can't change competitive landscape
- Support Continuous Improvement efforts
  - Lead effort to generate ideas (cost, quality, performance, safety, environmental)
  - Execute projects & 6-sigma efforts
  - Include Gov't personnel in projects
- Support FMS requests
  - Sales increasing – mutual benefits
  - Timely responses
  - FMS vs Direct Commercial Sales – Best interest of the Gov't
- Conduct true Risk Management
  - Strategic & tactical
  - Not just charts on what is considered a risk
- Strategic Communications
  - Don't get ahead of the Army
  - Speak w/One Voice

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PEO MS OVERVIEW

Presented To

2009 Munitions Executive Summit

National Defense Industrial Association

4 February 2009

Presented by:
Mr. Mike Hartwell,
Deputy Program Executive Officer
Missiles and Space

Distribution A: Approved for Public Release, Distribution Unlimited

PROGRAM EXECUTIVE OFFICE MISSILES AND SPACE

MISSION:
Provide an Unprecedented Level of Service and Support for the Systems for Which We are Responsible

What We Do:

- Centralized Management for All Army Tactical and Air Defense Missile Programs and Selected Army Space Programs
- Full Life-Cycle Management of Assigned Systems
- World Wide Support of Fielded Weapon Systems
- Key Link Between the User and Tech Base

What We Manage:

- Nine Project Offices
- Two International Cooperative Development Programs
- Two Major Initiatives: Integrated Air and Missile Defense and Single Integrated Air Picture

Government Workforce
~1,000
(Civilian and Military)

Managing

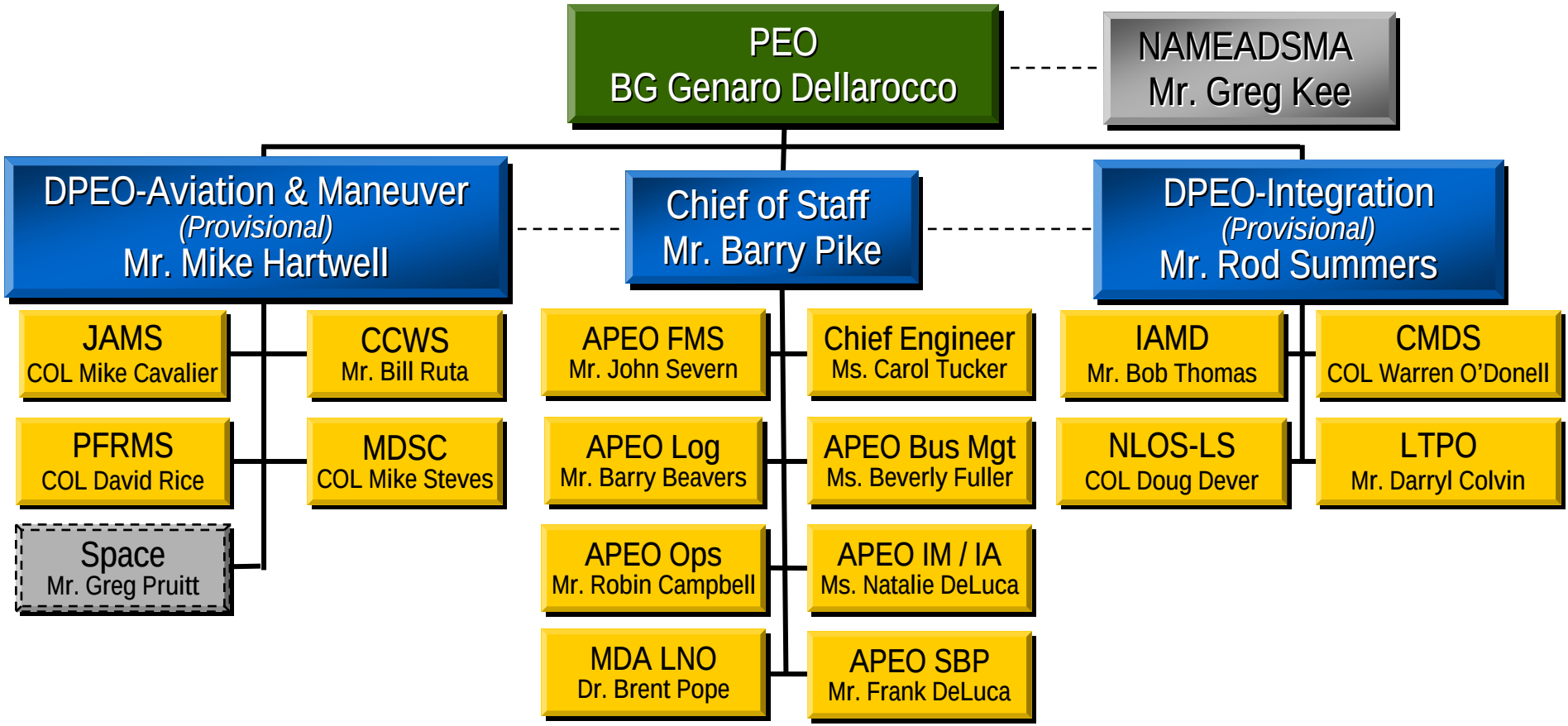
FY09
Appropriated Funding > $4.0B

To

Support the Warfighter

PROVIDING THE WORLD'S FINEST SUPPORT TO THE WARFIGHTER AT "REDSTONE ARSENAL – THE CENTER OF EXCELLENCE FOR ROCKETS AND MISSILES"

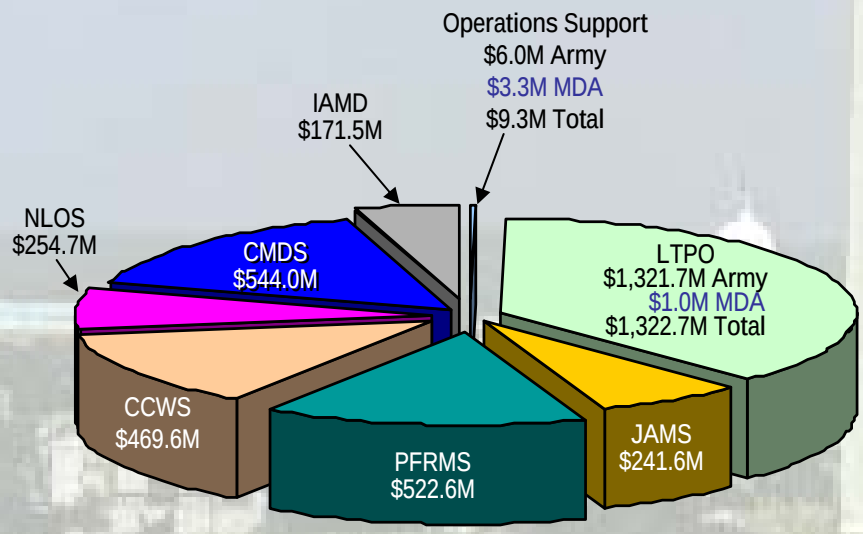
FY09 ORGANIZATION



Interim Organization Leading to FY10 Construct

FY08 APPROPRIATED BUDGET AND FY09 APPROPRIATED BUDGET COMPARISON

FY08 Appropriated



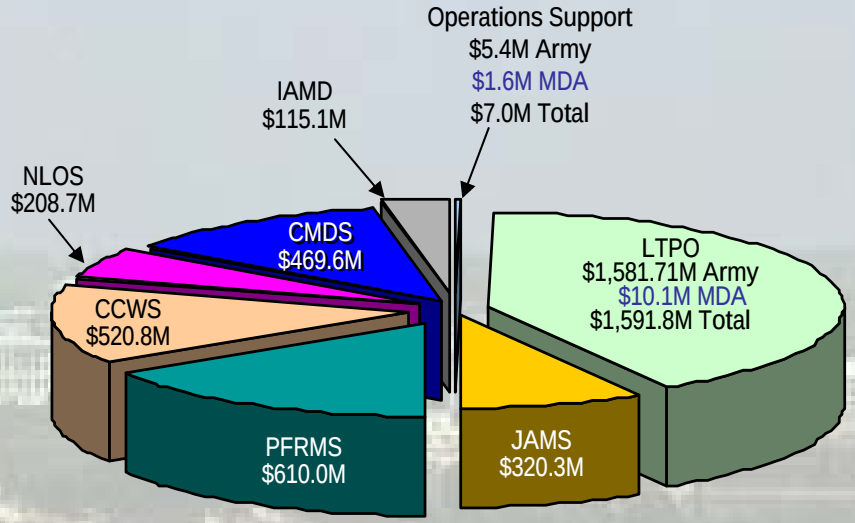
Total Army: $3531.7M

MDA $ for PEO: $4.3M

Total: $3536.0M

Source: Appropriations Conference Report 110-434 – Reflects No Spares

FY09 Appropriated



Total Army: $3831.7M

MDA $ for PEO: $11.7M

Total: $3843.4M

Source: FY09 Appropriation Joint Explanatory Statement 110-329
Reflects No Spares

PEO MISSILES AND SPACE PROGRAMS

- Close Combat Weapon Systems
  - Javelin
  - TOW
  - ITAS
  - IBAS
- Joint Attack Munitions Systems
  - Hellfire
  - Hydra Rocket (2.75 Inch)
  - Joint Air-to-Ground Missile
  - Viper Strike
- Lower Tier Project Office
  - PATRIOT
  - PAC-3 Missile Segment Enhancement
  - PATRIOT/MEADS CAP
  - JTAGS
- Cruise Missile Defense Systems
  - JLENS
  - SLAMRAAM
  - Sentinel ETRAC
  - Directed Energy Applications
  - Avenger
  - Stinger
- Precision Fires Rocket and Missile Systems
  - GMLRS
  - ATACMS
  - HIMARS
  - MLRS M270A1
- Non-Line of Sight-Launch System
  - Precision Attack Missile/Container Launch Unit
- Integrated Air and Missile Defense
- Missile Defense Strategic Capabilities

CLOSE COMBAT WEAPON SYSTEMS (CCWS)

Anti-Armor and Target Acquisition for the Front-Line Warfighter

- ✓ Develop, Field and Sustain Current and Future Force Close Combat Missile Systems and Associated Target Acquisition Systems
- ✓ Enhance Effectiveness of Current Systems With Technology Insertion
- ✓ Maintain Reliability of Stockpiled Systems

JOINT ATTACK MUNITIONS SYSTEM (JAMS)

Aviation Rockets and Missiles for the Joint Force

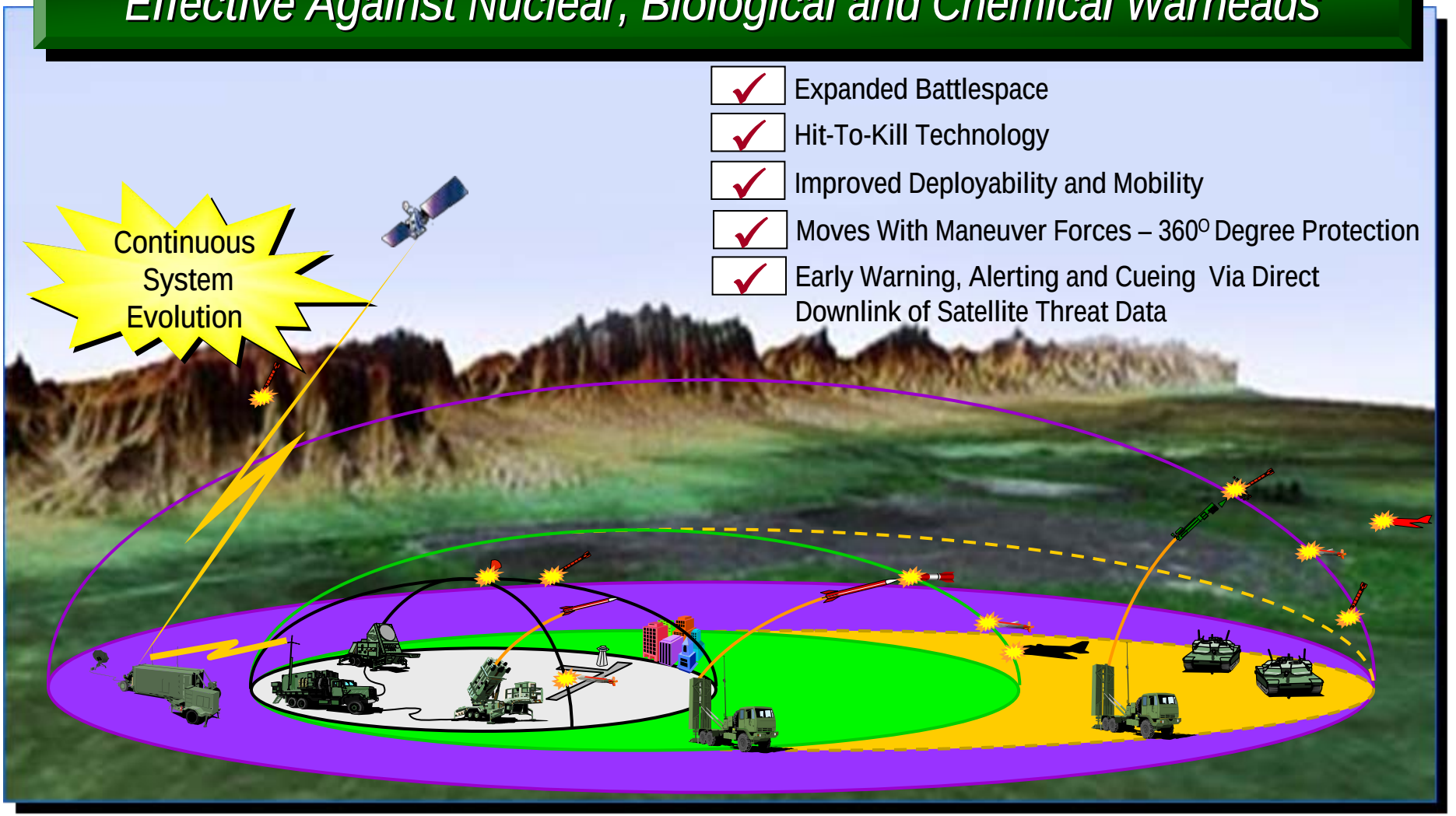
- ✓ Provide Current and Future Force Joint Aviation Assets With the Rocket and Missile Systems Needed to Dominate the Land Battle
- ✓ Upgrade Current Missile Systems
- ✓ Develop and Field a Joint Air-to-Ground Missile System to Replace Current HELLFIRE and Maverick Families of Missiles

LOWER TIER PROJECT OFFICE (LTPO)

Effective Against Nuclear, Biological and Chemical Warheads

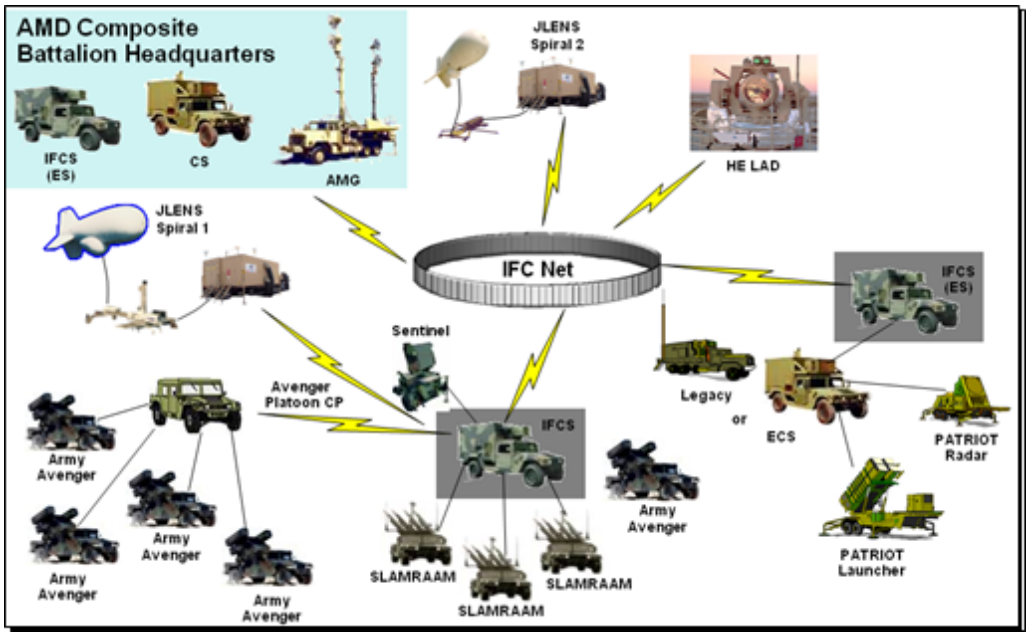
- ✓ Expanded Battlespace
- ✓ Hit-To-Kill Technology
- ✓ Improved Deployability and Mobility
- ✓ Moves With Maneuver Forces – 360^{O} Degree Protection
- ✓ Early Warning, Alerting and Cueing Via Direct Downlink of Satellite Threat Data

Continuous System Evolution



CRUISE MISSILE DEFENSE SYSTEMS (CMDS)

Enhanced Protection for the Warfighter



- ✓ Provide Fully Integrated Low Altitude Air Defense Against Cruise Missiles, Unmanned Aerial Vehicles and other Low Flying Fixed and Rotary Wing Targets
- ✓ Developing Common BMC4I Capability for the AMD Task Force and the Composite Battalion
- ✓ Evolve Into a Future AMD Force Capability Capable of Defeating Current and Future Threats Including Rockets, Mortars and Artillery
- ✓ Evolve Sentinel Through P3I to Support FCS/SLAMRAAM by Overcoming Emerging / Evolving Threats

PRECISION FIRES ROCKET AND MISSILE SYSTEMS (PFRMS)

Precision Fires for Current and Future Forces

- ✓ Provide a Suite of Launchers, Rockets and Missiles That Provide the Precision Fire Capability Needed for Current and Future Forces
- ✓ Increased Deployability
- ✓ Increased Precision
- ✓ Integration of Existing Technologies to Provide New Capabilities

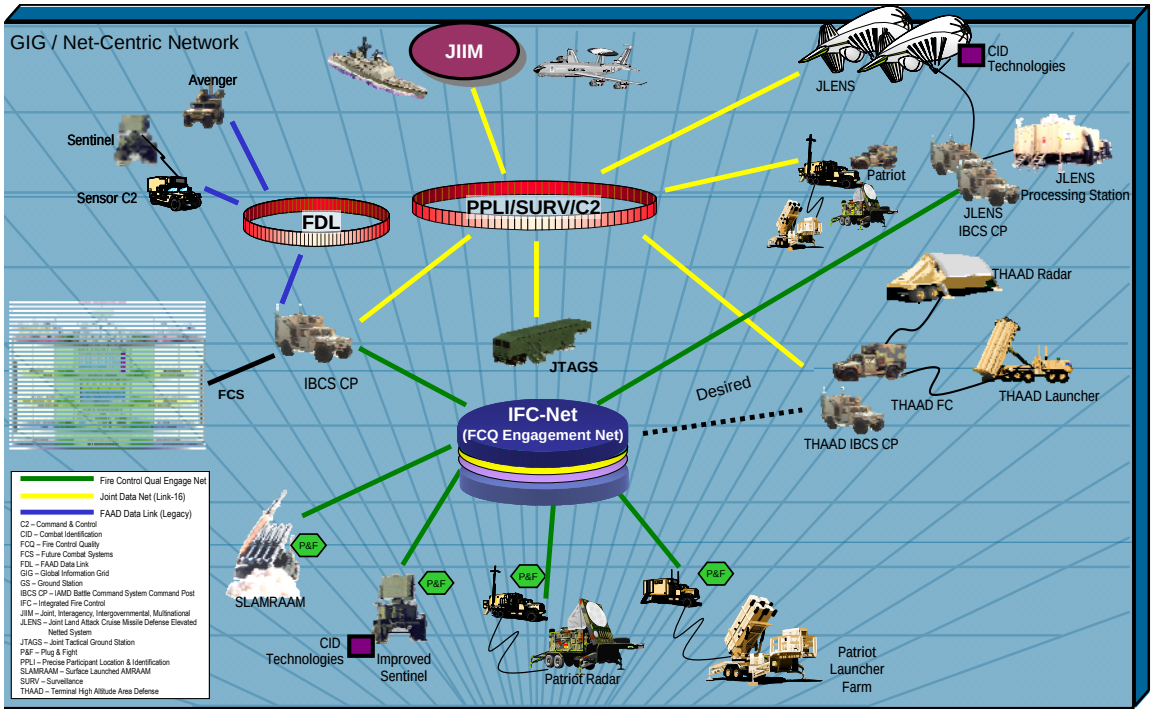
NON-LINE OF SIGHT LAUNCH SYSTEMS (NLOS)

Unmanned Fire Support

- ✓ Highly Deployable, Platform-Independent Container Launch Unit (CLU)
- ✓ Self-Contained Technical Fire Control
- ✓ Remote, Unmanned Operations
- ✓ Precision Fire Support to Brigade Combat Teams (BCT)

INTEGRATED AIR AND MISSILE DEFENSE (IAMD)

Fully Integrated Defense for the Warfighter



- ✓ Integrate All AMD Sensors and Shooters Into a Seamless Weapon System-of-Systems
- ✓ Net-Centric Cruise Missile Defense
- ✓ Open Architecture That Supports New Technologies and Capabilities
- ✓ Joint Composite Track Management

MISSILES DEFENSE STRATEGIC CAPABILITIES (MDSC)

To Field, Equip, Deploy and Sustain MDSC Worldwide in Support of Joint and Multinational BMD Forces in Order to Protect and Defend US and Coalition Personnel and Critical Assets from Ballistic Missile Threats

- ✓ Total Package Fielding
- ✓ Institutional Training
- ✓ Operational Sustainment
- ✓ Stockpile Surveillance and Reliability Program
- ✓ Type Classification and Material Release
- ✓ MS 'C' IAW Army Proponents' Approved Capability Production Documents
- ✓ Foreign Military Sales

THAAD

GMD

TPY-2

PEO MS RESPONSES TO EVOLVING MISSION REQUIREMENTS

Joint Attack Munition Systems (JAMS)

HELLFIRE

- Provides the Warfighter an Air-to-Ground Precision Missile System
- Increases Aircraft Survivability

HYDRA 70

- Family of Free-Flight, Ground-Attack Rockets

Close Combat Weapon Systems (CCWS)

JAVELIN

- First Fire-and-Forget, Shoulder Launched, Anti-Armor Missile System
- Top Attack / Direct Fire Modes
- Able to Defeat All Known Tanks Out to Ranges in Excess of 2500 meters

TOW

- Optimized for Performance Against Tanks With Reactive Armor
- Effective Assault Weapons Against Buildings and Field Fortifications

Lower Tier Project Office (LTPO)

JTAGS

- Theater-Wide TBM Early Warning, Alerting and Cueing

PATRIOT

- Demonstrated Hit-to-Kill Capability
- Only Fielded U.S. Anti-Tactical Ballistic Missile System

Precision Fires Rocket and Missile System (PFRMS)

MLRS Rockets

- Provides a Longer-Range, Greater Precision, Multiple Launch Rocket System, Enabling a Quick Artillery Response With Lethal Overmatch

ATACMS

- Engages Targets-Throughout the Corps / Unit of Employment Area of Influence

Cruise Missile Defense Systems (CMDS)

Homeland Defense

Short-Range Air Defense to Protect Critical Assets (STINGER, Avenger and Sentinel Radar)

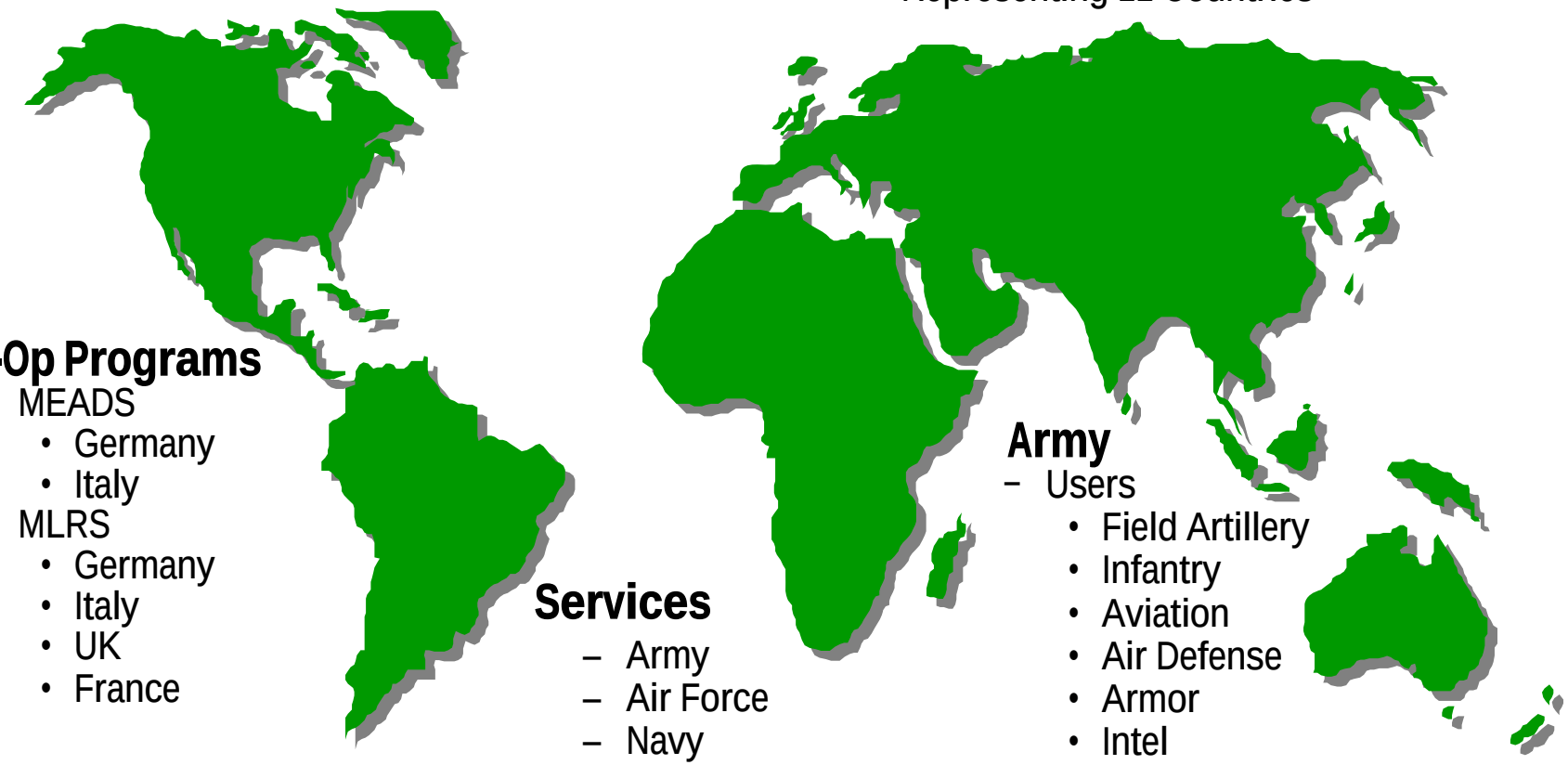
Gun-Up Avenger

- Special Mod to Enhance Force Protection

THE ARMY MISSILE BUSINESS

FMS
- 35 Countries
- FY09 Projected FMS Funding >$12B

Joint / International Representation
- 22 Joint Efforts
- 5 Sister Service Officers
- 28 International Officers / Civilians
  - Representing 11 Countries



Co-Op Programs
- MEADS
  - Germany
  - Italy
- MLRS
  - Germany
  - Italy
  - UK
  - France

Services
- Army
- Air Force
- Navy
- Marine Corps

Army
- Users
  - Field Artillery
  - Infantry
  - Aviation
  - Air Defense
  - Armor
  - Intel
  - Future Combat Systems

QUESTIONS

Cross Service Panel

Mr. Jyuji D. Hewitt
Deputy to the Commander
HQ, Joint Munitions Command
(309) 782-8885
Jyuji.Hewitt@us.army.mil

JMC - Ready - Reliable - Lethal

Agenda

- ✓ The Materiel Enterprise
- ✓ The Joint Munitions and Lethality Enterprise
- ✓ Requirements
- ✓ Future Planning
- ✓ Summary

Materiel Enterprise

The Ammunition Enterprise

Mission: "To execute integrated munition & lethality systems life cycle management through a team of world class technology, acquisition and logistics professionals who provide effective, available, and affordable munitions and lethality for the Joint Warfighter."

Navy (Lethality)

Air Force

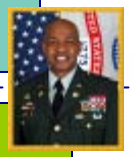
OUSD (AT&L)

Marines

BG Wyche
Acting Commanding General
JM&L LCMC

JOCG Chair

BG Wyche
Deputy Commander
JM&L LCMC



James Sutton
Program Executive Officer
Ammunition

SMCA Executor

- 300 People (Mil, Civ & Contractor)
- 200 Industrial Partners (14 Foreign)
- 200 Items in Production

BG Wyche
Commanding General
Joint Munitions Command

SMCA Field Operating Activity

- 14,000 People (Mil, Civ & Contractor)
- 19 Plants & Depots
- 246,000 Short Tons of Ammo to OIF/OEF

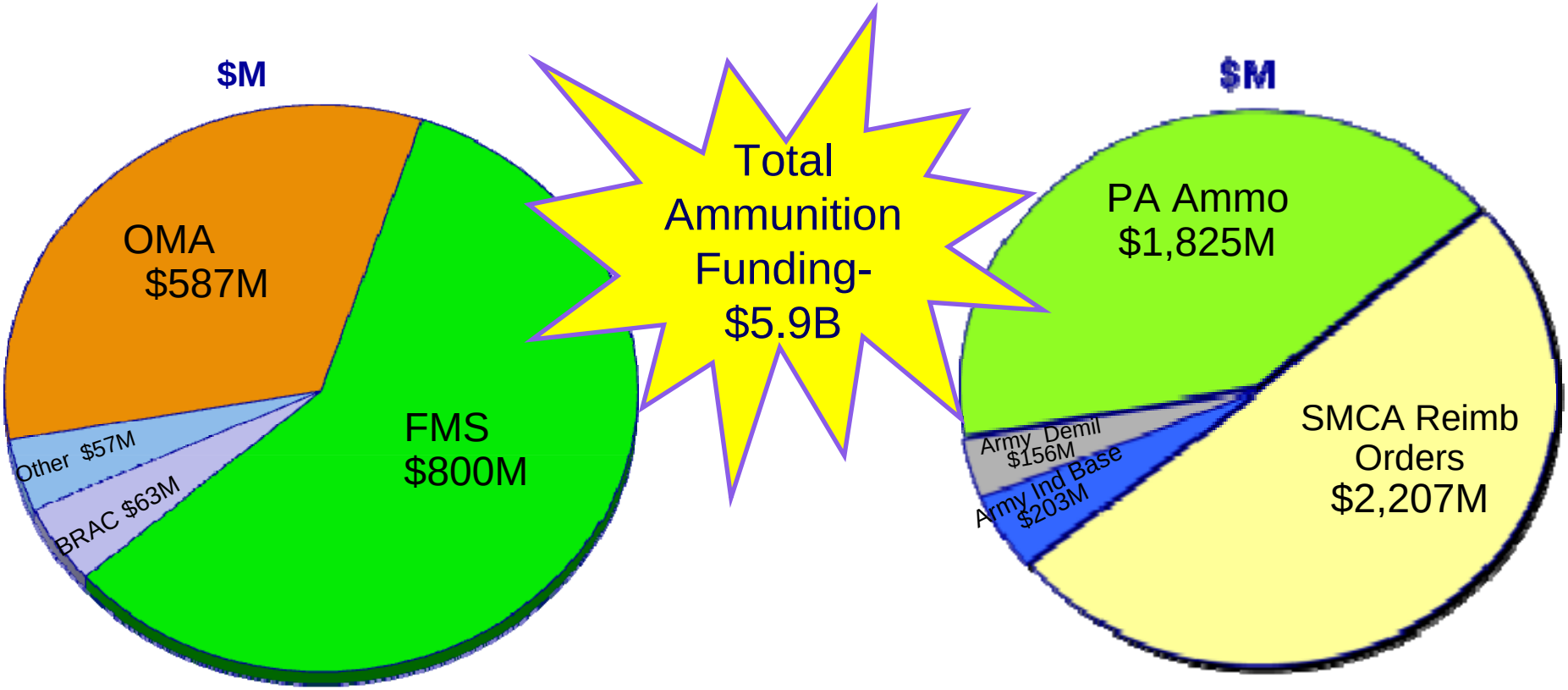
Dr. Lannon
Director
Armament, Research, Development & Engineering Center

- 3200 People/2000 Scientists & Engineers
- 34 Matl Release in FY 07, 20 in FY 08
- Malcolm Baldrige Winner

Power of the LCMC:

Gaining Synergy via Focused Research & Development, Acquisition, and Logistics to Maximize Warfighter Readiness

Ammunition Funding- Supporting the Mission FY09

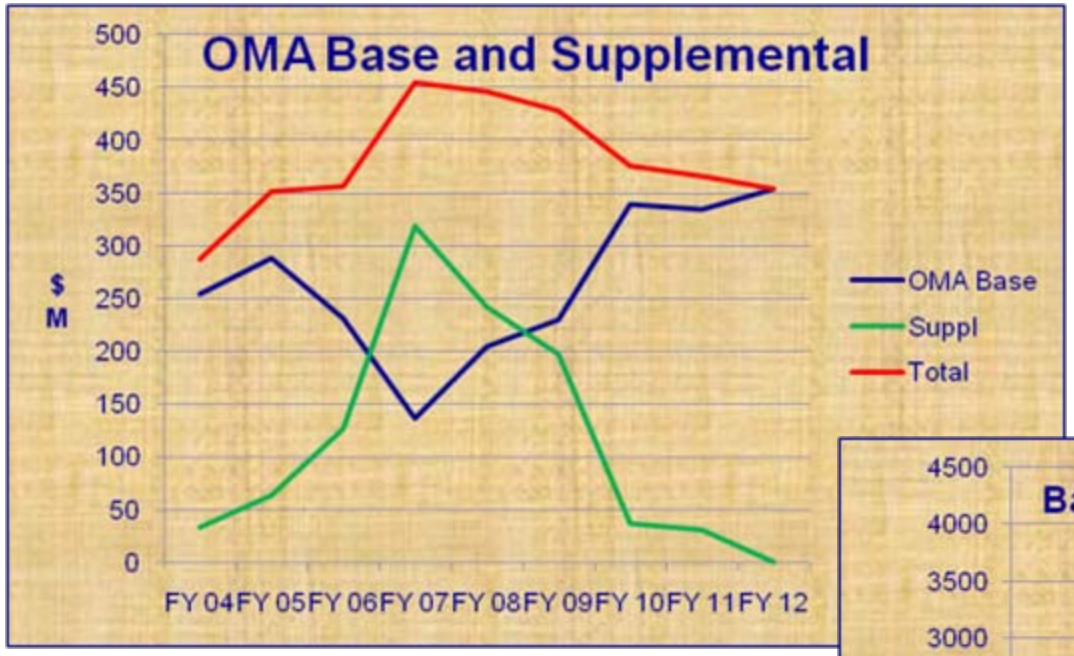


Top Ten Foreign Military Sales Programs

as of 30 Sep 08

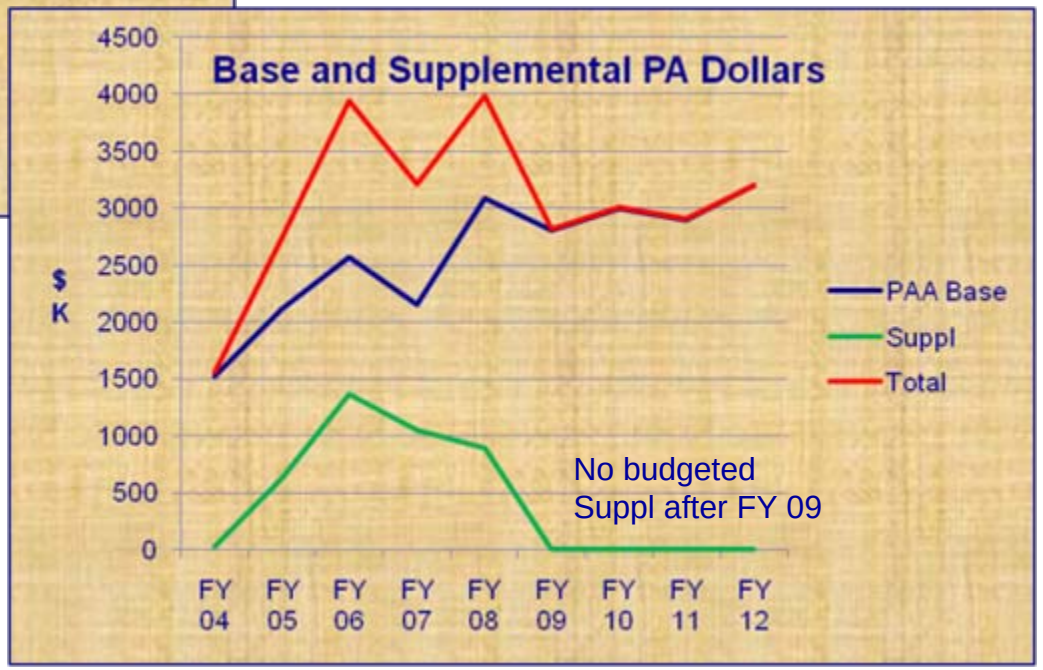
Top Ten	$1,221.5M
All Others	$ 129.5M
Total	$1,351.0M

OMA and SMCA Procurement Ammunition Outlook



⇐ Retaining the Base

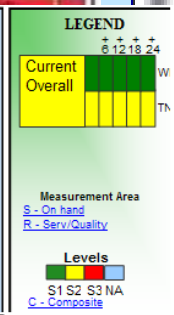
Procuring to Requirements ⇒

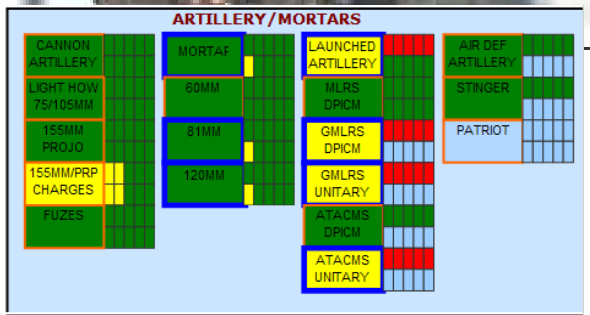


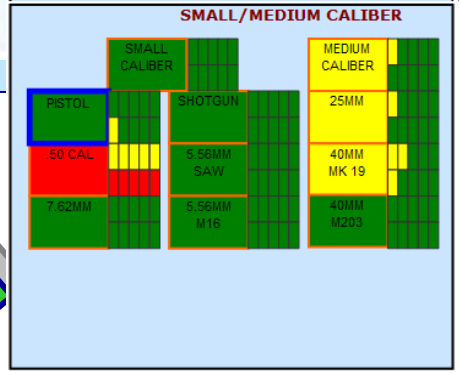
Supporting the Warfighter

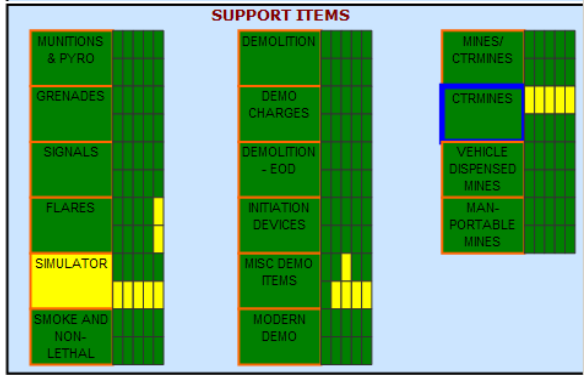
STATUS Dec 02

TODAY Dec 08









Organic Industrial Base Facilities

Iowa AAP
•Missile Warheads
•Load, Assemble and Pack
120mm Tank, 105/155 Artillery

Milan Army AAP
•Load, Assemble and Pack
40mm, mortars, demo blocks

Crane Army Ammunition Activity
• 5"/54 & 76mm Load, Assemble & Pack
• Illum candles, Pyro, Flares
•Supply Depot Operations

Kansas AAP
•Sensor Fuzed Weapon

Rock Island Arsenal
•HQ Joint Munitions Command

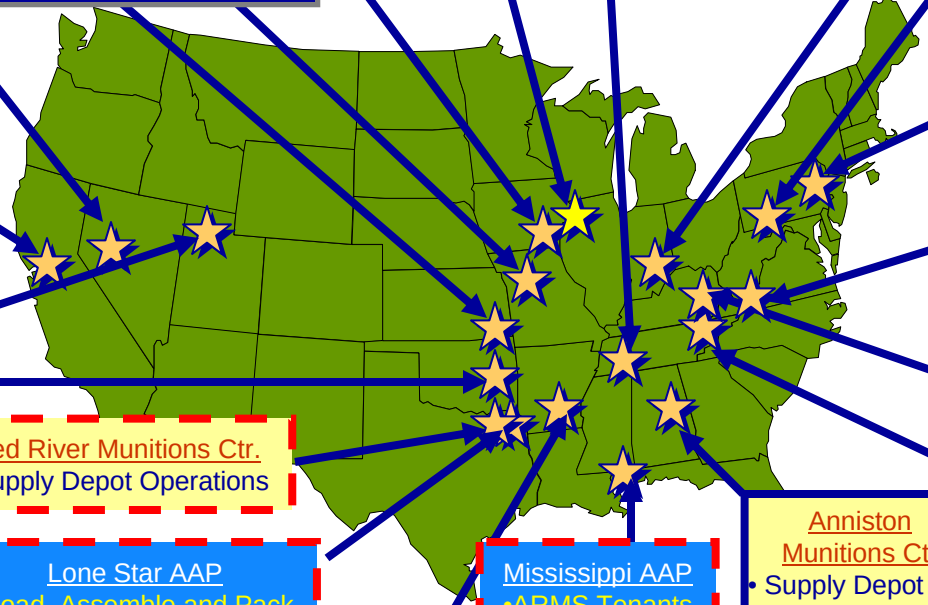
Letterkenny Munitions Ctr.
•Tactical Missiles
•Supply Depot Operations

Hawthorne Army Depot
•Western Area Demil Facility
•Supply Depot Operations

Lake City AAP
•Small Caliber
5.56, 7.62 & 20mm, .50 cal

Scranton AAP
•Projectile Metal Parts
155mm shells & 120 mm mortar

Riverbank AAP
•Processing Metal Parts
Steel Cartridge Cases
5 in. Navy gun & Stryker



Radford AAP
• SolventlessPropellants
• Nitrocellulose

Tooele Army Depot
•Supply Depot Operations
•Ammunition Peculiar Equip

Blue Grass Army Depot
•Supply Depot Operations
•Chemical Defense Equip

McAlester AAP
• 500,1000 & 2000 lb Bombs
• Intelligent Munitions
•Supply Depot Operations
Defense Ammunition Center
•Explosive Safety / Engineering
•Demil R&D Technology
•Training / Career Mgmt

Red River Munitions Ctr.
•Supply Depot Operations

Holston AAP
•Explosives RDX/HMX

Lone Star AAP
•Load, Assemble and Pack
Relays/delays/detonators
Artillery

Mississippi AAP
•ARMS Tenants

Anniston Munitions Ctr.
• Supply Depot Ops
• Missile storage
• Demil

Pine Bluff Arsenal
•White/Red Phosphorus
•Smoke/Obscurants
•Supply Depot Operations

19 Installations
144 End Items
229 Critical Components

LEGEND

= Government Owned Government Operated (GOGO)

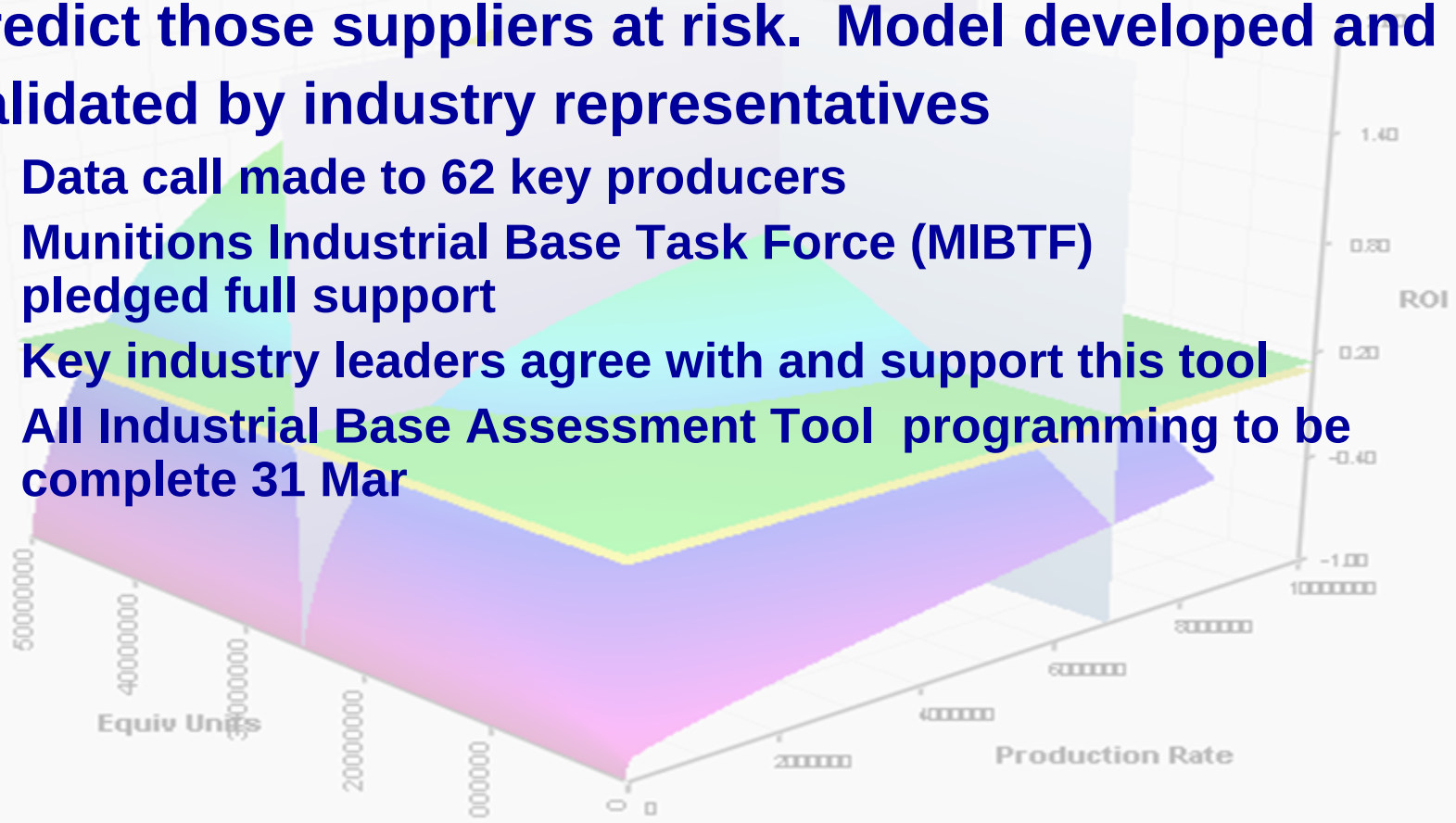
= BRAC sites

= Government Owned Contractor Operated (GOCO)

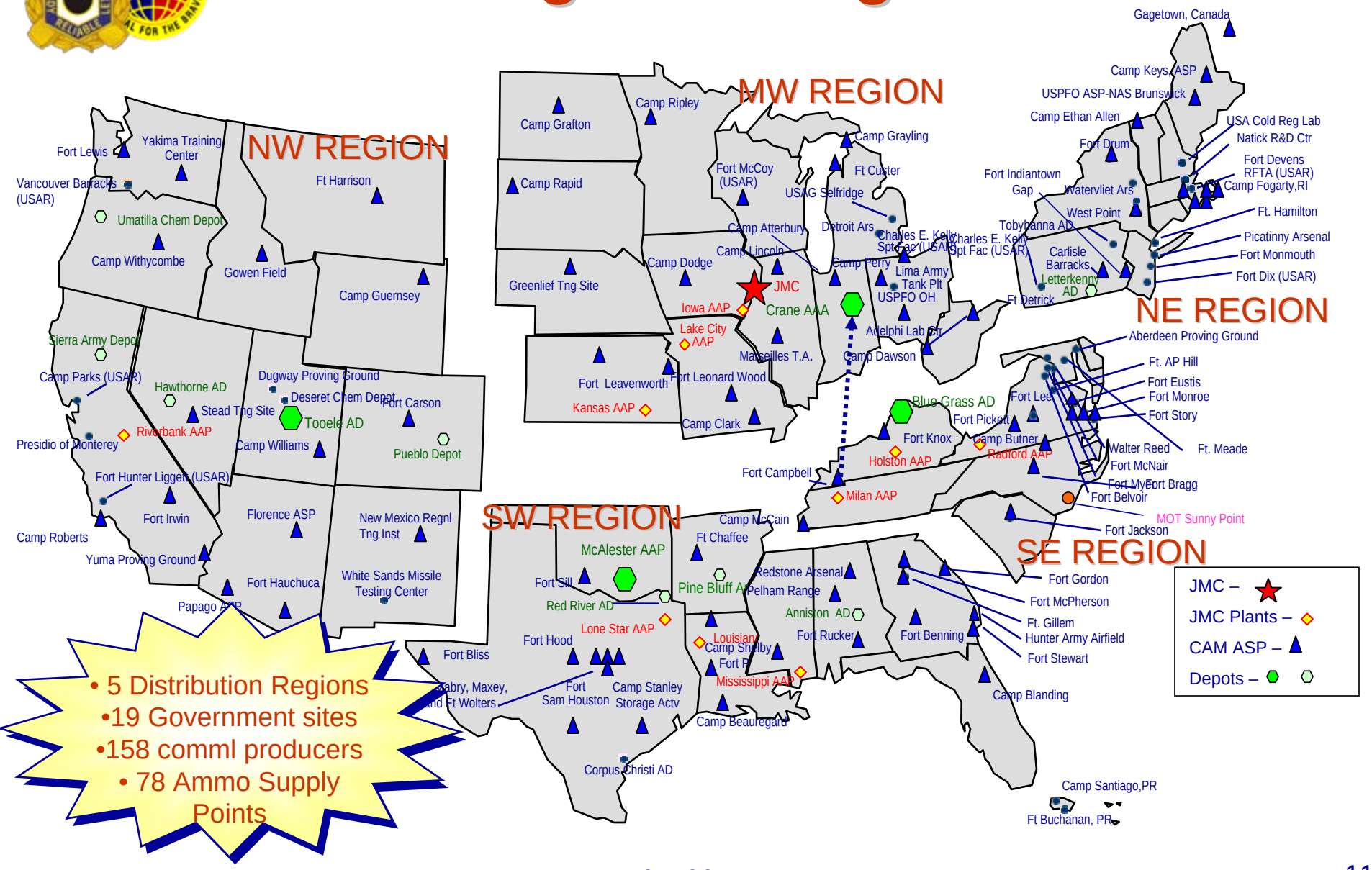
AAP = Army Ammunition Plant
RDX = Research Dept Explosive
HMX = High Melt Explosive

Soft Landing Approach

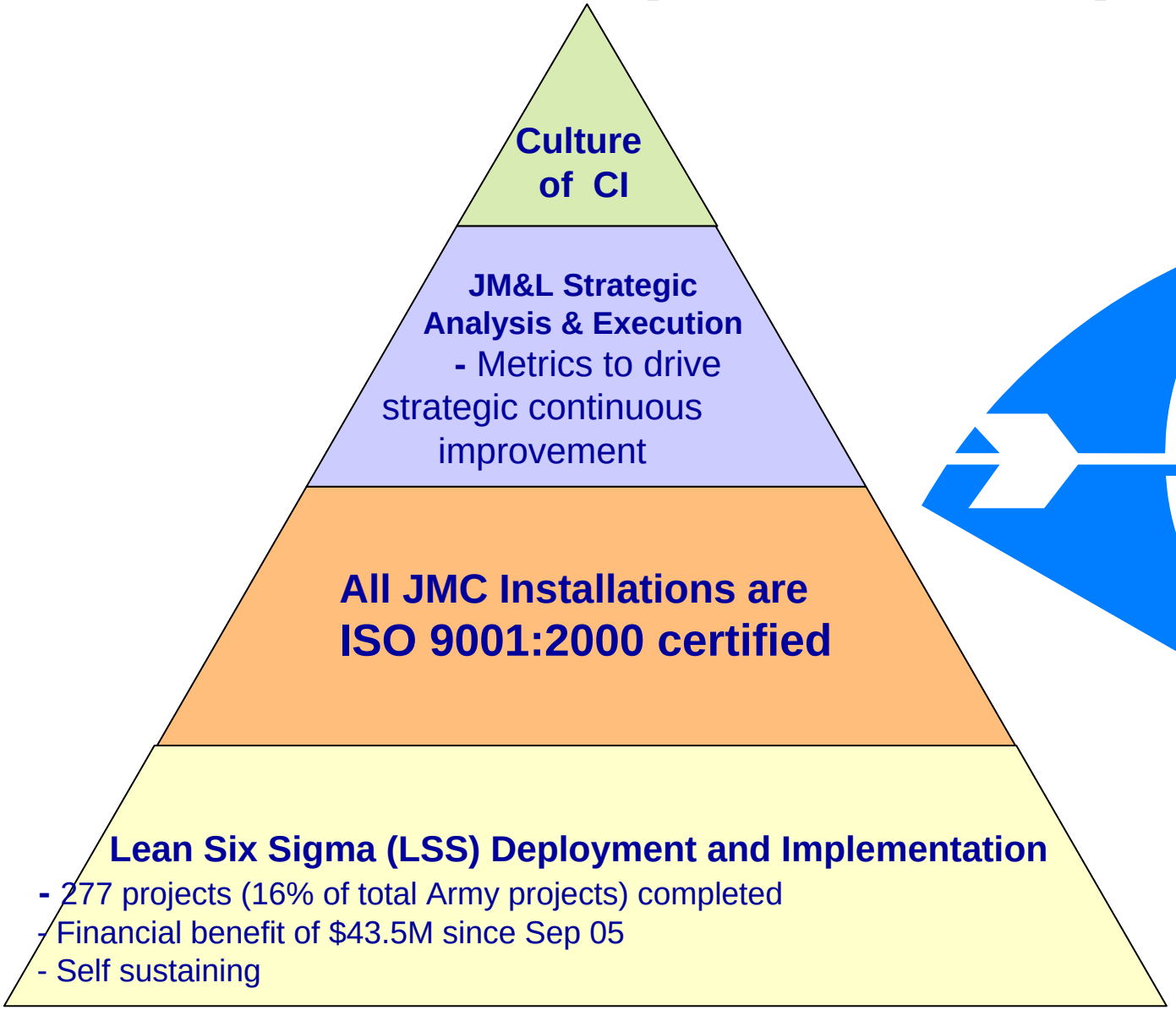
- ✓ **Minimum Sustaining Rate (MSR) determination can predict those suppliers at risk. Model developed and validated by industry representatives**
  - **Data call made to 62 key producers**
  - **Munitions Industrial Base Task Force (MIBTF) pledged full support**
  - **Key industry leaders agree with and support this tool**
  - **All Industrial Base Assessment Tool programming to be complete 31 Mar**



Integrated Logistics



Continuous Improvement (CI)



Summary

- ✓ **Collaboration**
  - ➢ **Minimum Sustaining Rate**
  - ➢ **Unity of effort**
- ✓ **Adaptation of the Enterprise Approach**
  - ➢ **Continuous improvement**
- ✓ **Teamwork**

Need Industry's Continued Support

Industrial Base Presentation

5 February 2009

COL Andre Kirnes
Project Director Joint Services
PEO Ammunition
Picatinny Arsenal, NJ 07806-5000
973-724-5257
andre.kirnes@us.army.mil

Industrial Base Panel Purpose

- Capture and share insights from different munitions providers as to:
  - What we have done well and what we can improve upon
    - Contractor Operated Contractor Owned (COCOs) - Mr. Dave Siggers (Spectra, Camden AR)
    - Government Owned Contractor Operated Facilities (GOCOs) - Mr. Michael Yoh (Day and Zimmerman, Philadelphia, PA)
    - Government Owned Government Operated Facilities (GOGOs) - COL William Barnett (Pine Bluff Arsenal, AR)

Summary
Piecing the Puzzle for a New Industrial Base

Single Point Failure

Privatization

IBAT

Section 806 Implementation

Idle Facilities Audit

BRAC

Cost Modeling

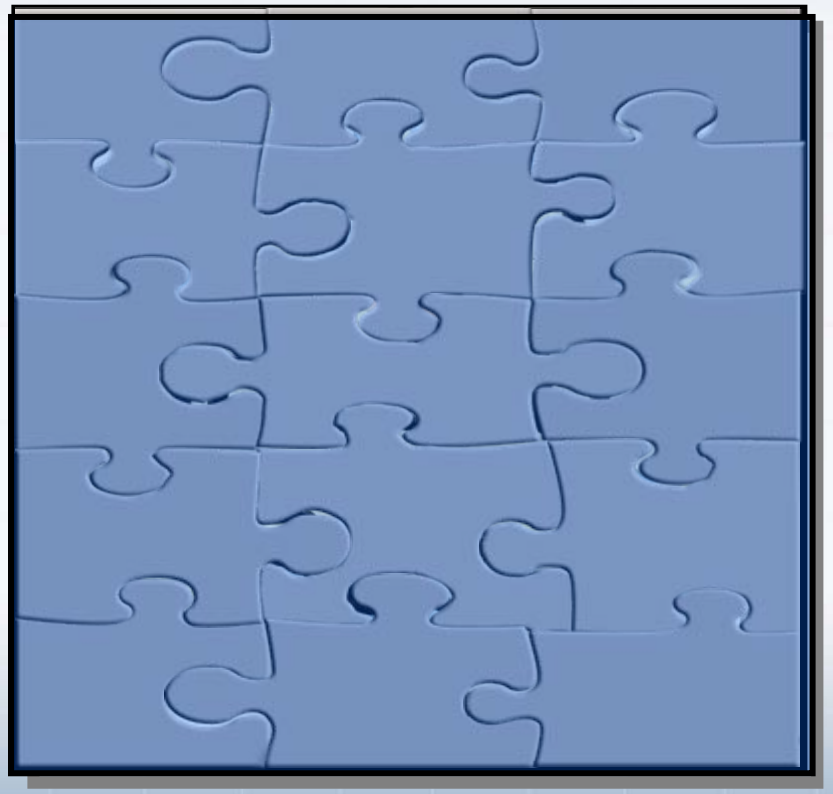
Critical Infrastructure Risk Management

Sourcing Study

Industrial Base Strategic Plan

Capacity Utilization Study

GOCO Competition



Disaster Recovery Plan

GOCO to GOGO Study

Modernization and Planning

Background - Facts and Assumptions

Problem Statement: **Historically, a lack of organic Army Ammunition Plant (AAP)/Depot modernization resourcing has resulted in antiquated/unreliable equipment and infrastructure that challenges our ability to deliver ammunition to the Joint Warfighter in support of the National Defense Strategy**

Facts:

- **Achievement of National Defense Strategy (NDS) objectives depends on a viable organic ammunition industrial base**
- **49 Critical single point failures**
  23 mitigated
- **Organic ammunition industrial base provides capabilities/capacities not available in the commercial sector**
- **WWII Vintage Equipment/Facilities**
  - ✓ Oversized & Under Utilized
  - ✓ Unreliable
  - ✓ Equipment/Parts Obsolescence
- **Historically Resourcing has been Cyclical**
- **Sustainment of the industrial base is funded through customer orders**

Assumptions: Lack of modernization & sustainment of the organic ammo industrial base will result in

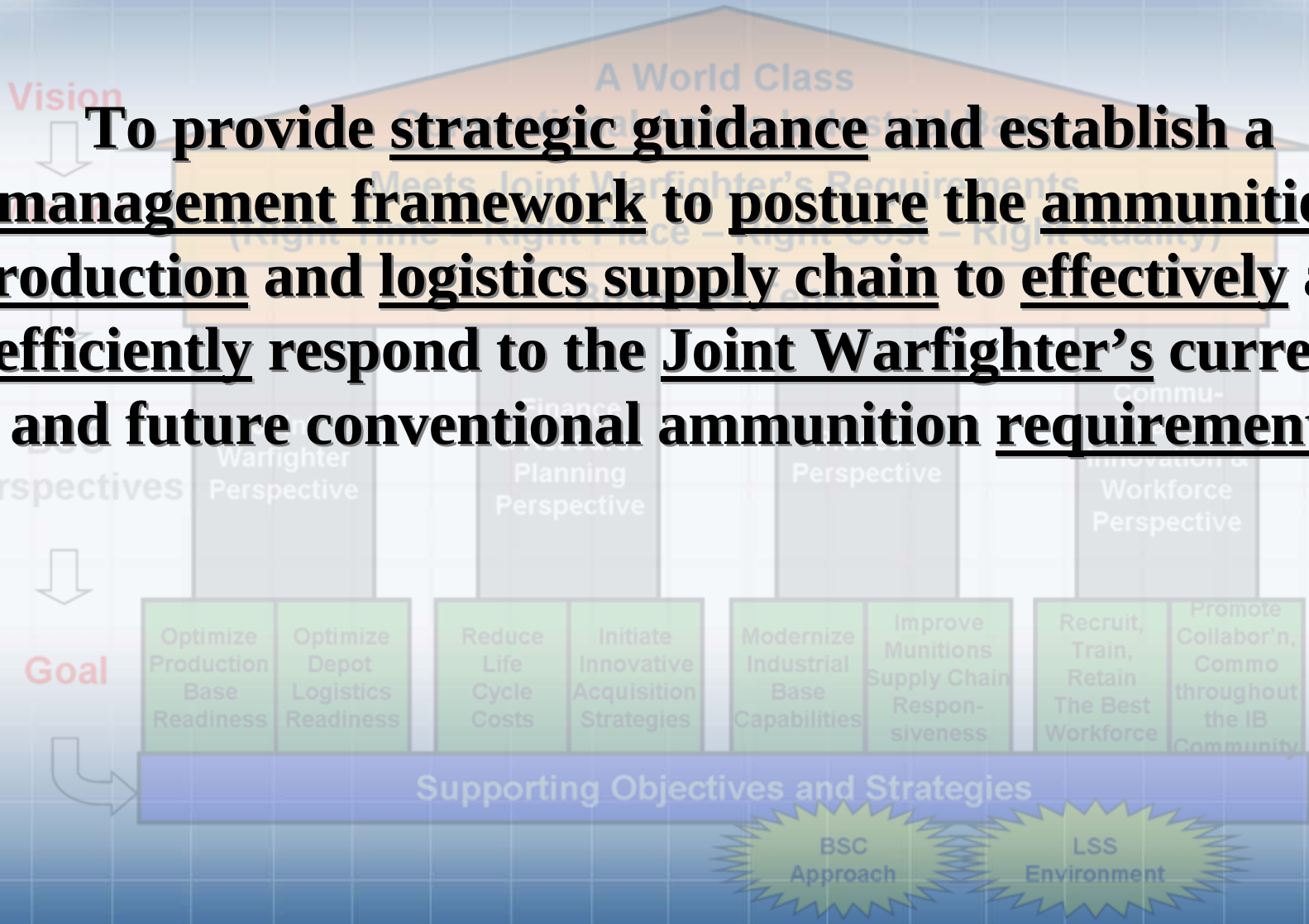
- **National Military Strategy will be at risk**
- **High probability of catastrophic production failures within our ammo plants**
- **High probability of significant supply disruptions will exist**
- **Organic industrial base will remain inefficient**
- **Increase in foreign dependency for ammo and ammo components**

What We Are Doing Now

- **Modernizing**
- **Utilizing Lean Six Sigma principles**
- **Government-Owned, Contractor-Operated (GOCO) competitions**
- **Strategic planning**
- **Optimizing ammo supply network**
- **Implementing BRAC**
- **Consolidating operations**

SMCA IBSP Development Process

To provide strategic guidance and establish a management framework to posture the ammunition production and logistics supply chain to effectively and efficiently respond to the Joint Warfighter's current and future conventional ammunition requirements



SMCA Industrial Base Strategic Plan Access Information

- **To obtain a copy of the Industrial Base Strategic Plan log onto:**

  http://peoammo.army.mil/PMJointServices/

- **Point of Contact is: MAJ Mark Brodhage; 973-724-9772 , mark.brodhage@us.army.mil, or Mr. David Turrisi-Chung; 973-724-7100, david.turrisichung@us.army.mil**

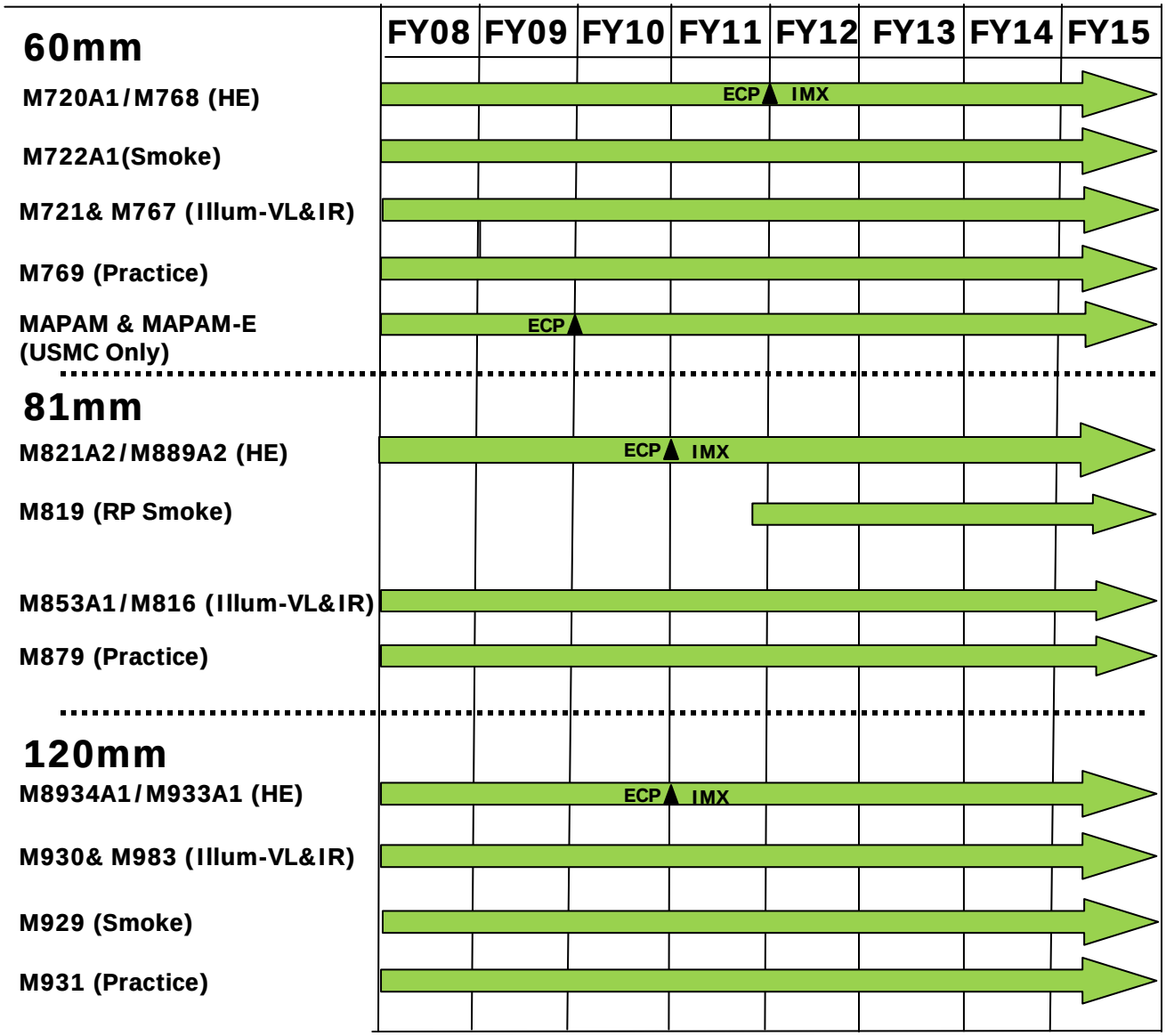
PM CAS Update

Presented by: COLONEL Ole Knudson
Project Manager for
Combat Ammunition Systems
973 724-2003, ole.knudson@us.army.mil

PM CAS Update

- Focused on meeting Warfighter needs
  - ✓ Precision Capabilities (Artillery & Mortars)
  - ✓ Meeting readiness requirements – both operational & training
  - ✓ Improving conventional ammo capabilities
- Relatively large artillery and mortar force structure, and FMS
- Implementing IDIQ contracting approaches
  - ✓ Increased responsiveness to meeting requirements
  - ✓ Maintain competition among qualified suppliers
- Continuing to seek very affordable precision approaches
  - ✓ “How much precision can we afford?”
  - ✓ Potential for a common guidance and control module (CGCM) ATO in FY10-11

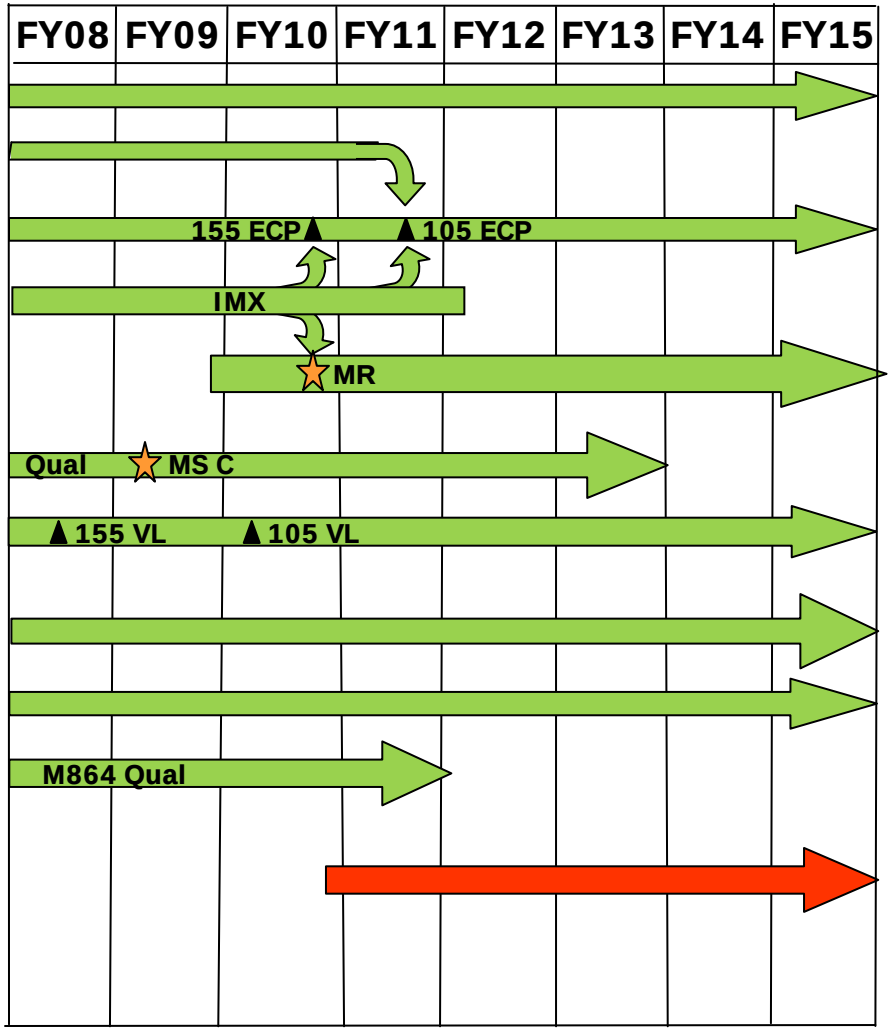
Mortar Ammo



- Buys of all types of Mortar Ammo planned
- Potential significant for FMS – Afghanistan, Iraq and others
- 60mm MAPAM is currently only USMC
- Planning to implement Comp B replacement with an IMX version

Funded | Unfunded

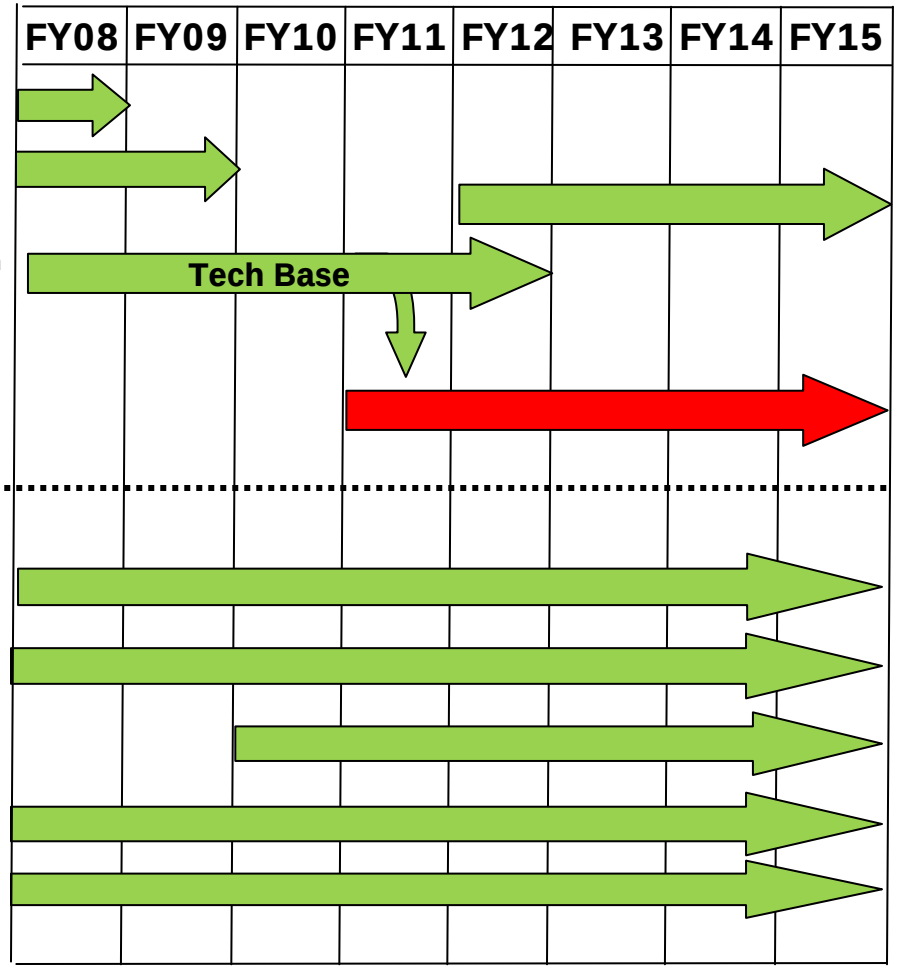
Artillery Ammo



- Somewhat reduced buys of Artillery Ammo
  - Less training usage than expected
  - Relatively large Army stocks of some items
  - Maintaining IB strategic capabilities
- TNT replacement with IMX planned in FY10
- Implementation of new capabilities
  - 105mm & 155mm VL Illum
  - Reuse of M483s shell bodies for training
  - 105mm Pff
  - 105mm hybrid propellant
  - Potentially, SDF for DPICM

Funded **Unfunded**

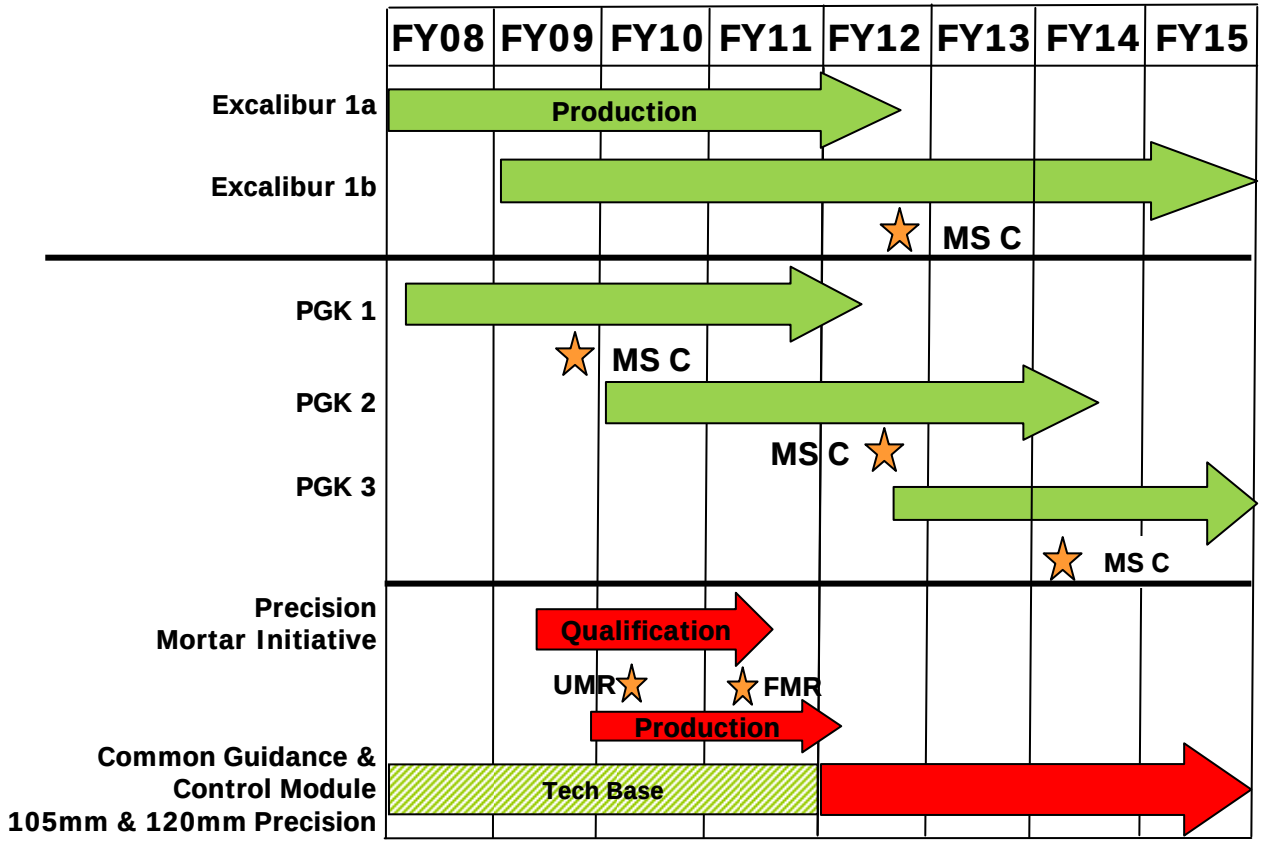
Artillery and Mortar Fuzes



- Large Qtys of Mortar Fuzes
  - Implementation of ETFM planned in FY10
  - Reduced Qtys of Artillery fuzes
- Less training usage than expected
  - Relatively large stocks

Funded | Unfunded

Precision Ammo



- Excalibur Ib with competitive shoot-off in FY10
- Implementing incremental approach for PGK
  - PGK-1 - 155mm HE IOC in FY10
  - PGK-2 - 105mm HE Initiation in FY10
- Accelerated Precision Mortar Initiative
  - Working towards early 2010 IOC to meet recent ONS
- 105mm Artillery PGM
  - Potential FY12 Initiation
  - Potential maturation in FY10-11 under CGCM ATO

Funded
Unfunded
Partially Funded

Congressional Budget Perspective
What Lies Ahead?

NDIA Munitions Executive Summit

February 5, 2009

-- What we know

-- What I think we know

-- What I think

-- Questions

What we know

- New Democratic President and Congress
  - "Left of center" Congress
  - Many operational budget decisions yet to be made
- Winds of change blowing – a "perfect storm"
  - Needs and expectations very high – even defense
    - Policy and "outlays"
  - Complex uncharted GLOBAL economic terrain
  - Out of Iraq into Afghanistan/Pakistan
- Stimulus bill very important! Game changer?
  - Out year impacts uncertain at best
  - Spending could be addictive, habit forming
  - NYT: "rewriting the social contract with the poor, the uninsured and the unemployed"

111th Congressional Leadership

- Speaker Pelosi and Majority Leader Reid yield leadership of Democratic agenda to President Obama
  - Traditional House and Senate differences remain
  - “Regular order” or not??.
- Generational change underway: “old bulls” giving way to 50’s-something crowd
- Most changes in Republican leadership ranks

111th Congress
Defense Committee "Ammo" Leadership

• HASC:	Ike Skelton	John McHugh (Ft Drum)
– Air-Land:	Neil Abercrombie	Roscoe Bartlett
• HAC-D:	Jack Murtha	Bill Young
• SASC:	Carl Levin	John McCain
– Readiness:	Dan Akaka	John Thune (??)
• SAC-D:	Dan Inouye	Thad Cochran

A few new, but experienced minority leaders

111th Congress
Defense Committee Key "Ammo" SDs/PSMs

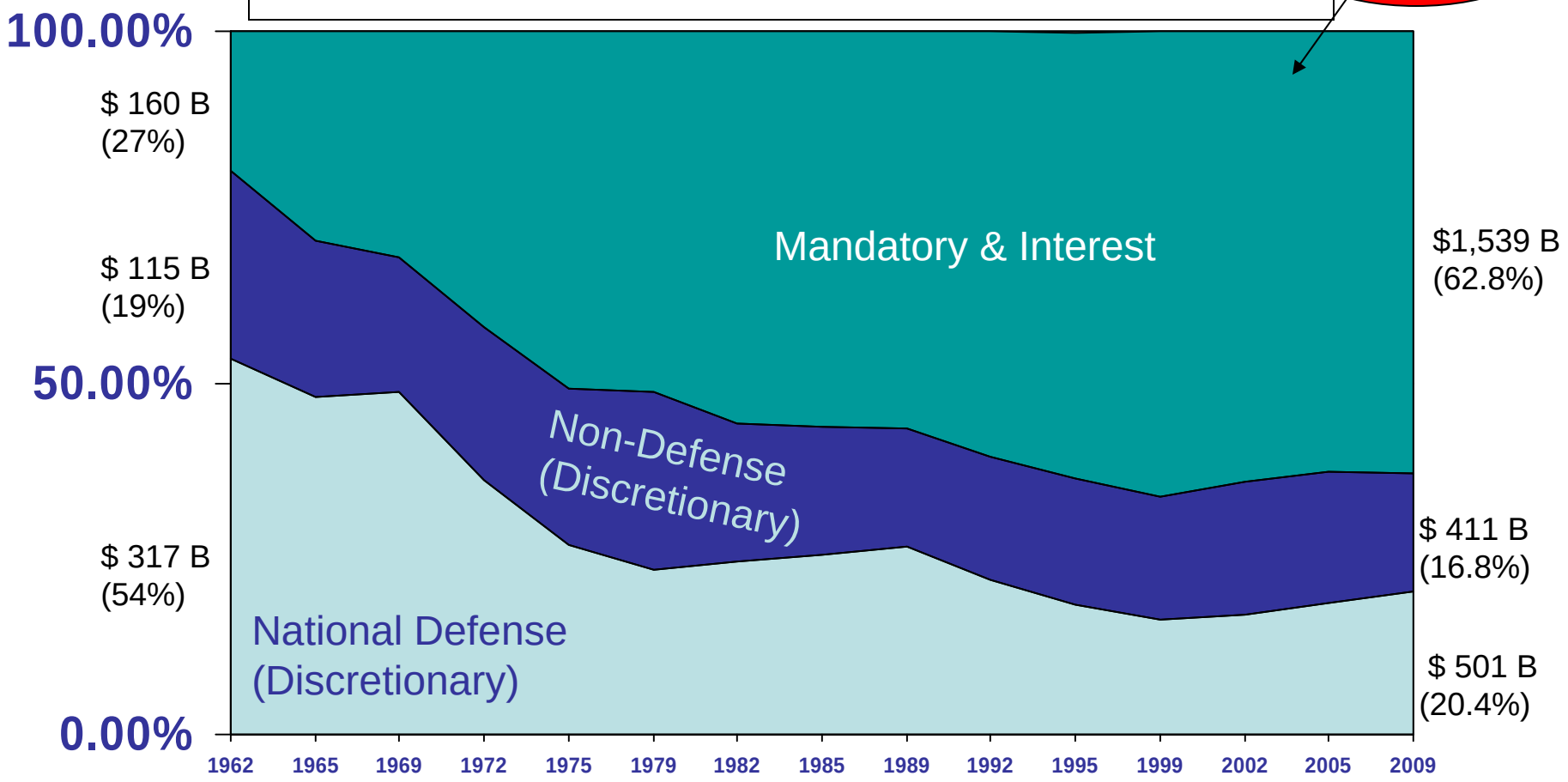
- HASC: Jesse Tolleson, Doug Bush & John Wason
- HAC-D: Paul Juola & Tom McLemore
  - PSMs: Paul Terry (USA)
  - Tim Prince (USN)
  - Kris Mallard (USAF)
  - B G Wright (USMC)
- SASC: Bill Sutey & PSM assignments pending
- SAC-D: Charlie Houy & Stewart Holmes
  - PSMs: Nicole Diresta & Brian Wilson

PSMs largely unchanged from last year

% Discretionary / Mandatory Federal Outlays

(FY2009 Budget Historical Table 8.2 – FY 2000 $B)

Last year's slide



1962

$592 B

$825B stimulus and $700B TARP substantially increase non-defense FY09/10 spending

2009

$2,451 B

Today's Political Battle
The Stimulus Plan ($B) as of Feb 1st

National Journal 1/31/09

	White House	House	Senate
Taxes	1/3	275	272+70=342
Mandatory	2/3	186	193
Discretionary		358	365
Total	≤850	819	900

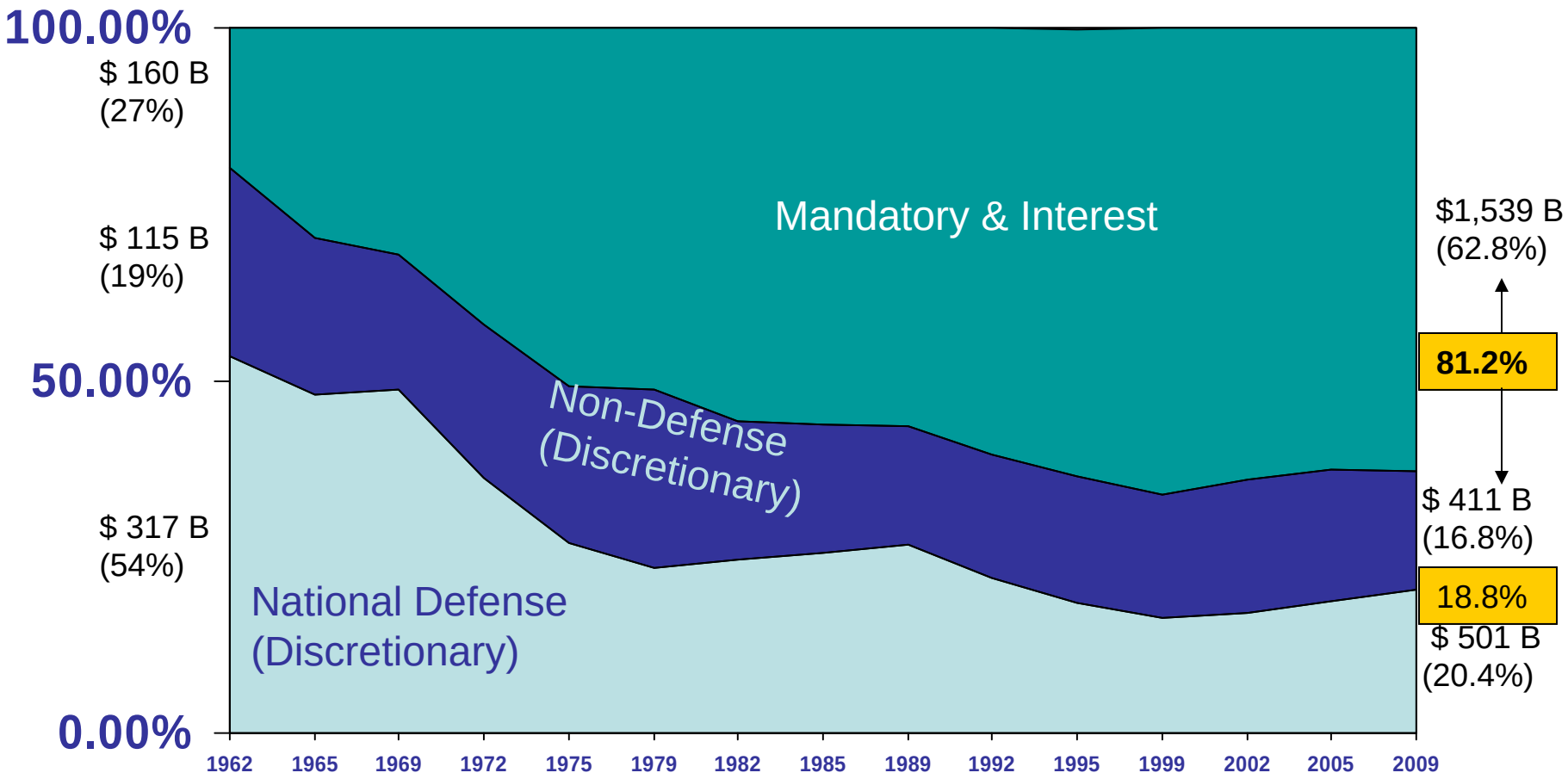
- Supply-side Economics vs. Public Investment: @ tax rates
- Clinton: tried both public investment & balanced budget

  Bush 41 = $121B/yr Clinton = $143B/yr
- Stimulus has $280B/year in new public investment = Reagan tax cuts

Now see which economic/governance policy is better

% Discretionary / Mandatory Federal Outlays

(FY2009 Budget Historical Table 8.2 – FY 2000 $B)



1962

$592 B

FY09 impact of $550B outlays if 50% spends in ’09, defense share -1.6%

2009

$2,451 B

2009 Congressional Budget Process

- Stimulus Package in process
  - To WH by Feb 13th
- "DoD Budget Outline" to Congress Feb 2nd – no detail
  - ~~May include increase to FY10 column of FY09 submit~~ → Probably Out
- Omnibus Approps/CR extension before March 6th
- "State of the Union" Feb XX:
  - "Top Lines" w/ spending themes and objectives
- Detailed Presidential Budget to Congress in late March/early April
- Congressional Budget Committees starting process
  - Deal w/ "process" for balancing Budget: "BRAC-like" commission
  - Stimulus Bill relieves pent up demand for more domestic funding
  - Deal with FY10 "reconciliation" issues not addressed in Stimulus: AMT, investment loss tax credits, etc
  - Outline of tax, discretionary spending and entitlements goals due about April 15th

DoD FY 2010 Budget View

(going into new Administration review)

- DoD proposed FY 2010 DoD "top line" increase to $581B
  - Proposed +$57B to $524B estimate in FY09 budget: +10.9%
    - Army: $17.1B (30%)
    - USN/USMC 13.7B (24%)
    - USAF 9.8B (17.2%)
    - SOCOM & OSD 16.4B (28.7%)
  - ***~$30B of increase for "persistent presence"***
  - ***Increase carried in base in FY11 and beyond (~$300B to POM)***
- FY09 "Full" Supp expected before April budget submission
  - SECDEF "personal estimate" $69.7B
  - New Administration to review and submit
  - Brings FY09 supplemental funding to $135.6B; down $37B from '08
  - Deferred $20B for reset
  - Historically, next year (FY10) bridge supps attached to "full supp" request
- Buying power continues to be squeezed
- Near term readiness vs. future modernization challenge

Rejected

QDR starting to inform PB-10; drive POM 11-15 adjustments
AND probably set Administration ammo policy

Supplementals ($B)

Year	'05 Bridge	'05	'06 Bridge	'06	'07 Bridge	'07 Full	'08* Bridge	'08 Full	'09 Bridge/ **Full**
Milpers	1.3	17.4	6.2	10.2	5.4	13.5	1.1	16.7	**3.8/*12.4***
OPS	16.4	37.1	33.2	37.9	44.3	50.4	61.1	30.5	**51./*29.8***
Proc.	1.4	17.4	8.0	15.0	19.8	25.6	6.1	48.7	**8.5/20.4 (deferral)**
Other	5.9	4.0	2.6	2.7	.5	6.0	1.8	6.5	**2.2/7.1**
Total	25.0	75.9	50.0	65.8	70.0	95.5	70.0	**102.5**	**65.9/69.7 ****

FY 10 Bridge Supplemental expected

***$16.8B Appropriated separately for MRAP; ** SECDEF estimate**

Ammunition (FY08/09 PB)
Procurement Funding ($M)

NO ammo $ in '09
$65.9B in bridge
Supp

	FY 08	'08 GWOT		FY 09	Full '09 GWOT
		Bridge	Full		
Army	2,235	154	345	2,276	
Navy/ USMC	1,057	305	305	1,123	
Air Force	749	0	205	895	
Total	$4,041	$459	$855	$4,294	

What I think we know?

- Winds of change favoring domestic programs
  - ***Economic recovery higher priority than defense today***
  - ***Public Investment may have priority over National Security***
- Political environment: sunny becoming partly cloudy/discordant
  - ***All players have a lot at stake***
- Obama Administration still working Departmental PB10 "top lines"
  - ~~**Proposed +$57B increase probably being scaled back**~~ → **~Inflation**
- Congress will continue supporting Service ammo requests
  - ***Ammo remains an acceptable bill payer account within DoD and Congress***
- Allocation of FY09 Full Supp procurement funds not final
  - ***Not sure if '09 supp ammo allocation is OK***
  - ***Challenge is forecasting current operations requirement***
- Policy to phase out use of supplementals
  - ***Will be difficult in near term***
  - ***Afghanistan costs could slow phase out***
  - ***Expect some migration to "base" of new essential capability***

We're on "long final" for the "soft landing" zone

DoD FY 2010 Budget View

(going into new Administration & OMB review)

- DOD proposed FY 2010 "top line" increase to $581B
  - Proposed +$57B to $524B estimate in FY09 budget: +10.9%
    - Army: $17.1B (30%)
    - USN/USMC 13.7B (24%)
    - USAF 9.8B (17.2%)
    - SOCOM & OSD 16.4B (28.7%)
  - +$31B of increase for "persistent presence"
  - +$14B Capitalization and acceleration (USN $8/USAF$4.7B)
  - +$12B Fact-of-life/inflation
- Anticipated "pass back": Fact-of-life/inflation + some for "persistent presence"
  - Balance forms basis of FY 10 Supplemental

Not accepted

Starting to turn off the defense spending "spigot"

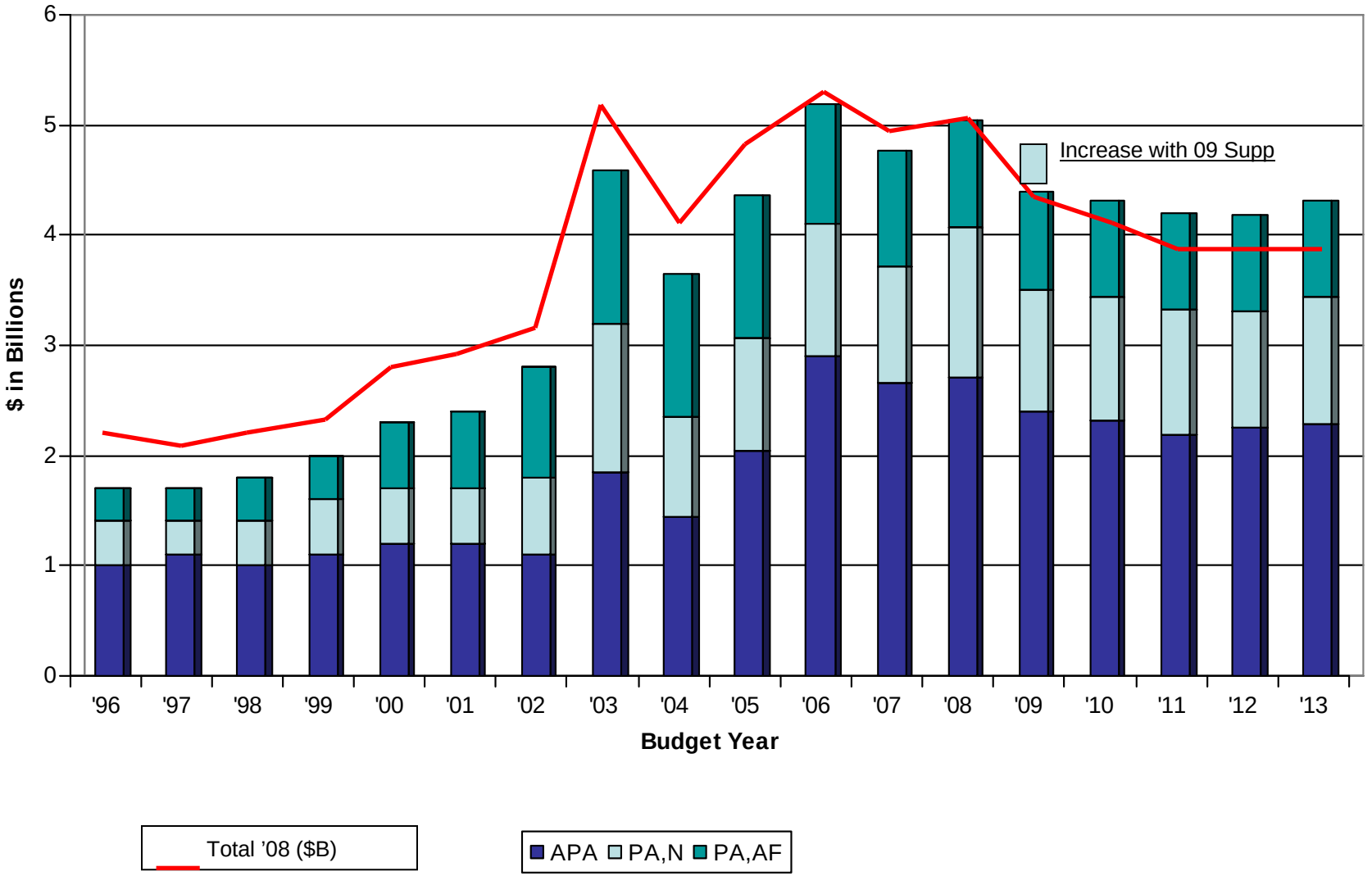
POM 08-13 ($B)

	2008	2009	2010	2011	2012	2013
MILPERS	116	125	129	134	139	144
O & M	164	180	181	187	190	197
PROC	98	104	113	118	122	125
R & D	76	80	77	72	71	68
Total	$480	$515	$524	$530	$539	$548

First major QDR-based POM adjustments in APOM 11-15;
politically expect top line reduction; best case "no change"

Ammo Funding ($B)

(no supp$ shown after ’08)



Congressional Budget Schedule – CY 2009

- Stimulus Package through mid-February
- Omnibus Appropriations/CR extension late February
- April 15th Congressional Budget Resolution sets USG functional allocations, e.g. “050 Defense”
  - ***Indicator of Congressional support for Defense funding***
  - ***Reflection of Defense Committee advocacy***
- Agency authorization and appropriation hearings: Mar & April
- FY09 Full Supplemental possible by Memorial Day
- HASC and SASC marks May-June
- HAC and SAC marks July - September
- Late session but DoD could be done on time

Schedule driven by economic recovery considerations and time requirements

Random Thoughts/Gates Testimony

- Top line constraints – “Money Spigot” closing
  - SECDEF does not like “across the board adjustments”
  - Current acquisition program not affordable
  - Major systems not off the table: FCS, ARH, LCS, KCX
  - C-17 and F-22 on the table but not in budget
  - Balance “desired vs. true needs” – 75% vs. 90% solutions
  - Priority to current threat over potential future threats
- SECDEF/Deputy: Acquisition reform a priority
  - Clean up procurement system
  - Fix the requirements process

“CJCS say Defense budget cuts may target spending on Weapons”:

T. Capaccio, Bloomberg

“Turning final for a soft landing zone?”

- If USG revenue is 18.3% of GDP in 2027, flow will not cover mandatory outlays and interest
- In 2017, Social Security outlays exceed receipts – no Social Security Surplus, debt restructuring?
- Obama Administration has called for commission to reconcile entitlements, costs and revenues
- Many estimate DoD top line insufficient:
  - SECDEF >$57B/year
  - CBO $100B/year
- Next full POM (FY12-17 starting in 2010) may touch a new “fiscal reality”

What I think?

- OMB budget pressure yields near top line “freeze” and supplemental safety valve
  - Not clear Congress would over ride Presidential “top line”
- For ammo, little changed since last year:
  - PEO-MIBTF “surge model” worked and continues to work – the right stuff delivered on time
  - Ammo program remains robust by historic standards
  - “Soft Power” requirements will compete for funding
  - Total spend is tapering off
  - Supplemental funding dropping off
  - “Soft landing” policy & procedures still a “work in progress”
- Accelerated QDR guiding and informing PB10, POM build and Administration policy
  - Now is the time to make case for IB health issues

PS: “take a victory lap”

- The PEO-MIBTF “surge model” worked very well – the right ammo gets there at the right time
- If not so, what did not work? Why?
  - Do not confuse management processes squeaking and “blundering through” with being broken
  - The “consensus answers” here are what need to be worked on and addressed
  - New Administration doing top-to-bottom review: now is the time to be heard.

QUESTIONS

Ogden Air Logistics Center

U.S. AIR FORCE

Munitions Executive Summit

STEVEN G. LAVOYE, COL, USAF
AF/A4LW (Pentagon)
4 Feb 09

Overview

- Air Force Key Points
- Air Force Armament Enterprise
- Current Focus Areas
- AF Requirements Overview
- What We are Doing to Help the Industrial Base
- Joint/Collaborative Initiatives to Satisfy War-fighter Demands
- How Can Industry Help?

Air Force Munitions Points

- Partner with the Joint Services and Coalition Team to WIN Today's fight
- Provide precise, tailored effects whenever, wherever, and however needed
- Modernize Our Aging Inventories
- Preserve America's Industrial Base

Air Force Armament Enterprise

OGDEN AIR LOGISTICS CENTER

Hill AFB UT

Air-to Ground Weapons
Air Intercept Missiles
GP Bombs

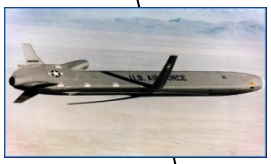
CAD/PAD JPO

Countermeasures

APF

Small-Med Cal AMMO

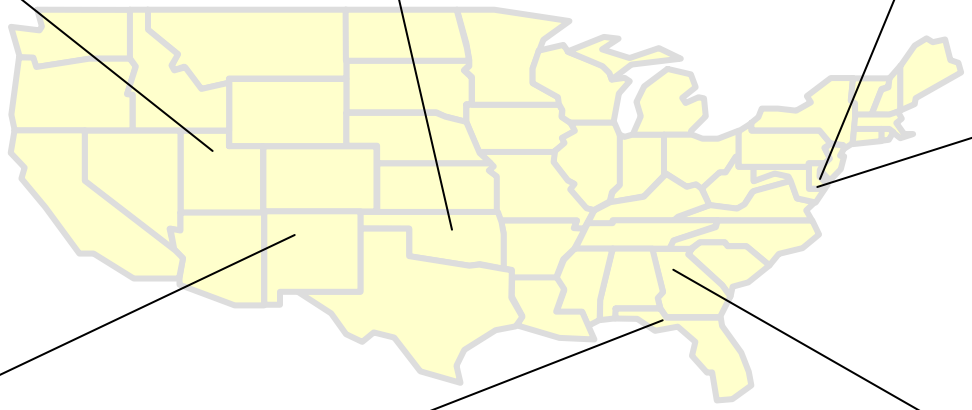
Oklahoma City AFB



ACM, ALCM, CALCM

Pentagon

SAF AQ
USAF HQ A3,A4,A5,



Indian Head, MD

CAD/PAD JPO

Kirtland AFB NM

Nuclear Weapons Center

Eglin AFB FL

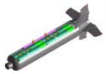
JASSM, JASSM-ER

JDAM

SDB I and II

WCMD

Fuzes



SFW

Robins AFB GA

Air Superiority Munitions

Handling Equipment

Guns and Racks

Expenditures of ~$689M Annually

Over 9,400 NSNs with Inventory Value > $22B

Current Focus Areas

- **Change in deployment strategies**
  - Captive-carry now a way of life

- **Historically, munitions requirements are adaptations of legacy weapons to "fit" new-design aircraft platforms**
  - Deployment shifting to UAV with expanded weapon set
  - Services and Industry need to become more assertive in suggesting weapons marriage with platforms

AF Requirements Overview

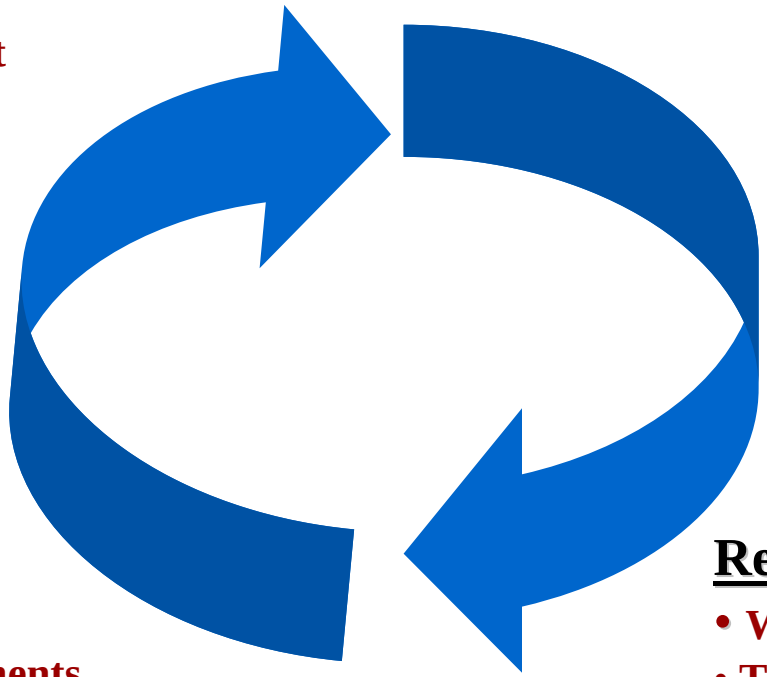
OGDEN AIR LOGISTICS CENTER

Munitions Working Group

- Start of the Annual Process

MMP
- Munitions Movement Plan

Theater WGs
- Combat Reqt
- Forward Presence



GAP
- Asset Location
- Support of Allocation

MRP Reporting

Allocations
- Asset Availability
- Compared to Requirements
- Equitable Distribution

Buy Budget
- Requirements
- Dollars to Support
- Procurement Actions

Requirements
- WRM (NCAA)
- Training
- Test
- Ground Forces
- EOD
- Unit Input

AF Munitions Budget Projections

	FY08	FY09	FY10	FY11	FY12	FY13
Rockets	$18.06	$29.44	$29.36	$37.09	$44.42	$44.71
Cartridges	$164.23	$150.82	$170.91	$181.19	$181.50	$185.70
Practice Bombs	$25.90	$24.59	$27.97	$25.31	$25.72	$28.20
General Purpose Bombs	$140.54	$149.70	$156.30	$150.83	$153.50	$159.10
Fuzes	$70.33	$72.13	$73.34	$77.73	$78.05	$78.48
Flares	$167.73	$304.16	$283.16	$285.18	$289.70	$292.19
EOD	$3.18	$3.25	$3.36	$3.45	$3.52	$3.59
CAD/PAD	$33.64	$38.19	$41.23	$40.26	$46.32	$45.09
Small Arms	$3.63	$8.17	$8.17	$8.17	$8.33	$8.50
Total	$627.24	$780.43	$793.80	$809.21	$831.07	$845.56

AF Budget Estimates
Dollars are in millions

What We are Doing to Help the Industrial Base

- **Addressing a Joint Requirements Process that will "smooth" or "flatten" the peaks and valleys of production requirements**
  - Start with FYDP requirements
  - Expand to beyond FYDP Vision
  - Goal is to help the Industrial Base help us!
- **Utilizing vendor Minimum Sustainment Rate (MSR) analysis to identify critical needs to be addressed**

Joint/Collaborative Initiatives to Satisfy Warfighter Demands

- **Example of working together to improve transparency of requirements and technical issues**
  - Joint Program Office for Cartridge Activated Devices/Propellant Actuated Devices (CAD/PAD)
  - Munitions Executive Steering Group (AFMC Munitions Leadership)
- **Letting go of parochial weapon views**
- **Environmental Initiatives**
  - Green Ammo

How Can Industry Help?

- **Improved information sharing**
  - Cooperative environment – share and discuss new innovative ideas, approaches, ways employ weapon systems
- **We desire weapons technology insertion integrated with aircraft platform development**
  - Different deployment for weapons
- **We need vendor flexibility to move with our ever-changing requirements. Can't wait 5-7 years for vendor line improvements**
- **Challenge Areas**
  - Vendor Quality Assurance
  - Insensitive Munitions Strategy

Questions ??

U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT, & ENGINEERING CENTER (ARDEC)

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ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NJ

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

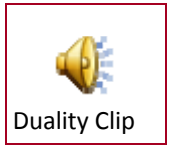
Barbara Machak

ARDEC Overview

February 4, 2009

The Duality of S&T

- S&T Challenges
  - Current versus future
  - Budget Cycle
  - Government in-house versus contract



Armament Research, Development & Engineering Center

Vision:

Innovative Armaments Solutions for Today and Tomorrow

Mission:

To develop and maintain a world-class workforce to execute and manage integrated life-cycle engineering processes required for the research, development, production, field support and demilitarization of munitions, weapons, fire control and associated items

Advanced Weapons – line of sight/beyond line of sight fire; non line of sight fire; scalable effects; non-lethal; directed energy; autonomous weapons

Ammunition – small, medium, large caliber; propellants; explosives; pyrotechnics; warheads; insensitive munitions; logistics; packaging; fuzes; environmental technologies and explosive ordnance disposal

Fire Control – battlefield digitization; embedded system software; aero ballistics and telemetry

Provides the Technology for Over 90% of the Army's lethality; Significant support to other services' lethality

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ARDEC Support to Two LCMCs

Headquarters, Department of the Army

Assigned/Direct Support
Coordination

Army Material Command, AMC
Gen. Ann E. Dunwoody ★★★★

Joint Munitions & Lethality LCMC
BG William N. Phillips ★

Garrison Commander

PEO Ammo
BG William N. Phillips

- Project Manager Close Combat Systems (PM CCS)
- Project Manager Combat Ammunition Systems (PM CAS)
- Project Manager Maneuver Ammunition Systems (PM MAS)
- Project Manager for Joint Services (PM Joint Services)

Research, Development and Engineering Command, RDECOM
MG Paul S. Izzo ★★

Armament Research, Development and Engineering Center, ARDEC
Dr. Joseph A. Lannon

TACOM LCMC
MG Scott G. West ★★

- Acquisition Center
- Integrated Logistics Support Center
- Program Executive Office Combat Support and Combat Service Support
- Program Executive Office Ground Combat Systems
- Program Executive Office Soldier

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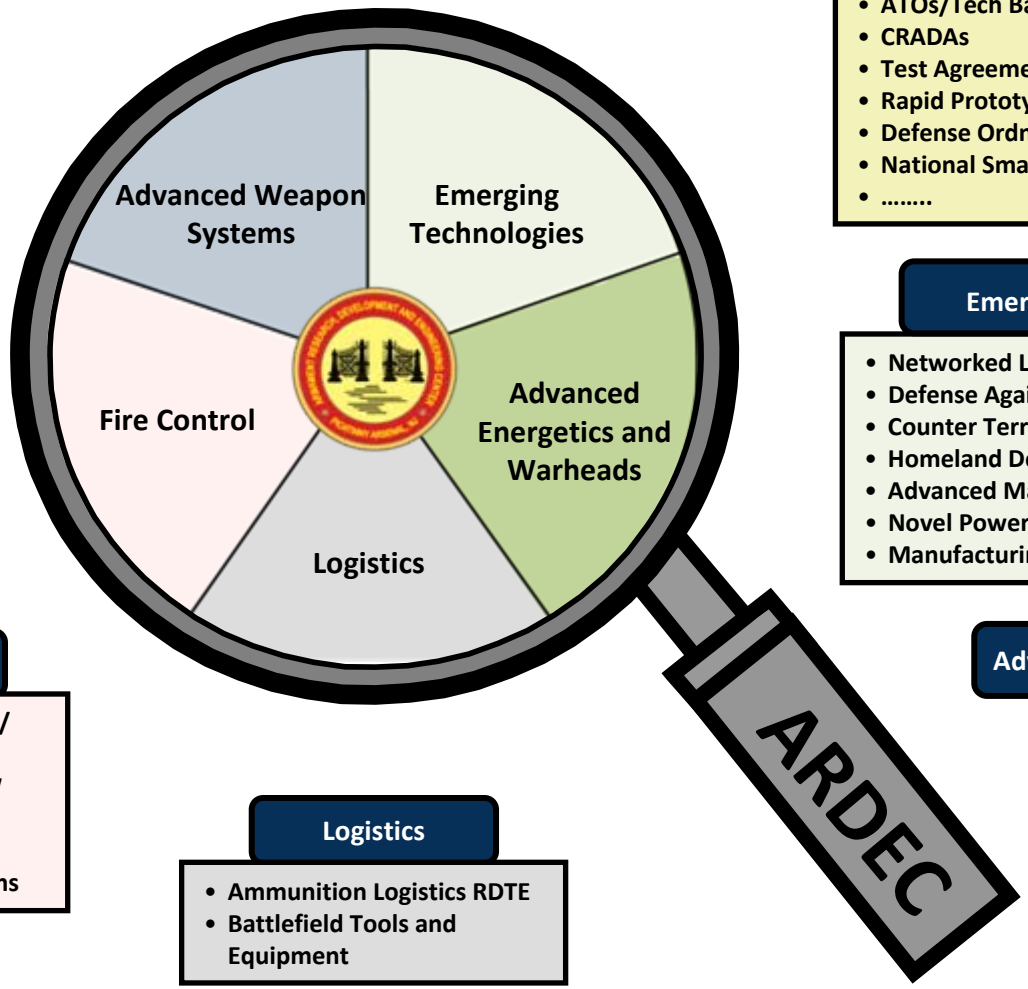
ARDEC Technology Focus Areas

Advanced Weapon Systems

- Direct Fire
- Indirect Fire
- Scalable Effects
- Non-Lethal Systems
- Small/Medium/Large caliber ammunition
- Directed Energy
- Remote Armaments
- Insensitive Munitions
- Fuzes
- Telemetry
- Precision Armaments
- Grenades
- Maneuver Support Munitions
- Demolitions



Collaboration Mechanisms

- ATOs/Tech Base
- CRADAs
- Test Agreements
- Rapid Prototyping
- Defense Ordnance Technology Consortium
- National Small Arms Consortium
- ……..

Emerging Technologies

- Networked Lethality
- Defense Against Unmanned Systems
- Counter Terrorism Technologies
- Homeland Defense Technologies
- Advanced Materials / Nanotechnologies
- Novel Power & Energy Systems
- Manufacturing Science Technologies

Fire Control

- Battlefield Digitization / SW Applications
- Embedded Systems SW
- Firing Tables
- Ballistics
- Automated Test Systems

Logistics

- Ammunition Logistics RDTE
- Battlefield Tools and Equipment

Advanced Energetics and Warheads

- Propellants
- Explosives
- Pyrotechnics
- Warheads
  - Kinetic Energy
  - Chemical Energy
  - Shaped Charges
  - EFPs
  - Fragmentation

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Army S&T Investments

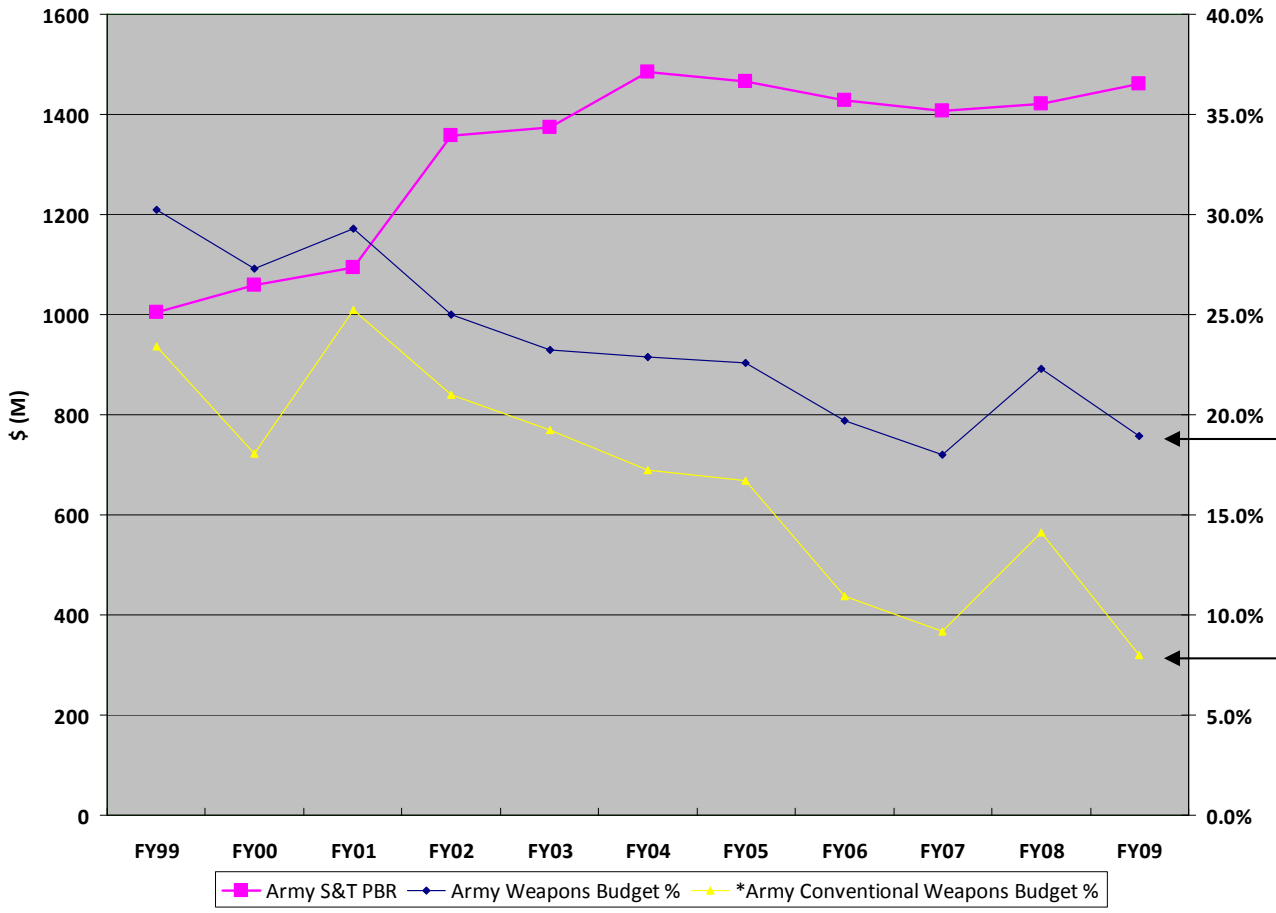
- Courtesy of:
  Keith Luhmann
  Staff Specialist for Conventional Weapons
  Weapon Systems Directorate
  USD(AT&L) / DDRE / DUSD(S&T)

- Numbers are yearly President's Budget Requests (PBR) from the USD (Comptroller) R-1/R-2 Forms. Weapons Taxonomy is categorized by the Defense Technical Information Center.

- The category "Conventional Weapons" is defined as the total Weapons S&T (BA2+BA3) less Directed Energy Weapons, Countermine/ Mines, EM Gun, and Electronic Warfare.

Note: BA2 = 6.2 (applied research)
BA3 = 6.3 (demonstration)

Army Conventional Weapons S&T (BA2+BA3) Percent of Total



10% of total weapons investment is other than conventional

Conventional Lethality is less than 8%

*Conventional Weapons = Total Weapons S&T Budget – Directed Energy – Countermine/Mines – EM Gun – Electronic Warfare (FY99-00)

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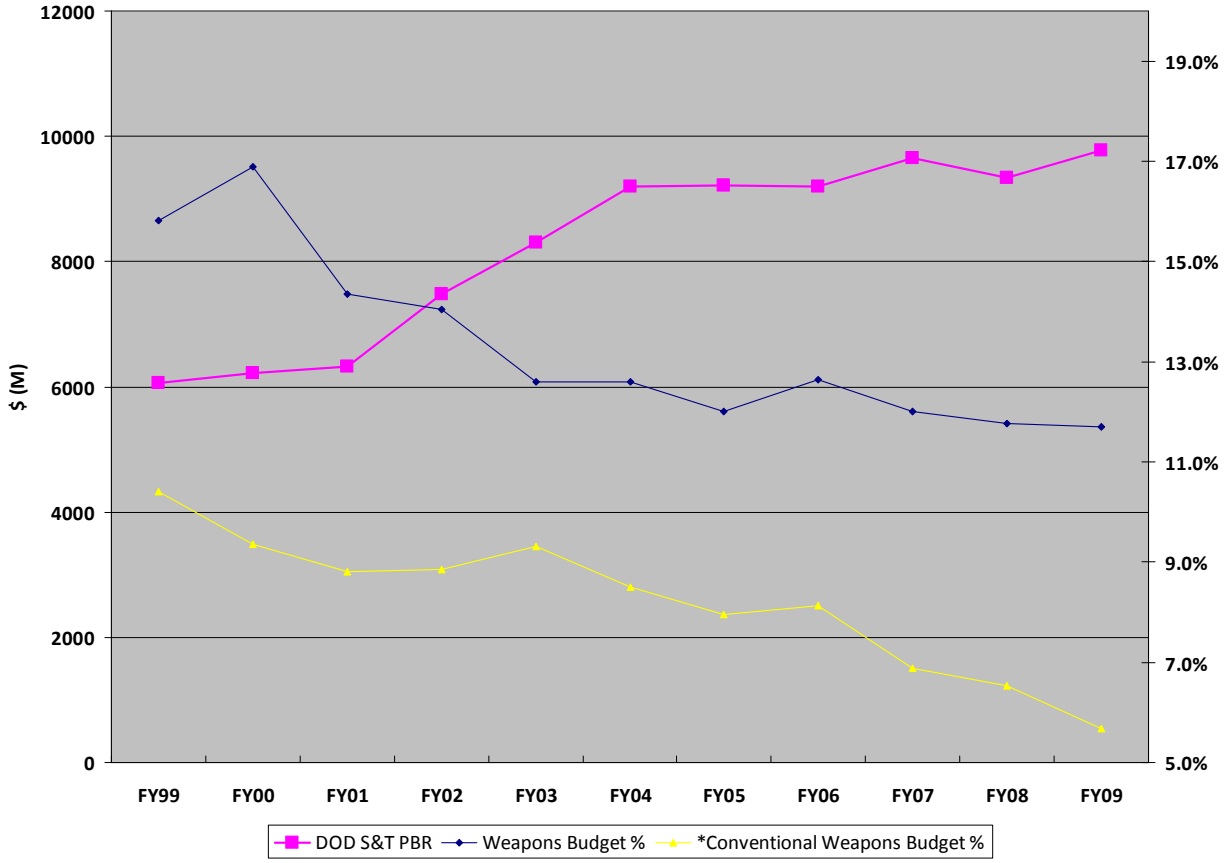
DOD Conventional Weapons S&T (BA2+BA3)



*Conventional Weapons = Total Weapons S&T Budget – Directed Energy – Countermine/Mines – EM Gun – Electronic Warfare (FY99-00)

Across services, lethality investments are low

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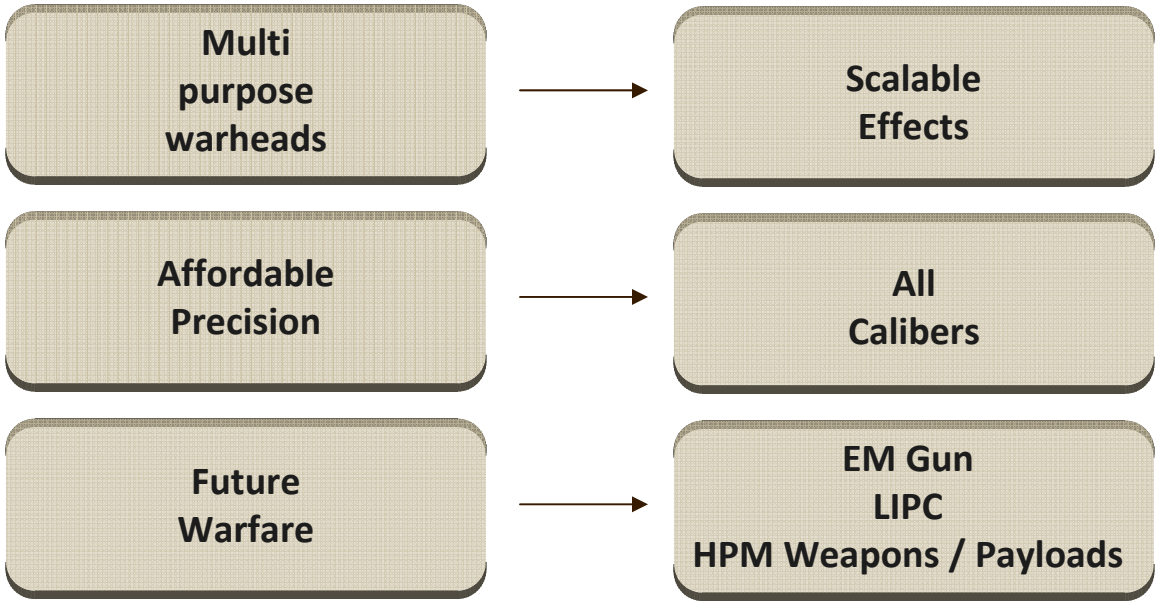
Technology Investment Strategy



Target Engagement	Weapon/Launcher System Control	Project Energy	Effects on Target	Effects Assessment
• Smart sights • Acoustics • Technical Fire Control	• Remote weapons • EM Gun • Laser Induced Plasma Channel (LIPC) • High Power Microwave (HPM)	• Multi-mode warheads • Fuze and power • Nano technologies • MEMS IMU/S&A	• MOUT Structures • Affordable Precision • Non-Lethal • Scalable Warheads	• Area denial • Survivability • Lethality

Underpinning Enabling Technologies
Energetics, Fuze, Power, GNC, IM, etc.

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ATOs Transitioned

Mid Range Munition

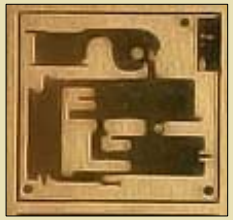
- Transitioned in FY07 to PM MAS
- 1st BLOS smart munition
- Autonomous and SAL designated
- Raytheon (Technology Base Provider) selected for SDD

120 mm Mortar / Mount

- Transitioned in FY06 to PM FCS /LSI
- 1st breech loaded mortar firing existing ammo without modification
- CRADA with FCS to provide engineering and mortar tubes in SDD

MEM IMU

- Transitioned in FY07 to PM CAS
- Co-developed with AMRDEC
- Common munitions / missile IMU
- Used in Excalibur



Lightweight Dismounted Mortar

- Transitioned in FY06 to PM Mortars

- 30% weight saving and 50% reduction in manufacturing cost
- Qualified for Army and Marine Corps use
- Applied to 60mm and 120mm

LW 120 Gun w/ Advance Muzzle Brake

- Transitioned in FY05 to PM FCS/LSI
- Reduced armament weight by 2 tons
- CRADA with FCS to provide engineering and components in SDD

Joint Modular Intermodal Distribution System (JMIDS)

- JMIC+JMIP transition in FY09 to PM-FSS
- Critical supplies delivered faster - 45% fewer C17 missions
- Reduces exposure to IEDs - 40% fewer vehicle trips

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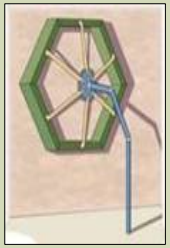
Portfolio Balance
Current Technologies

ATO-M: Pax-41 and Pax-3

- Scale up of IM explosives
- Transitioned to PM CCS for Spider and Bunker Defeat Munitions

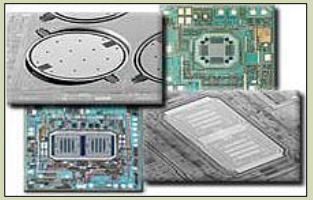
MOUT

- Behind wall effects
- Single step operations
- Less weight



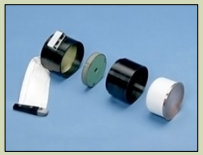
MEM S&A

- S&T and MTO
- Proven at TRL 6 and MRL 7 for 20mm and 155mm
- Saves space for more lethality



Common Smart Submunition

- Discriminating, fuzed sensor submunition
- Defeat both Hard and Soft Targets

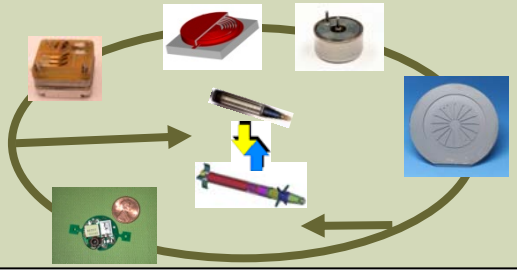


Hardened Combined Effects

- Bash through structures
- Transitioned already to NLOS-LS PGMM and MRM

Fuze and Power

- High Voltage Fireset
- MEMS Impact Sensor
- Thermal/Reserve Batteries
- Shaped Charge Array for MP ESAD



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Portfolio Balance
Current Technologies

Very affordable Precision Projectile

- Precision at $10,000 / RD
- Government design
- Forthcoming CDD for 105mm

Small Arms Deployable Sensors Network (SmADSNet)

- Gun fired fused sensors for building ID
- Meets objective requirements
- Utilize cots with ARDEC G-harden capability

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Portfolio Balance
Future Technologies

Scalable Technology for Adaptive Response (STAR)

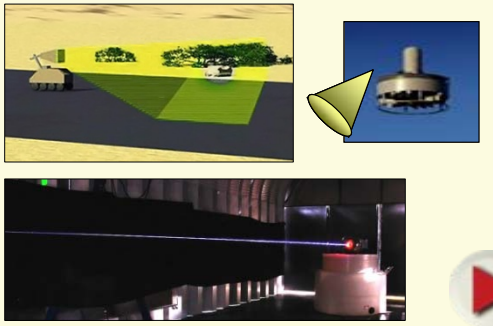
- Scalable, selectable & adaptive lethal effects
- Demonstrators: 250mm (GMLRS), 155mm (Excalibur), 30mm (M789/Mk238

EM Gun

- Eliminate use of energetics with increased lethality
- Enhanced Survivability with reduced launch signature
- 20MJ Railgun Launcher, Integrated Launch Package, & 20MJ Pulsed Power supply

High Power Microwave/LIPC

- Weapon and a payload technologies
- Multi-effects across multiple targets



Lightweight Small Arms Technologies

- Advanced lethality with increased munition effectiveness to target
- Advanced firing control systems for more accurate precision engagements
- 50% weight reduction in gun and bullet due to novel materials

KEAPS

- For FCS to meet objective threat
- ARDEC providing the warhead
- FY10 demo planned

Insensitive Munitions (IM)

- HPC institute, ARL and ARDEC teamed to develop the next generation of M&S for Insensitive Munitions application
- New M&S capability: Faster design and implementation
- Improved tactical and combat survivability
- IM efforts for HE Munition and new IM Fills

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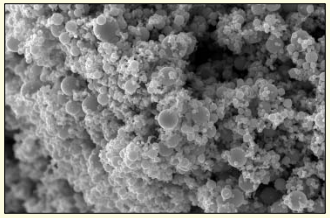
Portfolio Balance
Future Technologies

Extended Area Protection System (EAPS)

- 50mm gun and guided bullet
- Counter rocket artillery and mortar

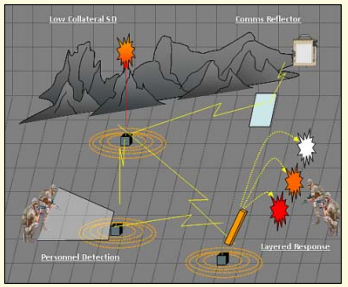
Novel/Nano Structured Energetics

- High performance extremely insensitive fills
- Structural Energetics



Networked Munitions Technologies

- Graduated response
- Improved detection of personnel
- Reduced collateral damage when self destructed



Multi-Mode Warheads

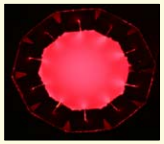
- Target Selectable (e.g. armor or bunkers)
- Scalable (Full or mitigated effect)
- Tunable (non-lethal to highly lethal)

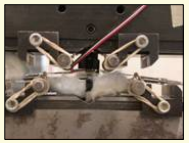
Replacement for DPICM

- Cluster Munitions Replacement Technologies

Breech Mounted Laser Ignition

- Being developed for 155mm artillery
- Replacement for primer based ignition
- Provides logistics and operational benefits
- Improves mission readiness
- Supports continuous high rates of fire





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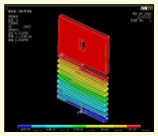
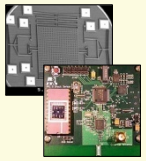
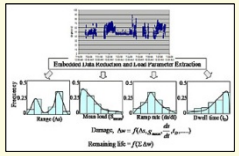
Portfolio Balance
Future Technologies

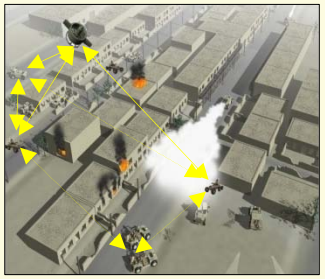
Prognostics and Diagnostics for Operational Readiness

- Holistic open architecture
- Core sensor/processor tag & prognostic engine
- Provide ability to communicate the health and predict readiness of multiple systems

Near Autonomous Unmanned Systems

- Unmanned armaments with autoloading Capability (7.62mm)



Acoustic/Seismic Sensors

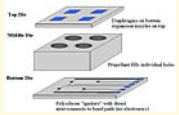
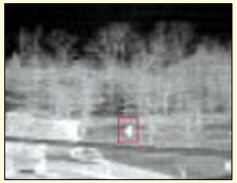
- Enhanced acoustic, UV, IR, narrow-band, and/or optical augmentation sensors to detect/locate/ID shooters
- Provide combat forces with actionable understanding of hostile shooters & gunfire in real-time & enhance TTPs to defeat threats

Soldier and Small Unit Lethality Integration

- Innovative message processing & Decision Aid for collaborative target engagement
- Integrated networked weapon sensors (Smart Sight) w/laser rangefinder & digital compass
- Soldier Integrated gun fire detection sensors (acoustic)

Joint Service Small Arms Project (JSSAP)

- Improved munition effectiveness to targets
- Correct range to moving targets and further power sharing within weapon

Tunable Pyro-technics

- Specific IR Counter Measure Output
- Insensitive igniters
- Enhanced primers, tracers & illumination
- Increased War fighter and aircraft survivability

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How Industry can help

- Over past year, closer coordination with IR&D reviews have been helpful. Need to continue.
- Re-enforce message on need to invest in lethality
- Focus on cost of technology solution
- Emerging technologies are not readily transferable to IB - need to dialogue on how to best handle
- DOTC is still preferred vehicle to execute S&T programs

...S&T will have impact on Industrial Base - let's work it together

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ARDEC Near Term Needs
(now to FY12 For Transition)

- DPICM Replacement
  - Integration of advanced component technologies, including fuzing, power sources, multi-mode sensor-fused submunitions, and UXO location to mitigate issues with current DPICM with respect to US and international pressure to eliminate unexploded ordnance resulting from use of “cluster munitions”, and enable focused research into components for a future novel DPICM capability
- Affordable Precision Technologies
  - Development of low cost common components, including seekers, guidance control and navigation concepts, fuzing, and power sources that can be integrated into current precision projectiles and enable focused research for future precision munitions across a broad spectrum of calibers and mission areas
- Insensitive Munitions
  - IM requirements are integrated into all ongoing and future Tech Base projects which utilize energetic materials
- Individual Assault Weapon
  - Provide a single shoulder launched system meets or exceeds current capabilities of multiple systems against bunkers and light armor targets, adds lethal effects behind the wall, and can be fired from enclosure

ARDEC Near Term Needs (now to FY12 For Transition) (continued)

- Munitions Fuze and Power Sources Technologies
  - Integration of advanced fuze and power source technologies into current systems to provide multifunction capability, greatly improve reliability, and reduce acquisition and life cycle costs
- Payload for Active Protection against all threats
  - Warhead technologies enabling a single APS effector to defeat the full spectrum of battlefield threats
- IED/Mine Neutralization with conventional ammunition
  - Integration of weapon, munition, and fire control technologies which allow defeat or neutralization of roadside or buried threats
- Probabilistic Reliability
  - Provide the capability to predict and mitigate failures before they occur. Initial focus will be MEMS ammunition components and remote weapon systems.
- Remote Armaments and integrated sensors
  - Provide remote weapon systems that utilize components optimized for unmanned firing capability to improve reliability and provide escalation of force and multiple lethality options with improved accuracy

ARDEC Far Term Needs
(after FY12 for transition)

- Digitization of weapons (105mm Art. And Small Arms)
  - Allow greater first and subsequent round hit probabilities by scaling digital fire control down to the smallest possible calibers
- Scalable Lethality
  - Fully scalable effects, from non-lethal to highly lethal, from one weapon/ammunition item
- EM Gun System Technologies
  - Power supply launcher, and launch package maturation and integration into a weapon system for a full scale demonstration
- LIPC/HPM weapons and payloads
  - Integration of DE capabilities into weapon systems and warheads for gun and missile launched effectors
- Counter RAM gun and guided bullets
  - Full up demonstration of an optimized weapon system to improve shortcomings of Phalanx
- Next generation seekers and Guidance Navigation & Control (GNC)

In Summary

- Balance between current and future technology is ongoing
- We have strategies for future investments. Need your support and assistance.
- Funding decline in S&T is disturbing. We are open to ideas on how to reverse this trend.

…..Continued Dialog to Leverage Collaboration Opportunities

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U.S. Army Munitions
HQ DA G-3/5/7

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Agenda

- DA G-3/5/7 Munitions Mission
- Army Munitions Strategy
- Munitions Requirement Process (MRP)
- Current Operational Trends and Observations
- Major on-going Actions/Initiatives

DA G3 Munitions Mission

- Serve as Army Staff focal point for integrating all munitions issues
- ARSTAF Team of Teams = G-3/5/7, G4, G8 and ASA (ALT)
- Where do we focus?
  - ✓ Determine ALL munitions requirements
  - ✓ Sustain the warfight
  - ✓ “Operationalize” munitions issues and recommend priorities
  - ✓ Coordinate munitions resourcing strategy
  - ✓ Synchronize munitions policy
  - ✓ Oversee Army weapons training program
  - ✓ Monitor munitions and industrial base readiness

Munitions "Team of Teams"

Validation, Prioritization, Resourcing, Policy

G-3/5/7
- SSW: **War plans**
- FM: **Force structure**
- CIC: **Capability RQMTs**
- TRA: **Develop RQMTs**
- CIR: **Develop priorities**
- OD: **Current operations**

G-4
Sustainment
- Munitions Div

G-8
Programming
- Conv'l Ammunition (FDX)
- Missiles & FCS (FDD, FDE, FDS, FDV, FDF)

ABO
Budgeting
- Munitions Div

ASA(ALT)
Acquisition & Program Management
- Missile Systems & Ammunition Directorate

Integration

Requirement Generators

OUSD
MRP guidance and scenarios

Joint Staff
JCIDS approval, Out-year targets

CCDRs/ASCCs
OPLANs, Near-year targets

AR2B

Long-Term (POM)

TRADOC
JCIDS; STRAC, POI, and CBT Loads

CAA
QWARRM Model

ATEC
TEST RQMTs

Near-Term
GWOT

OTHER CMDS
ONS

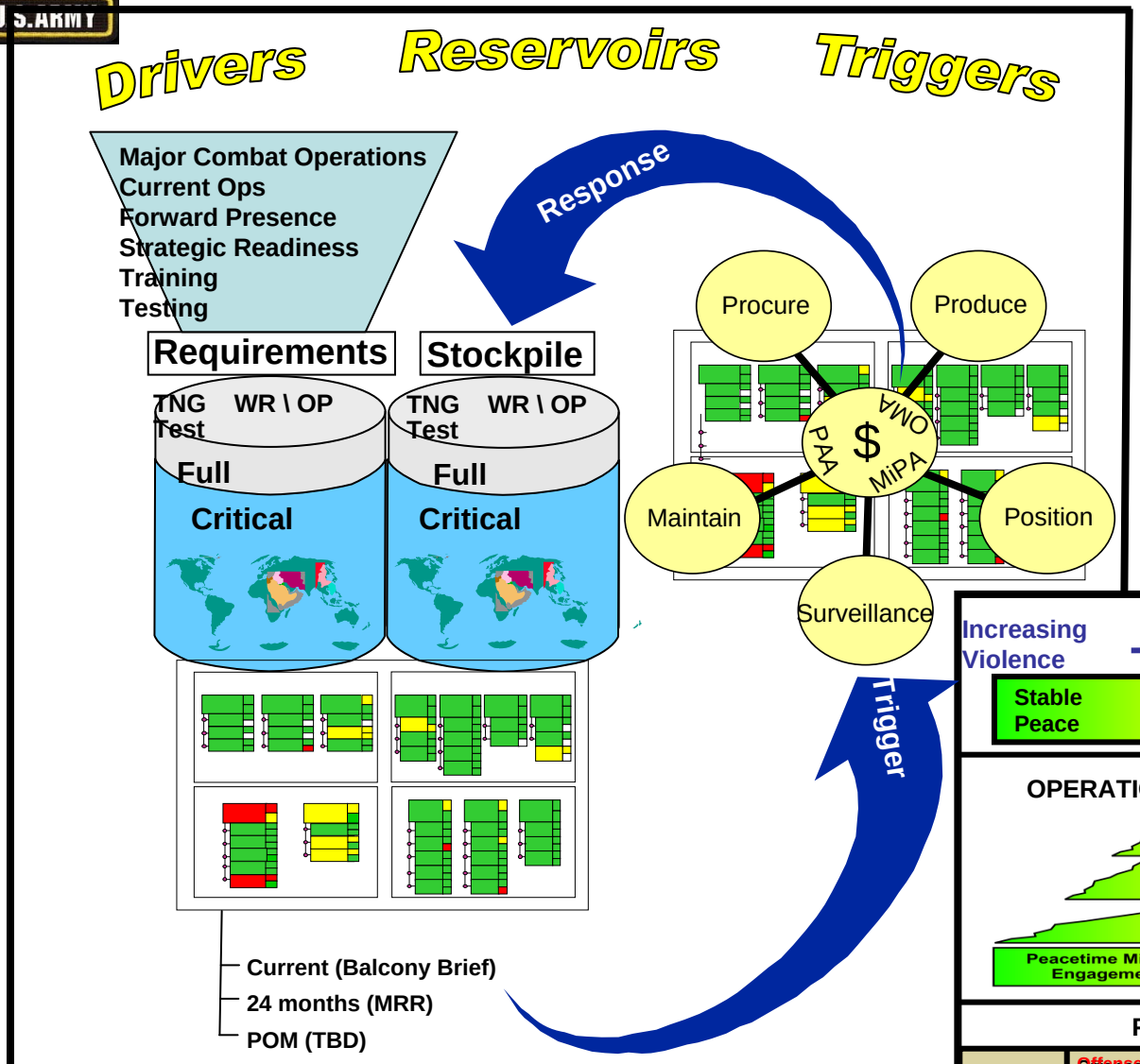
Acquisition and Logistics

AMC

A&M LCMC
Life-Cycle Mgmt Command for missiles

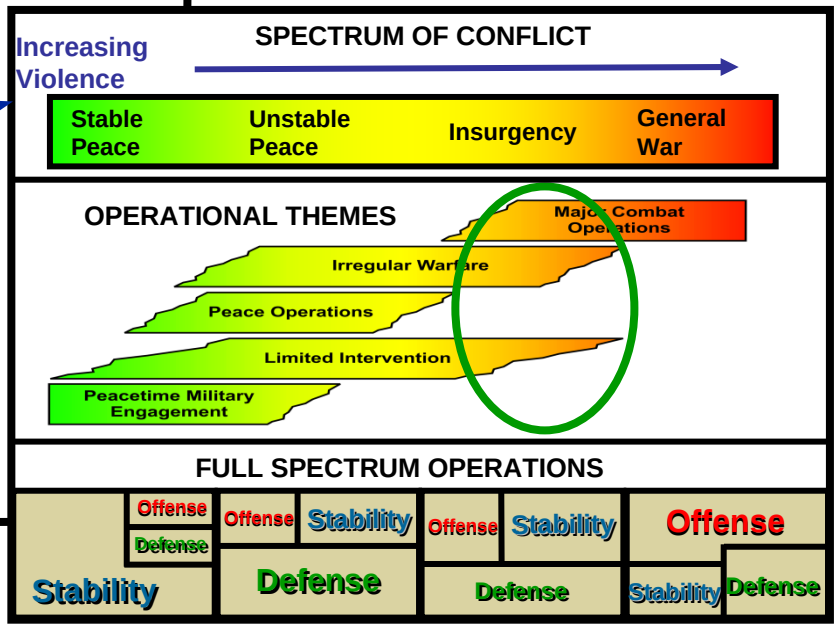
JM&L LCMC
Life-Cycle Mgmt Command and Single Manager of Conventional Ammunition (SMCA)

Army Munitions Strategy



Endstate

- Generate steady-state capability while maintaining flexibility to surge.
- Be proactive versus reactive.
- Take a holistic, comprehensive, synchronized approach.
- Get operational issues in operational channels.
- Support Joint and Army capability- and readiness-based requirements and priorities across the spectrum of conflict.



Munitions Requirements Process (MRP)

- DoD Instruction 3000.4, Munitions Requirements Process (MRP), directs all Services to develop munitions requirements biennially.

- The MRP is a deliberate planning process that supports long-range POM planning and investments.

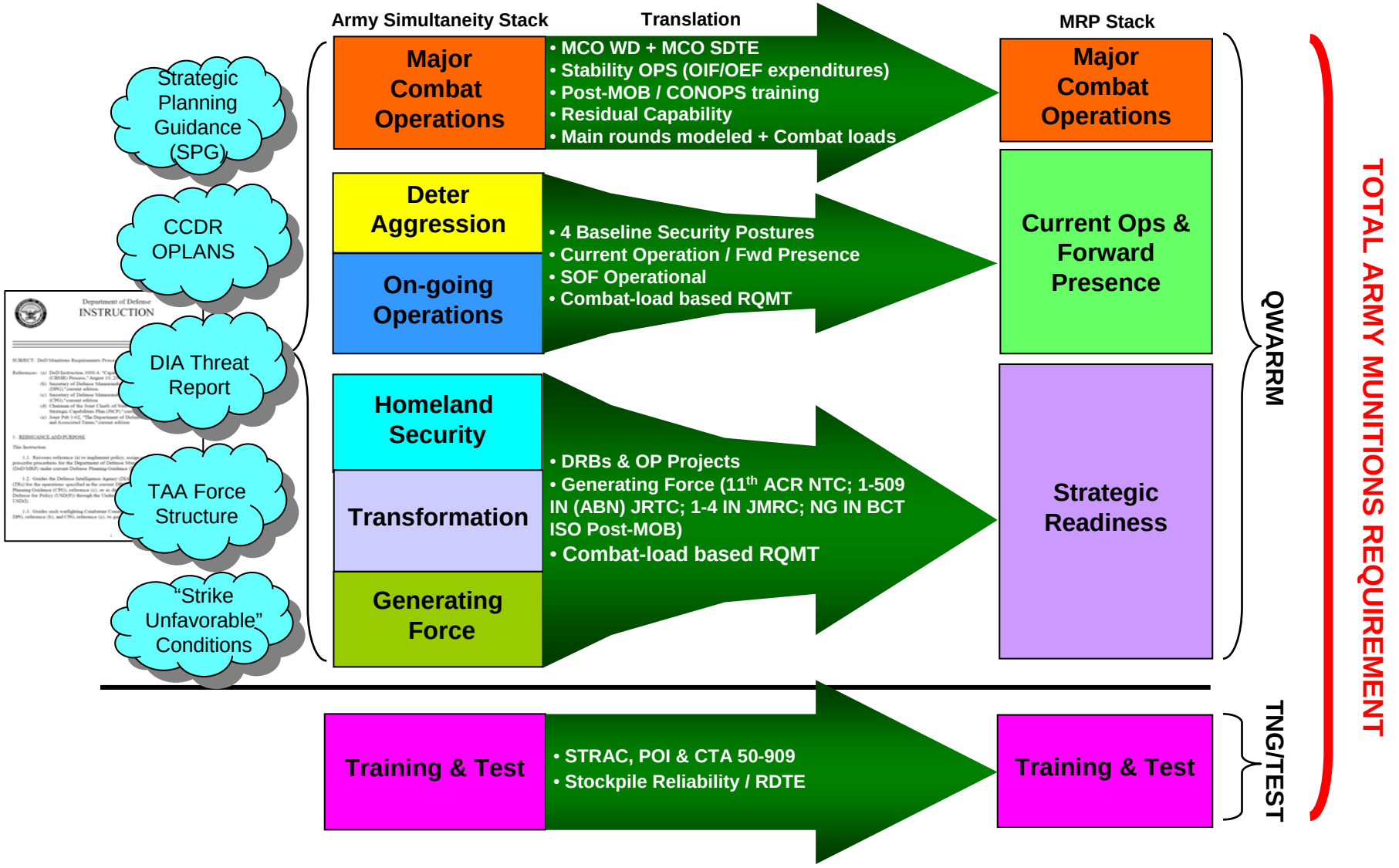
- As part of the deliberate planning process, we use the "Quantitative War Reserve Requirements for Munitions" (QWARRM) process to develop War Reserve / Operational requirements.

- The Center for Army Analysis (CAA) conducts theater-level modeling based on input from multiple sources including:
  - Strategic Planning Guidance
  - COCOM OPLANS
  - DIA Threat reports
  - Projected Force Structure
  - Approved / projected munitions
  - Munitions caps
  - Approved Combat Loads (CL)
  - Munitions / system performance data

- Training and test requirements are developed separately from the QWARRM process.

Total Army Munitions Requirements (TAMR)

Account for Everything; Double-count Nothing



Current Operational Trends and Observations

- We must be more responsive to rapidly changing Tactics, Techniques and Procedures to support the current warfight and persistent conflict (e.g. 2.75” flechettte rockets, Blast/Frag Hellfire).

- Phase IV Operations and “Persistent Conflict” require more than small arms (e.g. demo, precision-guided munitions, non-lethals, etc.)

- Joint and Coalition munitions planning and training is critical. Technology cannot outpace slowest runner (7.62 Dim Trace, Aphids)

- Ammunition Foreign Military Sales (FMS) are on the rise and must be leveraged for; Strategic Shaping/Coalition building and Industrial Base readiness

- Reduction in inventory (due to overall reduction in force structure, increased lethality and precision) has led to a greater reliance on near real time inventory and expenditure data (not there yet)
  - Just in time production does not equate to just in time logistics

Ongoing Actions/Initiatives

- Sustain the Warfight
  - Integrating Emerging Munitions (UMR/FMR)
  - Transition between AOs
  - Foreign Military Sales
- Manage Army Munitions Requirements and Prioritization
  - Training Strategies - Munitions Growth
  - Operational Needs Statements - Enduring
  - Precision to Conventional munitions – right mix
  - TRADOC Missile Assessment/Study
- Cluster Munitions Dynamic
  - Distinction between Oslo Accord and OSD Policy
  - Joint Staff and TRADOC Ongoing Studies
- FY12-17 POM / TAMR
  - QWARRM is our war reserve munitions requirements development process
  - Developed IAW Department of Defense Instruction 3000.4, Munitions Requirement Process (MRP)
  - OSD AT&L Implementation Guidance dictates Defense Planning Scenarios for use in MRP
  - Training Ammunition requirements developed IAW STRAC and TRADOC POI's

Don Chrans DA G8
Programming and Budgeting

McAleese Projections of likely "Funding & Program Tradeoffs" under Obama Administration

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NDIA 2009 Munitions Executive Summit
New Orleans, Louisiana
February 3-5, 2009

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I. Immediate expected impact of Secretary Gates:

(Excerpts from Secretary Gates' speech at National Defense University on September 29, 2008. Later published in Foreign Affairs Journal, and recently-reaffirmed during Congressional Hearings on January 27, 2009).

- *"In Iraq, the number of U.S. combat units there will decline over time -- as it was going to do no matter who was elected president in November.* ***Still, there will continue to be some kind of U.S. advisory and counterterrorism effort in Iraq for years to come."***

- *"In Afghanistan…U.S. troop levels are rising, with the likelihood of more increases in the year ahead. Given its terrain, poverty, neighborhood, and tragic history,* ***Afghanistan in many ways poses an even more complex and difficult long-term challenge than Iraq -- one that…will require a significant U.S. military and economic commitment for some time."***

- *"Support for conventional modernization programs is deeply embedded in the Defense Department's budget, in its bureaucracy, in the defense industry, and in Congress.* ***My fundamental concern is that there is not commensurate institutional support -- including in the Pentagon -- for the capabilities needed to win today's wars and some of their likely successors."***

- ***"All told, the '2008 National Defense Strategy' concludes that although U.S. predominance in conventional warfare is not unchallenged, it is sustainable for the medium term****…U.S. air and sea forces have ample untapped striking power should the need arise to deter or punish aggression -- whether on the Korean Peninsula, in the Persian Gulf, or across the Taiwan Strait."*

- *"In the case of China, Beijing's investments in cyberwarfare, antisatellite warfare, antiaircraft and antiship weaponry, submarines, and ballistic missiles could threaten the United States' primary means to project its power and help its allies in the Pacific…****This will put a premium on the United States' ability to strike from over the horizon and employ missile defenses and will require shifts from short-range to longer-range systems,*** *such as the next-generation bomber."*

- *"…it is common to divide the 'high end' from the 'low end,' the conventional from the irregular, armored divisions on one side, guerrillas toting AK-47s on the other. In reality,…the categories of warfare are blurring and no longer fit into neat, tidy boxes.* ***One can expect to see more tools and tactics of destruction -- from the sophisticated to the simple -- being employed simultaneously in hybrid and more complex forms of warfare."***

- *"When it comes to procurement, for the better part of five decades, the trend has gone toward lower numbers as technology gains have made each system more capable. In recent years, these platforms have grown ever more baroque, have become ever more costly, are taking longer to build, and are being fielded in ever-dwindling quantities.*

- ***Given that resources are not unlimited, the dynamic of exchanging numbers for capability is perhaps reaching a point of diminishing returns. A given ship or aircraft, no matter how capable or well equipped, can be in only one place at one time."***

- ***"War is inevitably tragic, inefficient, and uncertain,…We should look askance at idealistic, triumphalist, or ethnocentric notions of future conflict that aspire to transcend the immutable principles and ugly realities of war, that imagine it is possible to cow, shock, or awe an enemy into submission, instead of tracking enemies down hilltop by hilltop, house by house, block by bloody block."***

(Emphasis supplied). DoD Transcript of Secretary Gates' Speech from September 29, 2008 is available at: http://www.defenselink.mil/speeches/speech.aspx?speechid=1279. Republished in Foreign Affairs Journal, "*A Balanced Strategy Reprogramming the Pentagon for a New Age*", by Robert M. Gates, January/February 2009. Restatement by Secretary Gates during January 27th, 2009 SASC & HASC Hearings is available at: http://armed-services.senate.gov/hearings.cfm?h_month=1#month and http://armedservices.house.gov/hearing_information.shtml.

II. Themes emerging from incoming Obama Administration:

(From public comments & articles of DoD Transition Team; surviving DoD Leadership; and Confirmation Hearings).

- DoD recognizes that Supplemental funding must fall significantly by 2010. **Expect DoD Leadership to commit to much-smaller 2010 GWOT Request, in exchange for final year of significant growth in DoD's 2010 base budget.**

- Rumored maximum $57B in additional 2010 DoD base funding, would result in ≈$581B 2010 DoD request, comprised of: (subject to final decision by new Administration)
  - ≈$17B to Army;
  - ≈$14B to Navy/USMC;
  - ≈$10B to USAF; and
  - ≈$16B remainder to "DoD-Wide" Accounts. (Rumored maximum of $57B is on top of planned $524B in 2010 from previous Administration; up slightly from current $515B 2009 base funding).

- **There is high-probability that incoming Administration will ultimately approve a significant increase in 2010 DoD budget, to fund "recurring-cost-of-wars", Operations & Support for "expanded Army & USMC", "Wounded Warrior" Initiatives, etc.** Potential increase of 50%-75% of that $57B proposed growth (≈6%-8% minimum likely), would result in 2010 DoD base budget of at least ≈$544B-$558B.

- **While Supplementals will decrease sharply by 2010, there remains significant potential that immediate 2009 Supplemental costs could actually increase**, because of returning Iraq/OIF Combat Brigades; plus deployment & "build-up" for ≈20K-30K additional U.S. Troops to Afghanistan/OEF, (e.g., large-scale infrastructure; Wheeled Tactical Vehicles; Aviation assets; ISR assets; etc.).

- "Mini-surge" in Afghanistan requires expansion of agricultural, infrastructure & economic aid as well. (Driven by mountainous-topography; lack of transportation infrastructure; severe poverty; massive illiteracy; lack of public communications infrastructure; "narco-terrorism"; lack of unbiased law enforcement & courts; and tribal perception of endemic corruption in National Government).

- While DoD is still committed to "two-nearly-simultaneous-Major-Regional-Conflicts", evolving Force Structure construct anticipates that only one of those conflicts will be a platform-intensive "Major Combat Operation", while the other conflict will be a "long-duration-Irregular-Warfare-Campaign". This distinction between "Capability" (to fight two near-simultaneous Major-Combat-Operations), versus "Capacity" (to provide rotational-forward-presence), has impact of:

  - For Army, "Capacity" requirement drives end-strength, with "must-pay-bills" for Operations & Support, which inherently-competes against Army Procurement.
  - For Navy, this weakens requirement for "high-end" Surface Combatants; favoring Littoral Combat Ships, expansion of DDG-51/CG-47 fleet, and also Virginia-Class Submarines (NSSN) for covert ISR & Strike taskings.
  - For USAF, this increases both Airlift & Aerial Refueling requirements, while potentially-reducing a portion of previous "high-end" TACAIR requirements, (due to reduction to only one-sustained "Major Combat Operation", against regional or near-peer competitor).

- Recapitalization is also constrained by increasing "Affordability" limitations. New Administration is focused on:
  - "Cost Predictability";
  - "Program Affordability";
  - "Multi-Mission Platforms";
  - Compressed-Development-Schedule for "Minimalist Platforms" ("75% solution in months", versus "99% solution in years/decades");
  - "Elimination of Duplicative Programs"; and
  - Pro-active development of Counter-Insurgency capabilities for "Hybrid & Complex" Warfare. (Potential for significant OSD alteration of resource allocation among respective Services).

III. Likely "Funding & Program Tradeoffs" among Military Services:

- **USAF:**
  - President Obama, and DoD Transition Team, have previously-expressed public concern over USAF "shortfall" in both Airlift capacity, as well as increasingly-frail Aerial Refueling Fleet. Perception is that USAF has not fully-prioritized "critical-joint-enablers", particularly Airlift (C-17 & C-130J), Tankers (KC-X), and ISR Assets. **Expect USAF to prioritize expansion of C-130J production under another multi-year-procurement.**
  - **Expect Congress to unilaterally "plus-up" additional C-17 orders in 2009 GWOT Supplemental. Incoming Administration could also seek to reincorporate C-17 production into 2011 base budget, through QDR.** (But C-17 & KC-X would then be "zero-sum" competitors within USAF's "Airlift Procurement" Account, particularly if Congress mandates Tanker "Dual-Production").
  - **Expect eventual USAF/OSD/Congressional compromise, to allow for F-22 production extension through ≈2010-2012.** (Mission requirement is genuinely-driven by need for survivability against proliferating "double-digit-SAM" threats. Fleet of 187 total F-22 only results in ≈126-129 combat aircraft). Expect:
    - USAF to formally-concede requirement for 381 F-22 fleet.
    - USAF to agree to accelerated F-35 CTOL orders in 2011-2013, for "affordability" & "balanced-fleet-mix".
    - **Primary issue will be whether OSD provides part-or-all, of ≈$3.1B Top-Line relief to fund F-22 production extension in 2010 base budget.**
    - **USAF, or Congress, could also seek "compromise" of ≈$2.5B for 16 additional F-22 orders in 2009 GWOT Request, (beyond 4 F-22 orders already expected in 2009 GWOT).** Precedent already exists of Navy funding for 16 "Super Hornet/Growler" orders in 2008 GWOT. (OSD is also expecting to request at least 9 additional Super Hornet/Growler orders in imminent 2009 GWOT).
    - As "worst-case" option in 2011, USAF could then "self-fund" F-22 production, through reduction of "over-programmed" RDT&E, and specialty-platforms.

- **Navy:**
  - Priority will likely be on "affordability" of Navy Ships (e.g., DDG-51, NSSN, LCS, LPD-17, T-AKE). New Administration's focus appears to be primarily on:
    - **Extension of LCS** for distributed near-shore counter-terrorism/piracy missions;
    - **DDG-1000 Program is in great danger, from shift in Navy Leadership's prioritization of Mission, "acceptable-risk", and "affordability",** particularly if Navy can achieve 2 DDG-51/year, (given historic Congressional funding of ≈$3.9B/year for 3 DDG-51 hulls).
    - **Expect Navy/OSD to seek "Ship-swap-agreement" with GD & NOC, to have one Shipyard produce all DDG-1000 orders,** with other Shipyard receiving additional DDG-51 orders, (to avoid duplicative cost of having both Shipyards capitalize & train workforce).
    - **Also expect Congress to encourage** (or possibly even unilaterally-fund & direct), **Navy to accelerate DDG-51 orders, to preserve Fleet's Surface Combatant quantities & Industrial Base.**
    - **Congress should also support additional "Sustaining Engineering" RDT&E funding, to cannibalize & preserve promising DDG-1000 Combat Subsystems** for CG(X), and "Open Architecture" competitions, to drive technical innovation among 2 viable CSI Integrators.
  - **Likely slow-down in aggressive MMA/P-8A production "ramp-up" schedule.** (MMA is driven by strong Chinese "diesel-electric" submarine threat, but aggressive planned production ramp-up in 2010-2012 remains overly-optimistic).
  - **Congress is likely to extend F/A-18E/F & E/A-18G multi-year-procurement through ≈2012, to address part/all of Navy's 60-125 short-term aircraft "TACAIR Gap".**

- **Army:**

  - New Administration adopts Army (and USMC) Growth Plans to enable "Force Generation" deployment/rotation models. **(As a practical matter, new Administration must adopt Army & USMC Growth Plans, but could seek to increase "support" specialties, such as Civil Affairs, Linguists, Engineers, etc.).**

  - **Army's Future Combat Systems will be heavily-scrutinized.** Congress & OSD perceive that FCS competes against "Reset", "Readiness", and "expanded-end-strength" requirements. Expect:

    - **Eventual OSD/Congressional consensus to deploying "FCS Network", and Infantry Brigade "Spin-outs", with primary scrutiny shifting to future "Manned-Ground-Vehicle" (MGV).**

    - **"Non-Line-of-Sight-Cannon" (NLOS-C), will still likely proceed because of current testing & strong Congressional mandate.**

    - If remainder of FCS Manned-Ground-Vehicle (25-27-ton) production is delayed or curtailed, **this would trigger additional Abrams & Bradley Upgrades, with high-probability of expanded Stryker fresh production.**

  - Wheeled Tactical Vehicle orders peak in 2010, as Army completes growth of the 6 new Infantry Brigade Combat Teams. Contraction in Supplementals by 2010, will impact fresh production of HMMWV; FMTV; and FHTV. **But "Reset" will also surge over next two-years, as degraded-vehicles return from OIF; coupled with "fresh production" & "Reset" for Troop-strength surge in Afghanistan.**

  - Regarding Army/USMC Joint Light Tactical Vehicle (JLTV) Program, new Administration will scrutinize both "Capability v. Capacity" requirements, and "Affordability-constraints". (Two variables of "unit-cost", plus technical maturity to commence initial production by 2011-2012, will likely decide outcome).

SEA 21
FLEET SUPPORT

NDIA 2009

MUNITIONS EXECUTIVE SUMMIT

"Evolving Requirements"

RDML James P. McManamon
Director, DON Weapons and Ordnance Safety (SEA 00V)
and
NAVSEA Deputy Commander for Surface Warfare
(SEA 21)

AGENDA

- CNO Guidance
- SEA 21
- SEA 00V
- Road Ahead
- Navy's SMCA Investment
- Service–Industry Partnership
- USN Requirements
- Future Gun Systems
- Summary

CNO's GUIDANCE

- Conduct the full range of operations from combat to humanitarian assistance.
- Provide presence and operational flexibility with forward deployed maritime forces.
- Deter and, if deterrence fails, win our nations wars.
- Foster and sustain cooperative relationships with an expanding set of allies to enhance global security.

Protect maritime freedom and address threats to peace

SEA 21

- ASN (RDA) addressed span of control issues in PEO ships and requested options to reduce the PEO portfolio and achieve a more effective distribution of programs
- SEA 21 formed to provide for new construction as well as modernization efforts.
- Platform is a means of conveyance to put the ordnance on target
  - Mission success requires quality ammunition in the right amount, at the right place, and at the right time.
- Navy highly values the preservation of a robust conventional ammunition industrial base

NAVSEA
NAVAL SEA SYSTEMS COMMAND

Ordnance Safety & Security Activity

SEA 00V

Naval weapons and explosives safety technical authority, providing the DON with expertise, policy, oversight, and procedures. In so doing we sustain Joint combat capability by identifying, mitigating, and communicating risks throughout weapons systems and explosives lifecycle.

Focus

- Explosives Safety & Security Policy and Procedures Technical Authority
- Ordnance Transportation, Handling & Storage Safety, Security and Environmental Compliance
- Explosives Safety & Security Inspections Guidance & Compliance Evaluations
- Explosive Mishaps Prevention
- Explosives Safety Site Approval/Waivers/ Exemptions
- Munitions Rule Application
- Munitions Response Program
- Insensitive Munitions Program Coordination Technology
- Ordnance Quality Evaluations

Products

- Weapon and Combat System Safety
  - Weapon System Explosives Safety Review Board
  - Software Systems Safety Tech Review Panel
  - Fuze and Initiation System Tech Review Panel
  - Unmanned Systems
- Shipboard Weapons Systems Integration
- Explosives Safety Inspections (ESIs)
- Explosives Safety Training
- Site Approvals / (ESQD) Arcs Determination
- Ammunition & Hazardous Materials Review Board
- Waivers & Exemptions
- Ordnance Assessment Policy and Procedures
- Insensitive Munitions (IM)
- Electrical Safety / HERO / Lithium Battery
- Arms, Ammunition & Explosives Physical Security
- Ordnance Environmental Compliance Guidance & Monitoring

Commitment

Safe Ordnance Design

Safe and Secure Handling of Ordnance

Environmental Compliance

Safe and Secure Storage of Ordnance

Road Ahead

- **Current CNO Guidance**
  - **313 ships and 3800 aircraft maintained in Naval Service by 2020**

- **Combat Systems evolution**
  - **'System of systems' with BMD efforts and Net-Centric warfare**
  - **Pinpoint accuracy with prescribed collateral damage**
  - **Common weapon systems across new construction platforms**
  - **Increasing use of UAVs**
  - **Directed energy weapons**

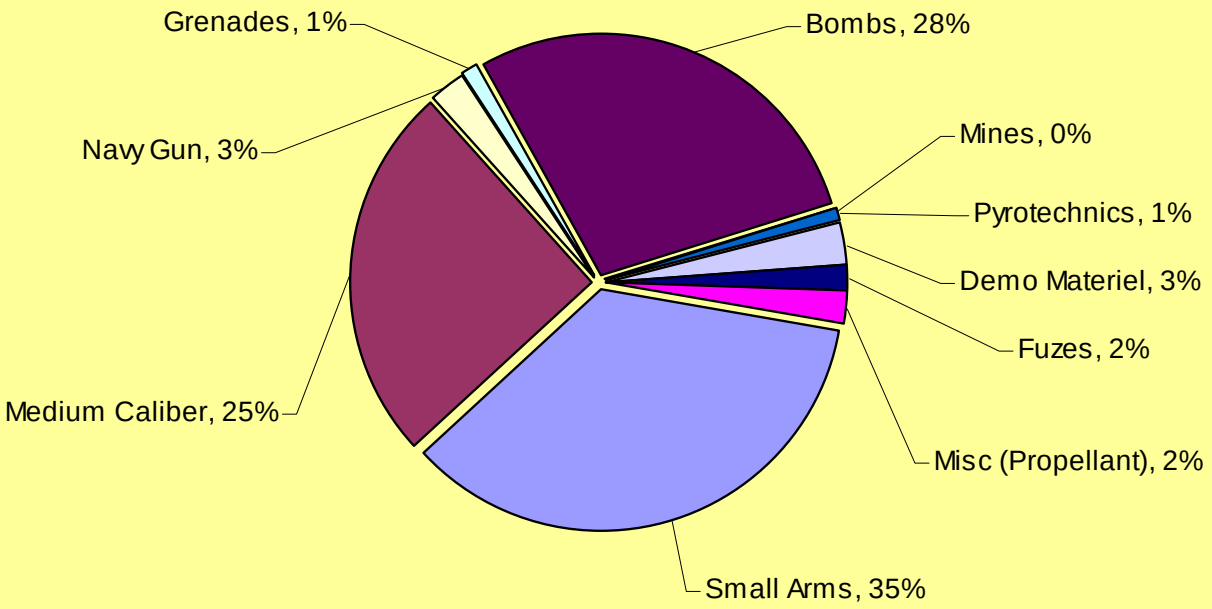
- **Operational Safety**
  - **Naval platforms becoming multi-mission and multi-Service**
  - **Explosives safety considerations: HERO, IM, etc.**
  - **Environmental stewardship**

Navy's SMCA Investment

- ✓ GWOT
- ✓ Annual training
- ✓ RDT&E
- ✓ International Programs

Today's Requirements ($1.5 B) up $200M from last year!

FY08 - FY15 Navy SMCA Procurements by Ammunition Family



Service - Industry Partnership

- Adequacy in performance of munitions in theater
  - Quality munitions
  - RDDs continually improving
  - Overall deployed forces requirements are being met
- Minimal impacts observed with SMCA managed BRAC transitions
- Closer collaboration with the Ammo Enterprise for efficient and effective procurement execution
- Indian Head Manufacturing Capability of Propellants supplements SMCA
  - 30-40% of NSWC/IHD propellant manufacturing supports SMCA mission

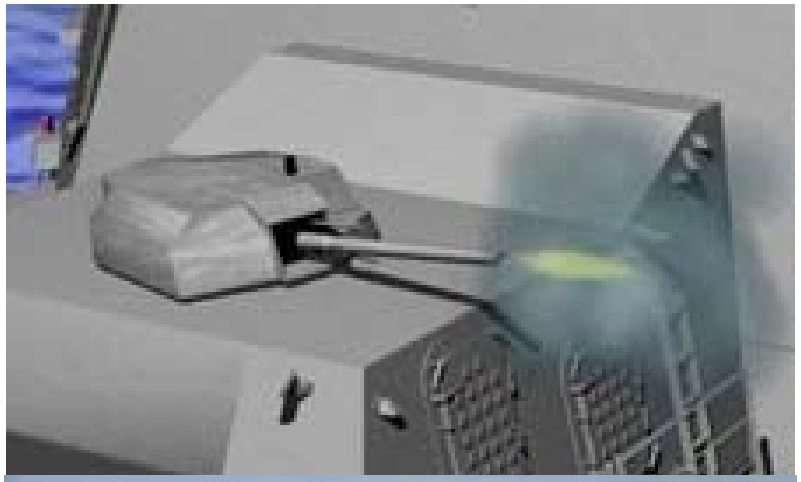
Service - Industry Partnership

- USN continues to be a large customer at the Army's facilities
  - AAP McAlester (Load Assemble & Pack of 5/54 Propelling Charges (MK 67 MOD 3)
  - CAAA Crane (Load Assemble & Pack 5/54 Projectiles and Pyro/Demo)
  - AAP Holston (5/54 explosive fills)

- 2.75” Hydra Rocket - big in Iraq/Afghanistan
  - Product Engineering Army product for Navy use

USN Requirements

- Continue to build 30MM inventory to support San Antonio Class LPD training and operational requirements
- USN still working towards a cost effective means to deliver 57MM ammunition to USN and USCG Deep Water program despite FY09 congressional marks
- Seek alternative munitions for training and qualification with individual and crew served weapons due to Live Fire Range limitations.



USN Requirements

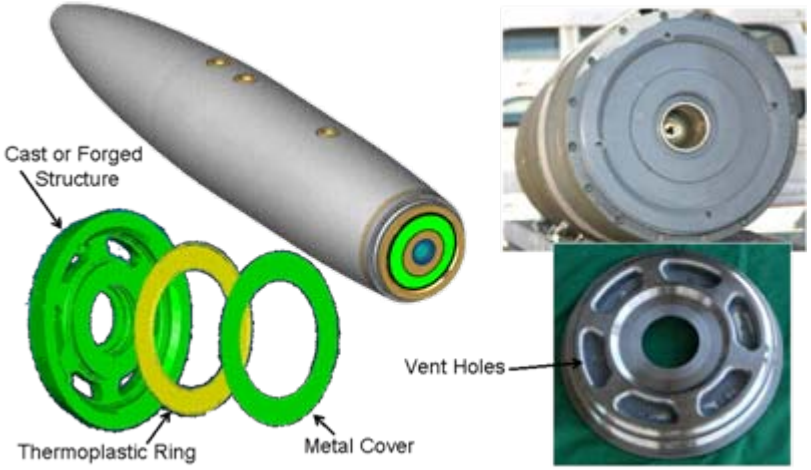
- **Pyro/Demo at CAAA**
  - **Small quantity procurement issues w/System Engineering challenges**
  - **Troubleshooting, engineering investigations, failure review boards**
  - **Cost adjustments have significant impact on procurements.**
  - **Increase in student quotas at the Joint EOD School requires the procurement of additional pyrotechnics and demolition materials**
- **Rapid fielding of new pryo/demo items requires optimum teamwork with SMCA as items transition to production**

General Purpose Bombs (PMA-201) IM Technology Joint Program

GP Bomb IM Technology

Description: Develop, test & demonstrate weapons with equal or better IM performance than current BLU-117/110/111 filled with PBXN-109

- Maintain lethality effectiveness (w/Tritonal or PBXN-109)
- Maintain compatibility with current fuzes
- Maintain compatibility with current guidance packages and tail kits



GP Bomb IM Vent Hole Technology

Status

- BLU-111 B/B & C/B complete; FY10 Production
  - IM Vent Plate Configurations
  - PBXN-109
- BLU-117 B/B & C/B 95% complete: FY10 Production
  - IM Vent Plate Configuration
  - AFX-795
- BLU-126 C/B IM Qual in FY09
  - Incorporate & Test Vent Plate Configuration
- Reactive Liner IM Technology
  - Mature Technology for Bomb's application

Mil Std 2105 Test Matrix

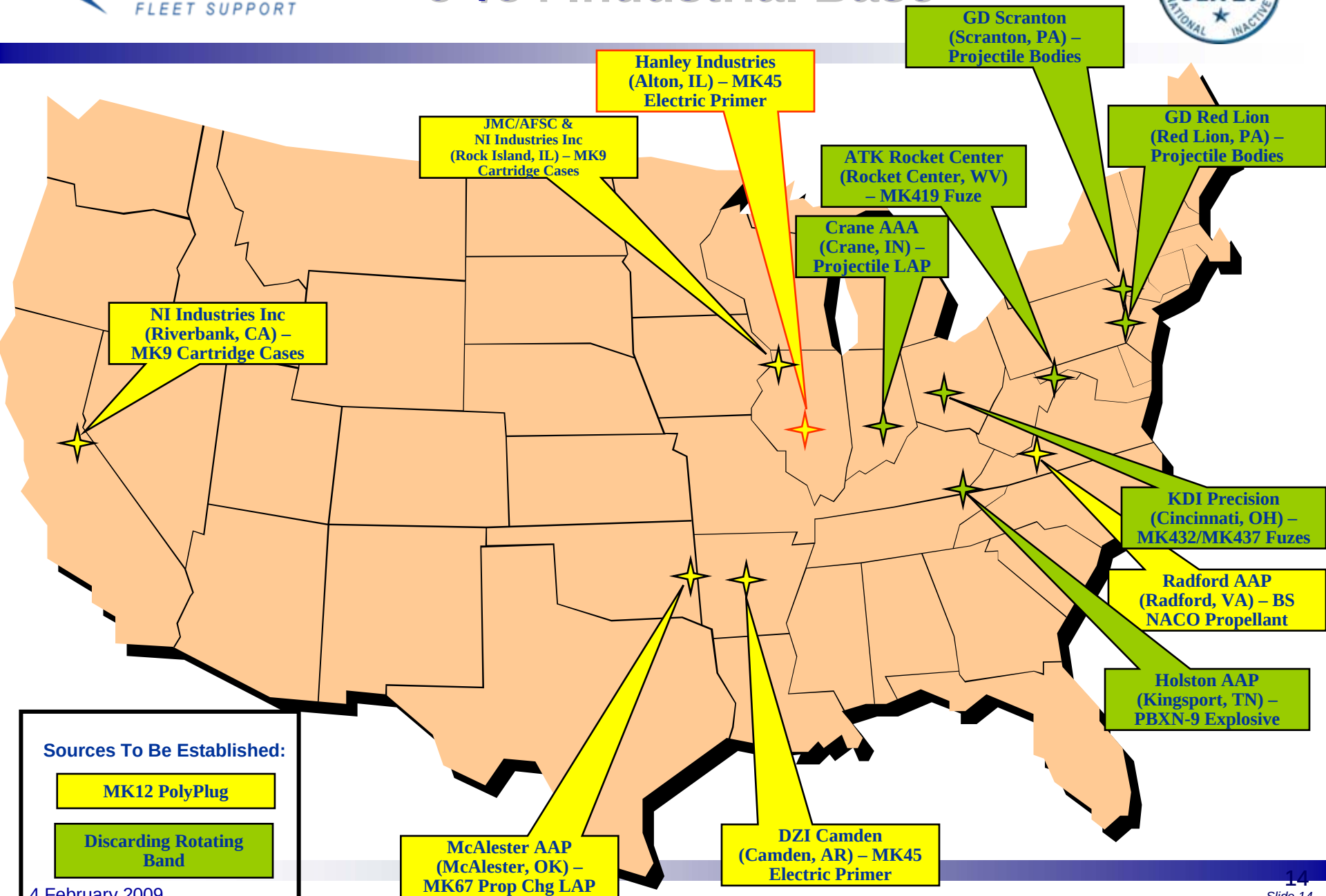
Current GP Bomb IM Reaction Status (w/Vented Base Plate Technology)

	FCO	SCO	BI	FI	SD	SCJ
BLU-111	V	IV	V	IV	TBD	(F)
BLU-110	V	III/IV	IV/V	V	TBD	(F)
BLU-117	V	V	III	III	(F)	(F)

5”/54 Systems Contracting

- 5/54 Conventional Ammunition is procured via Single Manager For Conventional Ammunition (SMCA)
- Current Acquisition Strategy - procure large quantities of component parts and subsequently build projectile sub-assemblies and propelling charges
- Acquisition Strategy and reduction in NCEA over last decade presents challenges to maintaining responsive Industrial base
- Existing inventory of component parts has been largely depleted
- USN working with the SMCA to release sources sought to evaluate the potential to move forward with a Systems Contract Approach for 5/54 ammunition

5”/54 Industrial Base



Fuzes

- Reduction in U.S. Army cannon artillery and decrease in USN training requirements for 5/54 in recent years has impacted the industrial base – consolidation and reduction of NTIB suppliers
- USN continues to pursue naval version of Multi-Option Fuze Artillery (MOFA) for 5/54
- USN initiated Product Improvement Plan for the Multi-Function Fuze (MFF) to support Anti-Air Warfare requirement
  - Parts obsolescence
  - Decrease costs
  - Intent is for full and open competition acquisition strategy upon transition to SMCA.

PMA-272 transition agreement signed with PM-JS

- Collaboration with Picatinny PM-JS for transition of MJU-61 and MJU-64 flares to SMCA
- Developing ARM 024 (kinematic) countermeasure with planned transition following successful LRIP
- SMH-75 Flare procurement delayed by internal execution

Future Gun Systems

- MK 46 Mod 1&2 GWS
  - 30 mm ammo
  - Derived from Mod 0 Expeditionary Fighting Vehicle (EFV)
  - LPD 17 Class, LCS
- Advanced Gun System
  - 155 mm ammo
  - DDG 1000
- MK 110 Gun
  - 57 mm ammo
  - WMSL 750, DDG 1000, LCS

Summary

- **DON is active industrial base partner**
  - Heavy reliance on ammunition wholesale base for annual training and contingency re-supply
  - Active supporter of the U.S. Army's Ammunition Enterprise
  - Closest collaboration ever with PEO Ammo
  - BRAC transition
- **Interoperability of Services imperative**
  - Common visibility of ordnance items through info systems
  - Requirements collaboration
  - Joint design and development of today's weapon systems and platforms
  - Safety considerations (HERO, IM, etc.)
  - Standardization of joint criteria/test requirements

2009 Munitions Executive Summit

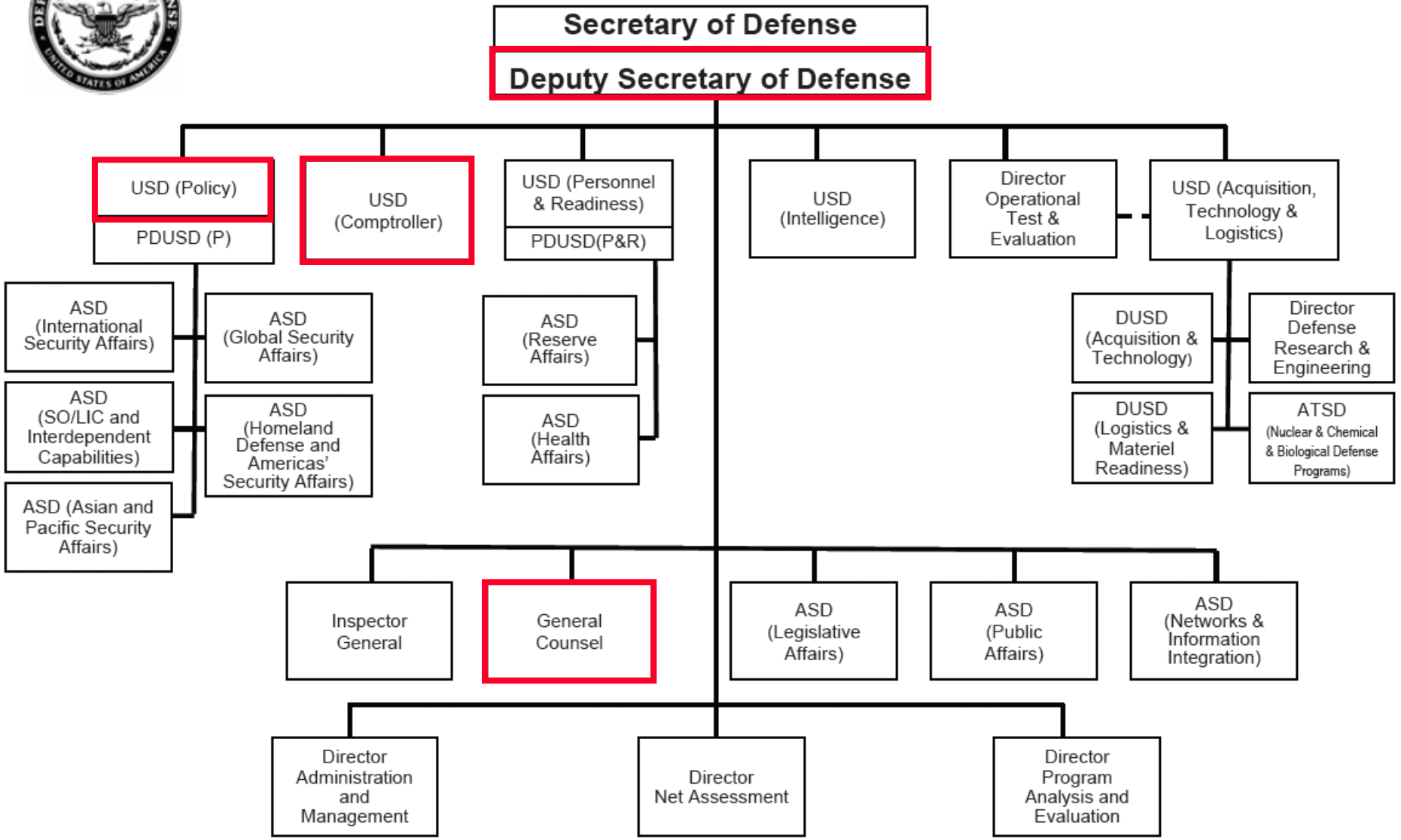
OSD Perspective

Anthony J. Melita
OUSD (Acquisition, Technology & Logistics)
Deputy Director, Portfolio Systems Acquisition,
Land Warfare and Munitions

Discussion Topics

- OSD / AT&L Organization
- AT&L Goals and Initiatives
- DoDI 5000.02 Update
- Budget Trends
- Munitions Interest Areas
  - Insensitive Munitions DOTC and Joint Munitions Program
  - Fuze Technology
  - Cluster Munitions
  - Conventional Munitions Demil
  - Rocket Motors Business Process Review
  - Small Arms Joint Assessment Team
  - TATB
  - Joint Munitions Program
  - DoD Ordnance Technology Consortium (DOTC)

Office of the Secretary of Defense



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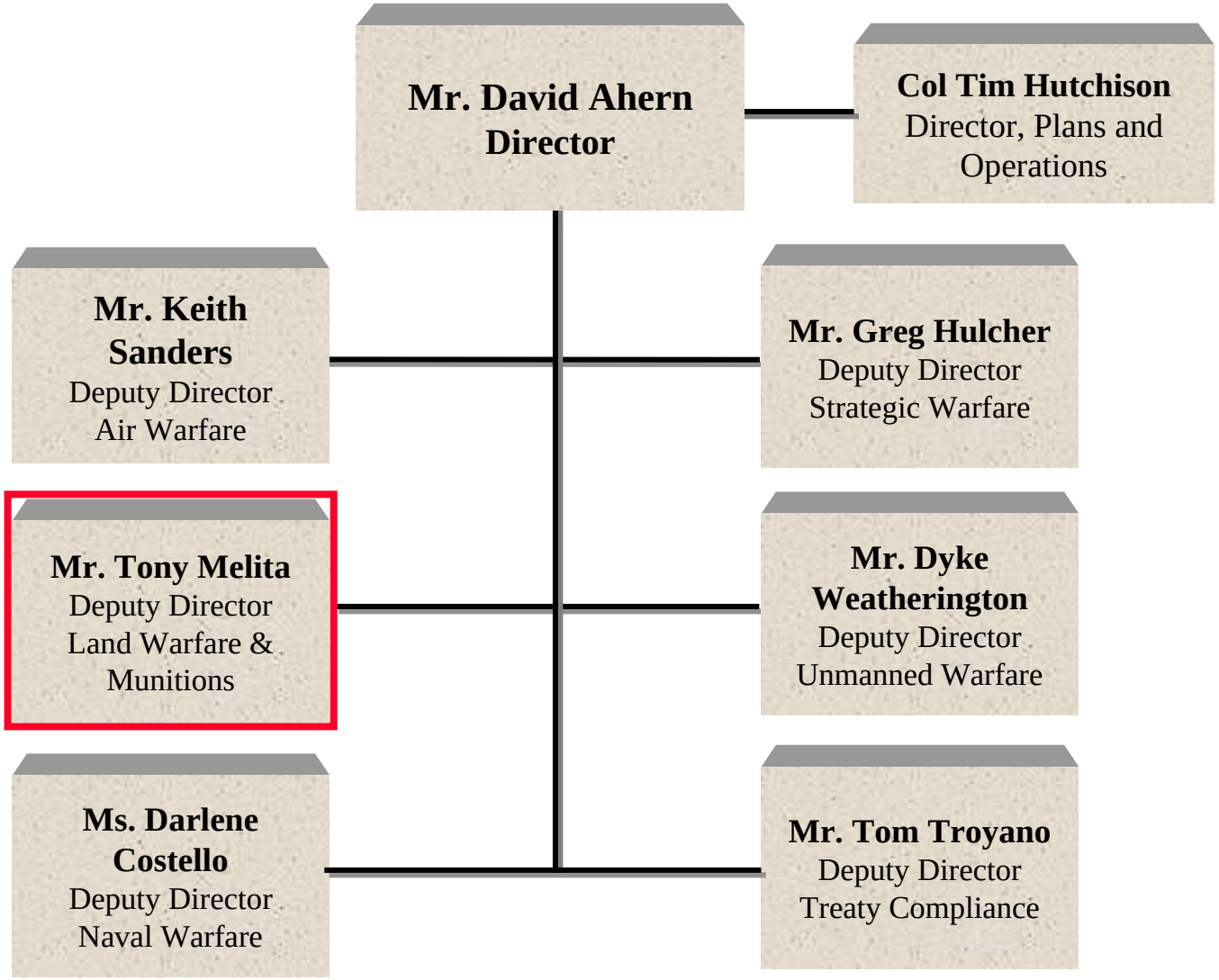
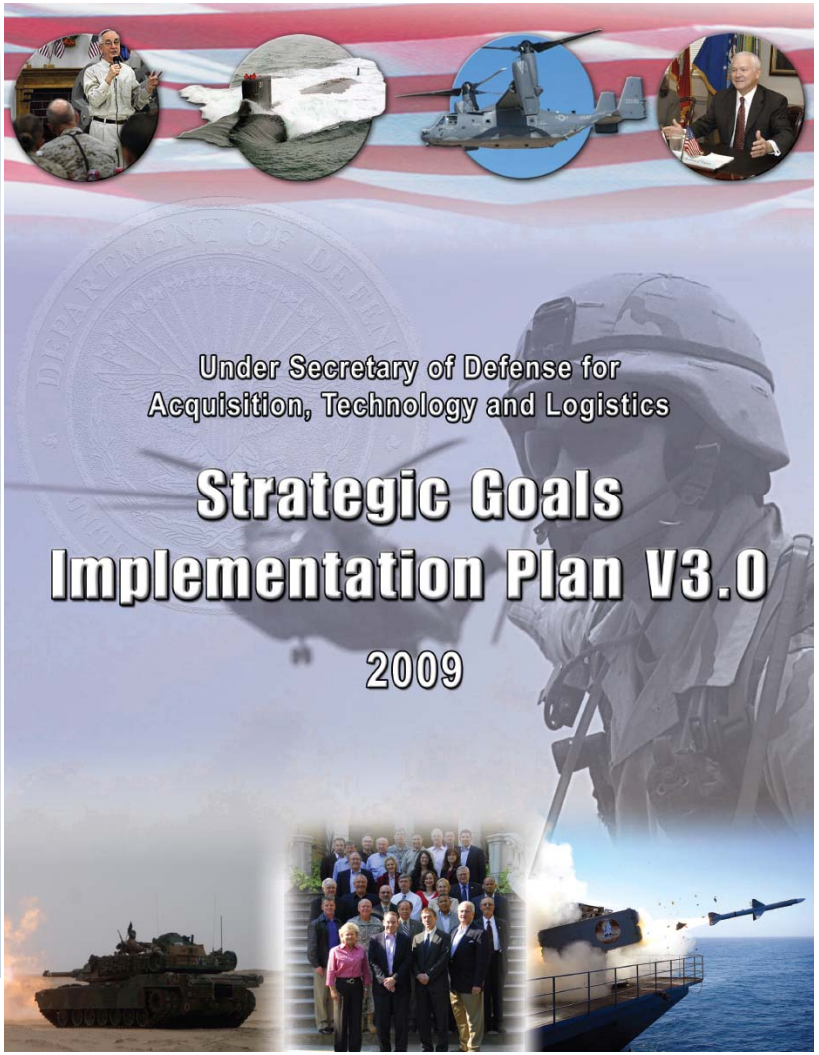
PORTFOLIO SYSTEMS ACQUISITION (PSA)



USD (AT&L) Goals

AT&L Organizational Goals

1. *High-performing, Agile, and Ethical Workforce*
2. *Strategic and Tactical Acquisition Excellence*
3. *Focused Technology to Meet Warfighting Needs*
4. *Cost-effective Joint Logistics Support for the Warfighter*
5. *Reliable and Cost-effective Industrial Capabilities Sufficient to Meet Strategic Objectives*
6. *Improved Governance and Decision Processes*
7. *Capable, Efficient, and Cost-effective Installations*



http://www.acq.osd.mil

Goal 3
Focused Technology to Meet Warfighting Needs

- Promote and shape investments to lower costs and development time for the enterprise.
- Take proactive steps to transition technology programs.
- Conduct Defense Support Team (DST) activities to assist ACAT Programs.
- Enable greater coordination and collaboration on S&T programs.

Goal 5
Reliable and Cost-Effective Industrial Capabilities Sufficient to Meet Strategic Objectives

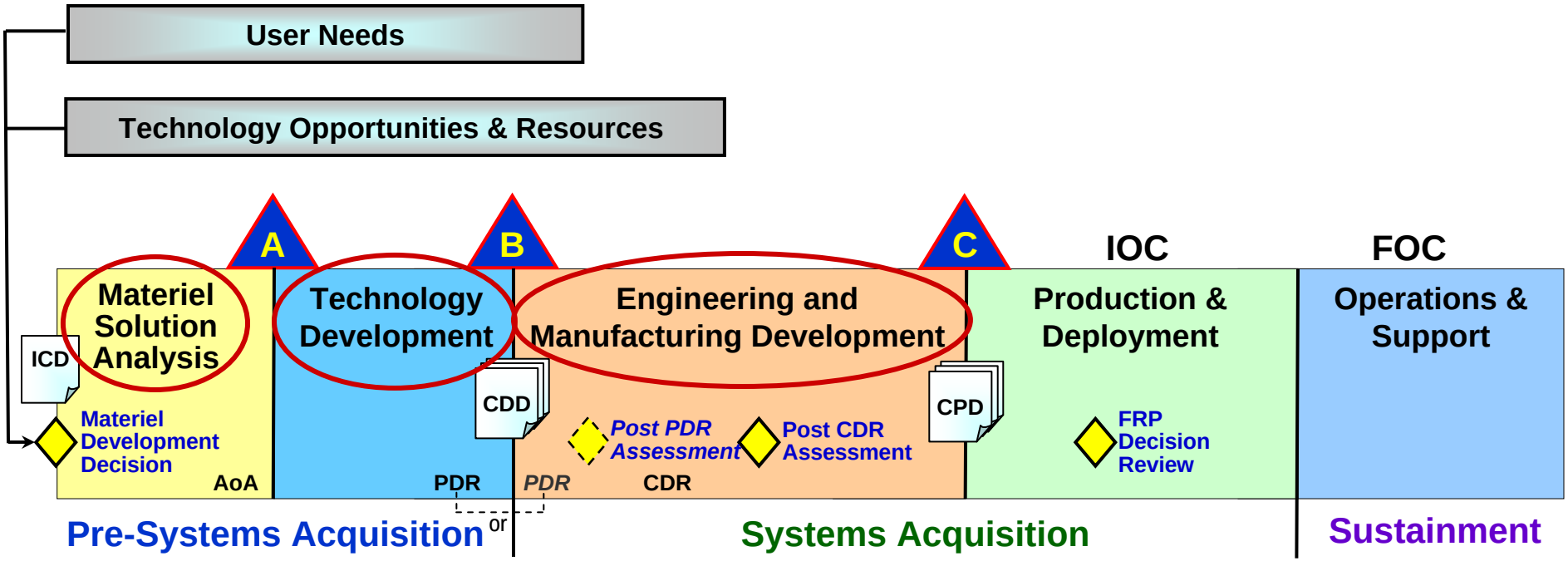
- Understand effects of DoD policy and program decisions on the industrial base, and the extent to which industry decisions limit or expand DoD options.
- Expand and sustain the industrial base to encourage competition and innovation for essential industrial and technological capabilities.
- Expand Non-Traditional Supplier participation in DoD Acquisition.

Operation of the Defense Acquisition System

DoDI 5000.02 Update

Detailed information available at
https://akss.dau.mil/dapc/

The Defense Acquisition Management System 2008

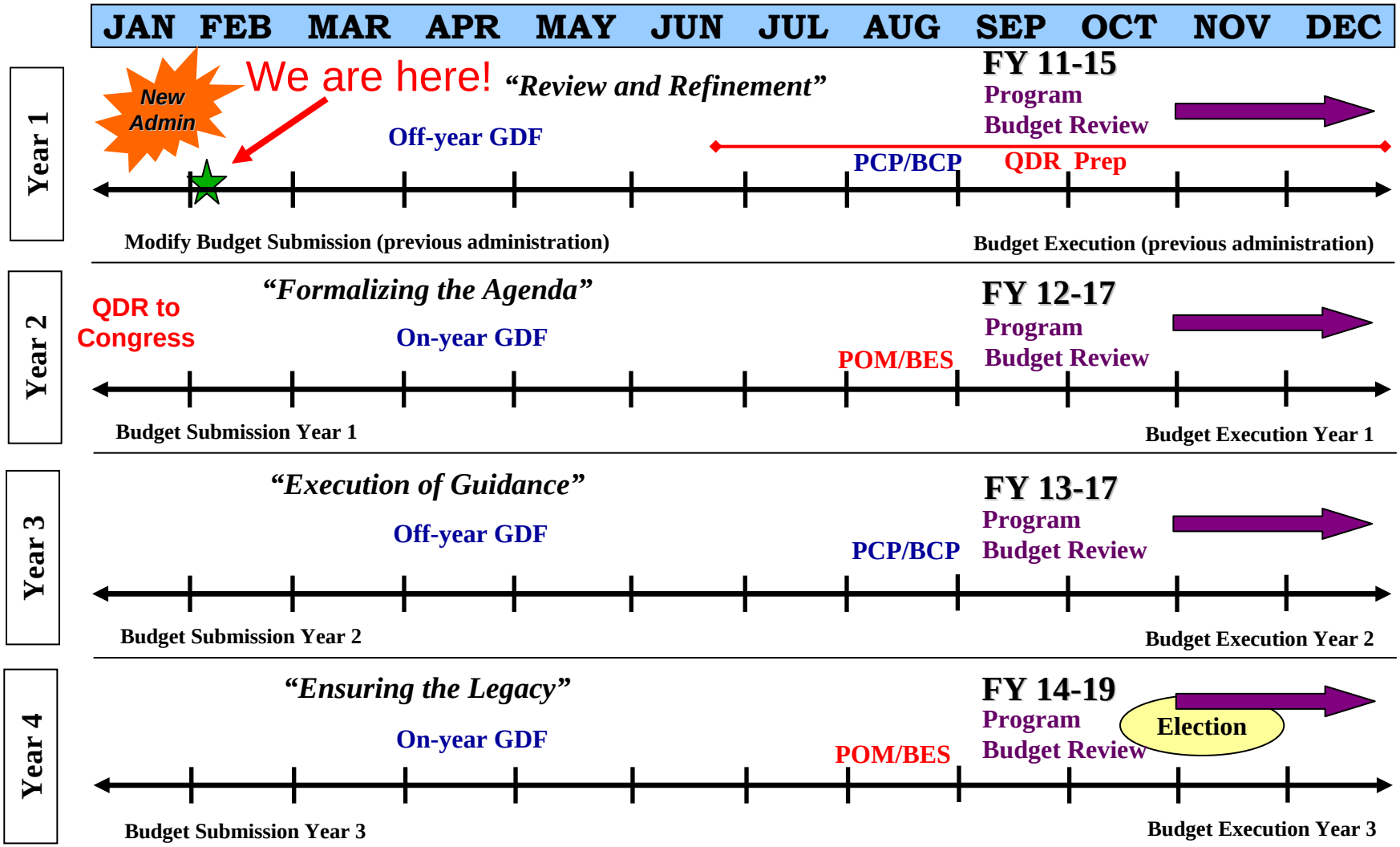


Changes to Phases

Old (2003)	New (2008)	Change from 2003
Concept Refinement (CR)	Materiel Solution Analysis	More robust AoA (result of changes to JCIDS)
Technology Development (TD)		Competitive prototyping / PDR
Systems Development & Demonstration (SDD)	Engineering & Manufacturing Development (EMD)	More robust system engineering

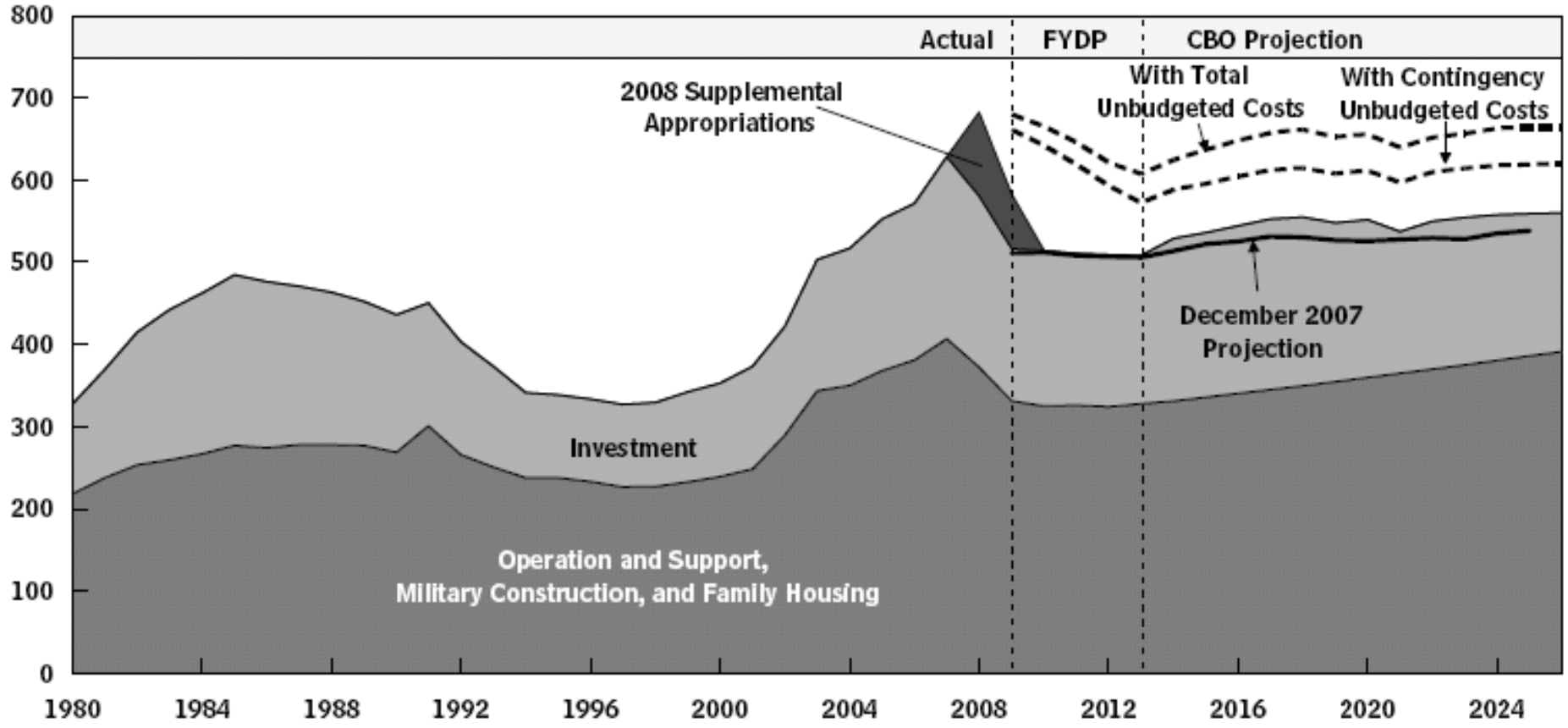
Budget Trends

Planning, Programming, Budgeting, and Execution



4 Administration Years with 2-year PPBE Cycle

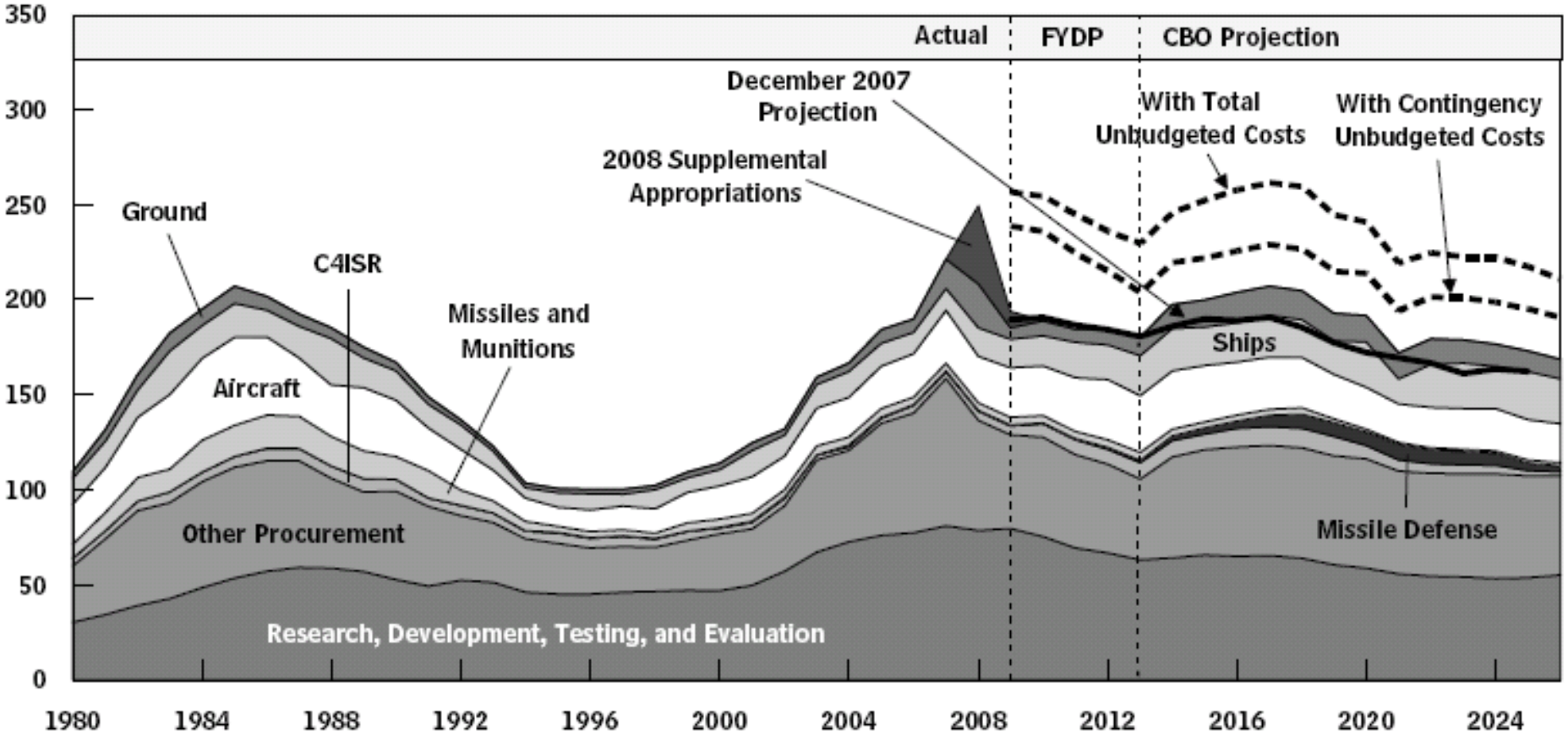
Past and Projected Resources for Defense



Source: Congressional Budget Office, “LONG-TERM IMPLICATIONS OF THE FISCAL YEAR 2009 FUTURE YEARS DEFENSE PROGRAM,” January 2009

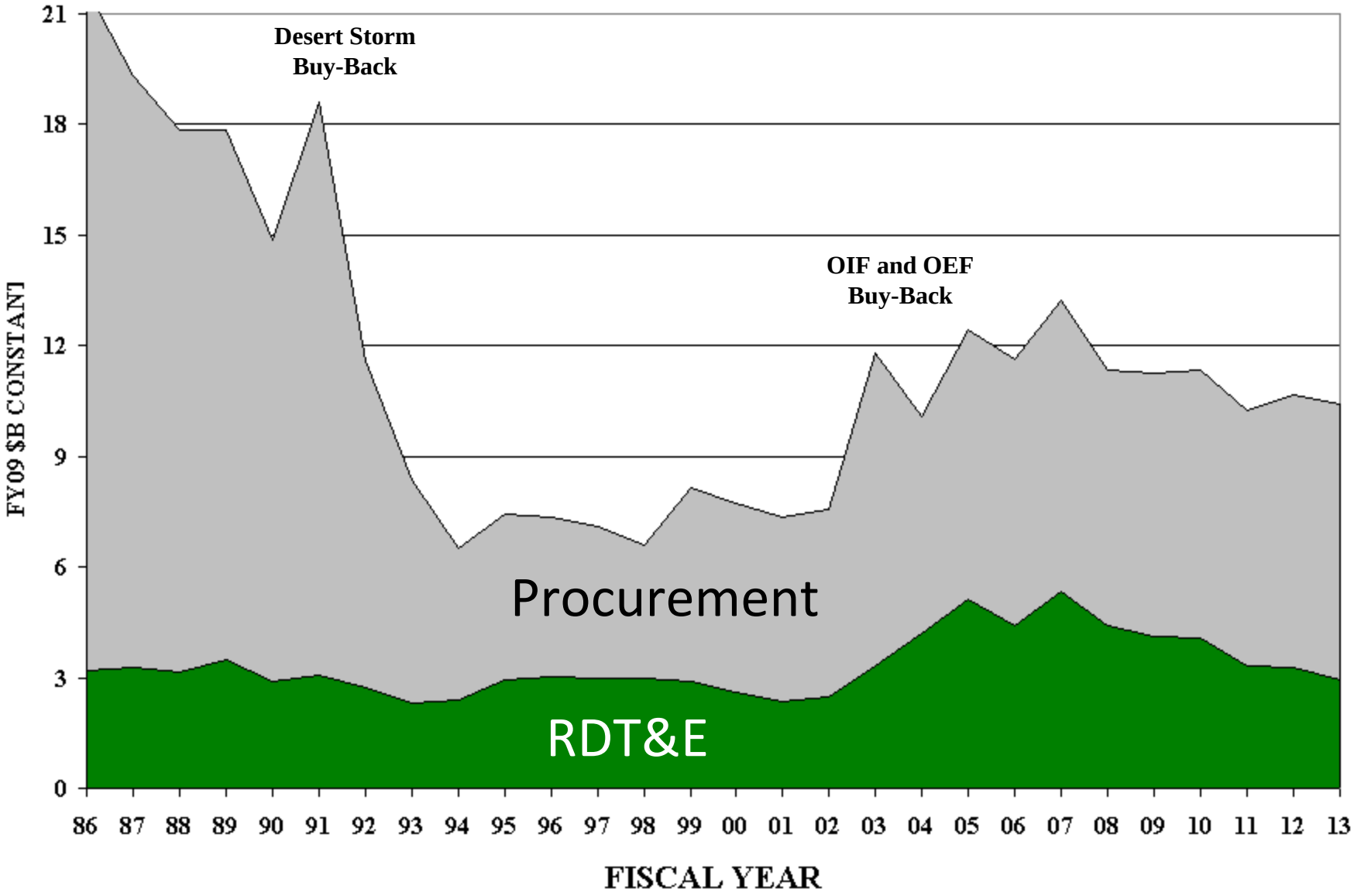
Past and Projected Resources for Defense Investment

(Billions of 2009 dollars)

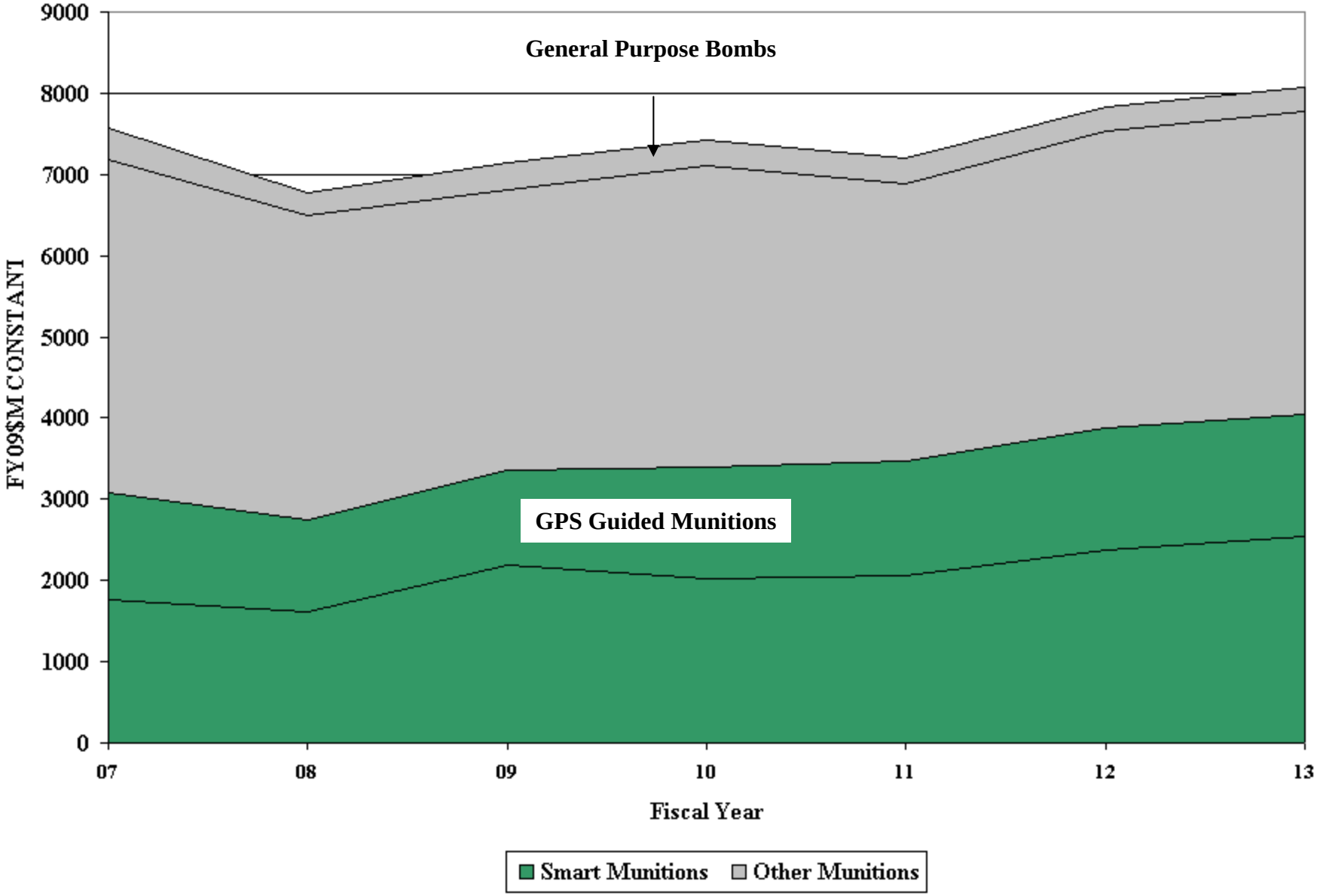


Source: Congressional Budget Office, “LONG-TERM IMPLICATIONS OF THE FISCAL YEAR 2009 FUTURE YEARS DEFENSE PROGRAM,” January 2009

DoD Munitions RDT&E and Procurement



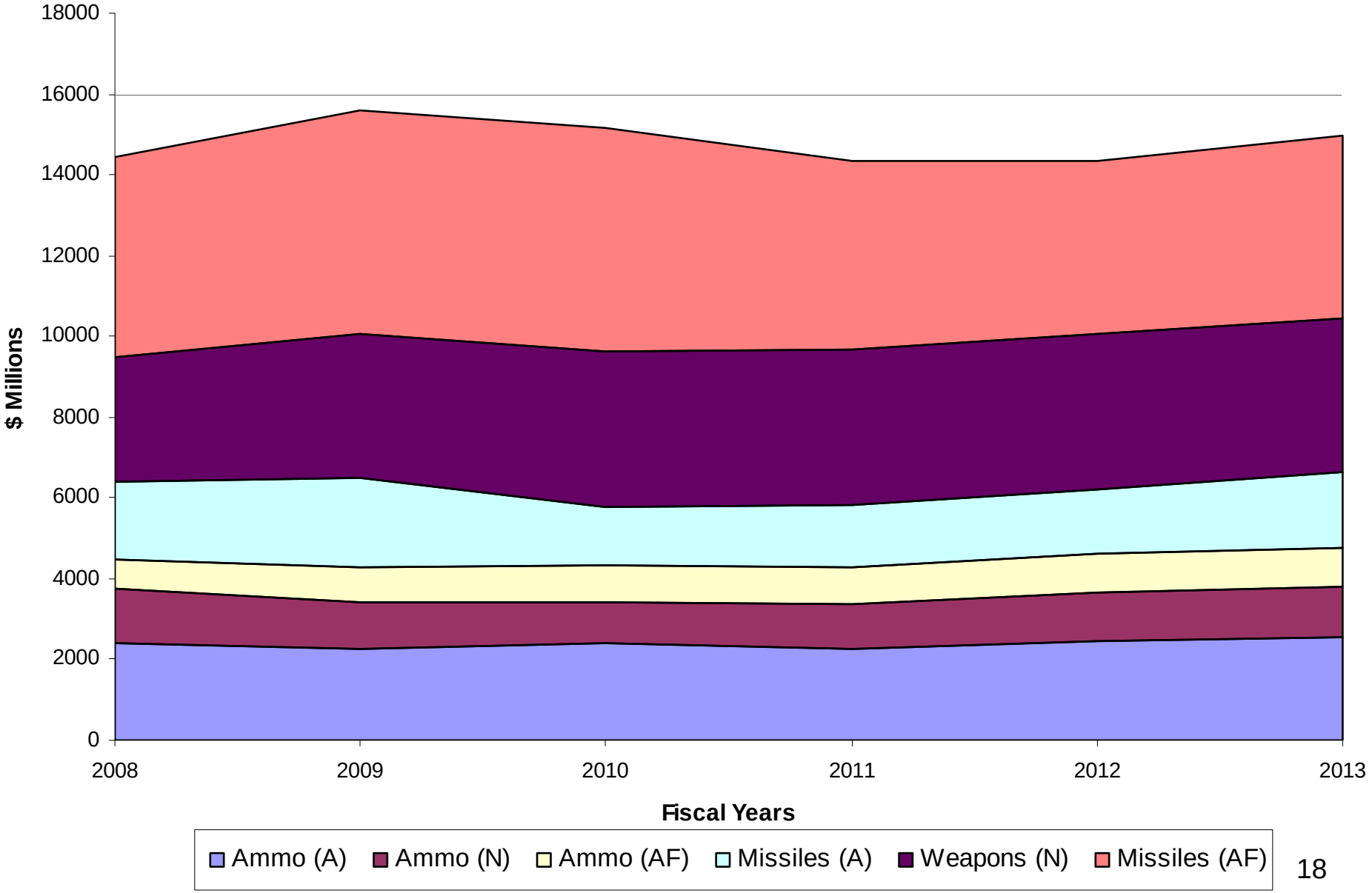
Smart Munitions vs. Other Munitions Procurement Trend



FY 2009 President's Budget
Munitions Appropriations

	2007	2008	2009	2010	2011	2012	2013
Ammo (A)	2,616	2,389	2,276	2,403	2,284	2,432	2,558
Ammo (N)	1,049	1,362	1,122	1,032	1,061	1,245	1,247
Ammo (AF)	1,044	749	894	907	925	944	961
Missiles (A)	1,617	1,899	2,211	1,429	1,546	1,582	1,864
Missiles (AF)	4,115	4,945	5,537	5,518	4,674	4,268	4,483
Weapons (N)	2,897	3,093	3,575	3,874	3,840	3,870	3,837
($ M)	13,338	14,437	15,615	15,163	14,330	14,341	14,950

FY 2009 President's Budget
Munitions Appropriations



Munitions Interest Areas

Insensitive Munitions (IM) Update

- IM Strategic Plans continue to garner the attention of senior military leadership – reduced munition vulnerability translates into reduced platform vulnerability

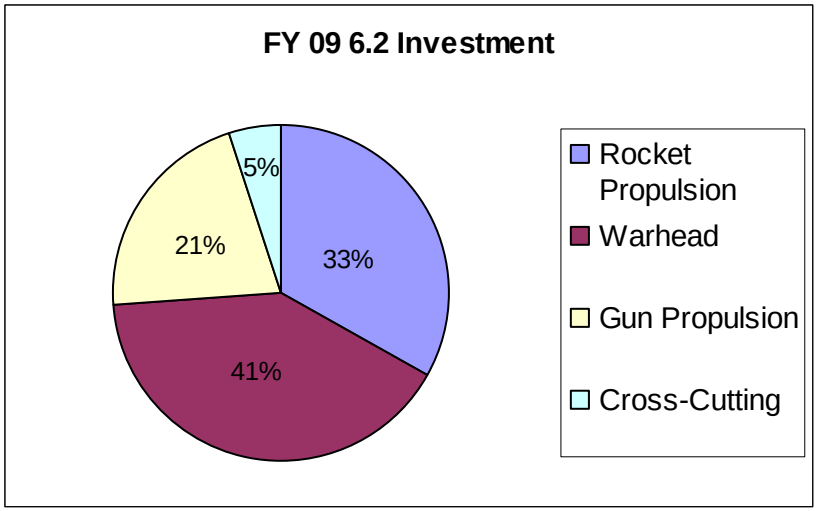
- Third submission of strategic plans has highlighted the significant improvements being made in some systems while identifying other areas that need additional focus and investment to prevent them from blocking advancement toward an IM compliant stockpile
  - Over 80% Munitions stockpile remains non IM compliant

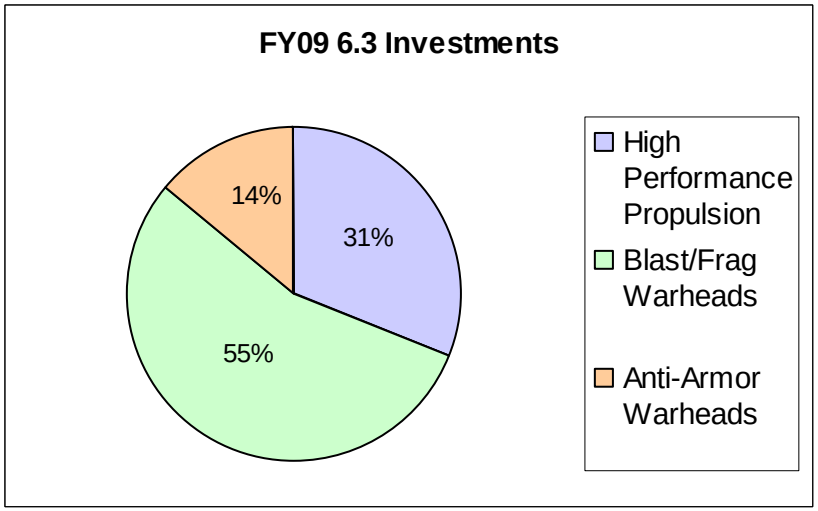
- Encouraged by strategic investments and trickle down of technology described in some plans; we will work with all PEOs to ensure that their IM investment plans are linked to IM technology transitions and to acquisition “windows of opportunity”

- IM Strategic Plans remain the primary tool for guiding IM technology investments

Joint IM Technology Program Update

- Joint Insensitive Munitions Technology Program
  - Total FY10-15 Funding is $231M
  - Program is focused on developing and demonstrating enabling technologies in 5 munition areas – High Performance Rocket Propulsion, Minimum Smoke Rocket Propulsion, Blast/Fragmentation Warheads, Anti-Armor Warheads, Large Caliber Gun Propulsion
  - First technology transfer should occur in FY09
  - *DOTC is the mechanism for engaging industry*





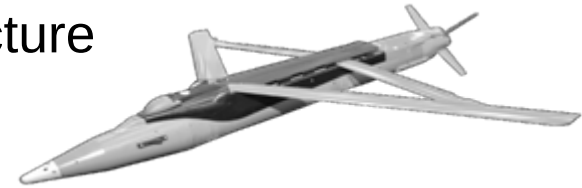
Fuzing Science & Technology Efforts

- POM10 fuze issue addresses fuze technology shortfalls for priority capabilities
- $81.4 million S&T funding FY2010 - FY2015

- VISION – Advance and maintain a healthy U.S. industrial and fuze technology base; establish early and continued government involvement in the development, application, and transition of fuze technology to munitions development.

- 4 Fuze Area Technology Groups formed:
  - Hard Target Survivable Fuzing
  - Tailorable Effects Weapon Fuzing
  - High Reliability Fuzing
  - Enabling Technologies and Common Architecture

- Participants
  - DoD communities: S&T / Requirements / Acquisition
  - Dept. of Energy
  - Industry via DOTC



Cluster Munitions

- New DoD policy issued June 2008; after 2018 all cluster munitions must have UXO rate of 1% or less.
  - Joint Staff leading a study to identify capability impacts, alternatives to replace legacy cluster munitions
- Convention on Cluster Munitions signed by 94 nations in December 2008; bans nearly all cluster munitions; U.S. is not a signatory
  - U.S. is negotiating within the Convention on Conventional Weapons to regulate (not ban) use of cluster munitions
- Impacts of new policy and treaty:
  - Increase in demil liability
  - Potential new R&D and production of replacement munitions
  - Possible changes in how U.S. operates with coalition partners who signed Convention on Cluster Munitions

Design for Demilitarization
Policy Memo Signed by USD(AT&L) August 2008

- Demilitarization stockpile poses safety and environmental hazards, and impacts readiness
- If not considered early in the design, increases weapons' life cycle costs
- During system design, weapons designers can optimize demil methods and resource reclamation and reuse
  - Facilitate disassembly and access to energetic materials
  - Use energetic materials and components having reclamation or reuse potential
  - Efficiently accommodate existing demilitarization processes
  - Reduce the use of environmentally sensitive materials
  - And enhance safety for demil operators
- PMs will now include in acquisition documents and in design reviews how they intend to address demil in design and test

- Current stockpile: ~460K short tons ammo, 360K short tons missiles
- Army is executive agent for all conventional ammunition demil
  - FYDP Execution ~ $750M
  - FYDP R&D ~ $85M
- Cluster munitions policy will increase demil stockpile

Rocket Motors
Business Process Review (BPR)

- Concept Decision Review of the Joint Air-to-Ground Missile (JAGM), March 2007, directed DUSD(A&T) lead a BPR to streamline the five year development/certification timeline

- With Service Acquisition Executive support, we formed an IPT made-up of stakeholder PEOs to oversee the effort, and assembled Nation-wide SMEs (from all 3 Services) to conduct a nine-month Lean Six Sigma review

- The review resulted in a new joint process for DoD rocket motors development and qualification and 13 recommendations for reducing cycle-time and program risk

- Pending USD(AT&L) charter for a Joint Rocket Motor Advisory Group (JRMAG), to serve as a multi-Service body of technical experts that will inform the requirements generation and material development processes

Small Arms & Ammunition
Joint Assessment Team
& Defense Support Team

TATB

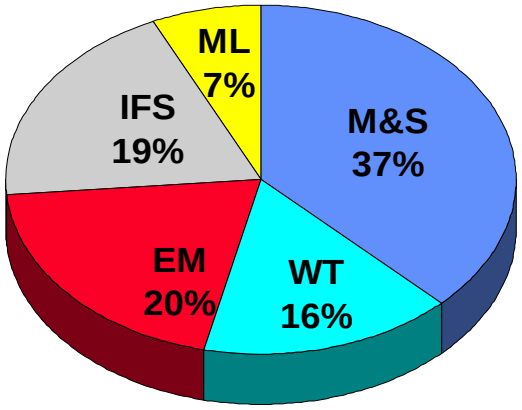
- Triaminotrinitrobenzene (TATB) is one of the least sensitive explosive materials known and is a critical ingredient in the booster explosives PBXN-7, used in bomb and missile fuzes and PBXW-14, used in mortar fuzes.
- The only qualified source, BAE Systems, Royal Ordnance in Bridgewater, UK, ceased production in Dec 2005 and closed in 2006.
- Current efforts to develop and qualify a drop-in replacement have been unsuccessful to date
- Current needs being met from a limited DOE stockpile
- Lack of a qualified TATB source may critically impact our capabilities
- Support from the entire munitions community required to address this critical need

TATB – Way Forward

- Establish senior-level steering committee – DoD & DOE
- DoD-wide IPT in place to identify and oversee TATB efforts – All potential solutions will be considered.
  - Continued support for MANTECH efforts at BAE and ATK, if warranted
  - Re-establish previous manufacturing capability at U.S. facility, if warranted
  - Utilize DoD prize authority to incentivize non-traditional defense contractors to work this issue
  - Utilize Title III authority to encourage industry investments
  - Consideration of stop-gap solutions should TATB availability end
  - Long-term technology investments to identify, scale-up, and qualify a TATB replacement through Joint IM Technology Program investments
  - Request for Information to U.S. Industrial Base for TATB and 1,3,5-TCB manufacturers

Joint DoD/DOE Munitions Program (JMP)

- Goal: transition technologies and tools developed by the JMP-DOE National Labs to NWEC members in accordance with federal laws & Lab rules
- To date several technologies have transitioned to industry, none have occurred through DOTC/NWEC
- Approx. 40 projects in 9 Technology Coordinating Groups arranged in 5 focus areas:
  - Modeling & Simulation (TCG I & II)
  - Energetic Materials (TCG II & III)
  - Initiation, Fuzing & Sensors (TCG X & XIII)
  - Warhead Technology (TCG IV & XI)
  - Munitions Lifecycle (TCG IX & XIV)



FY09 Funding

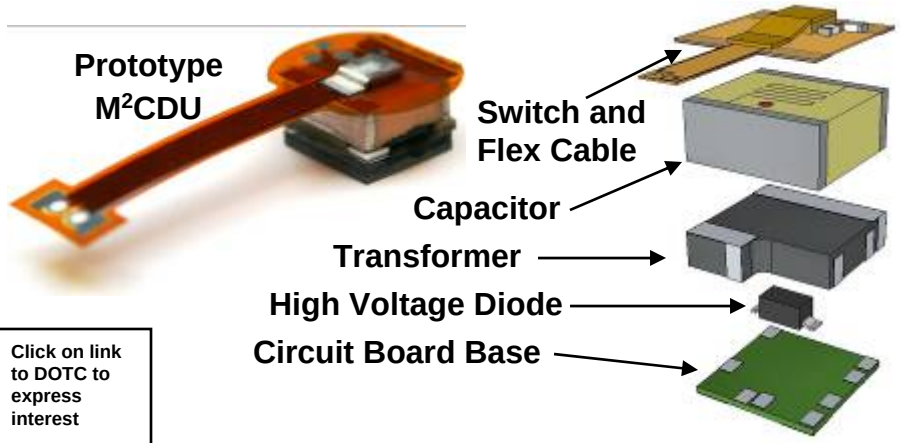
Current JMP Transition Opportunities

- Composite Case Technology for Munitions
- LLM-105 High-Power/Insensitive Explosive
- CHEETAH – Thermochemical code
- Complex system reliability estimation and prediction software
- On demand sensitization of materials technology
- Schlieren System for Surveillance of Detonators
- Advanced Diagnostic Suite for Detonators
- Inkjet Deposition of Explosives
- Micro-Monolithic Capacitive Discharge Unit (M2CDU)
- Thin-Film Thermal Battery Technology (TFTB)
- CTH – Shock Physics Analysis for Munitions Applications
- 3-Axis Milli-Pen (3AMP) Acceleration Recorder

For Technology Transition Opportunity Quad Charts contact JMP Technical Advisor, Eric Brown (eric.brown@osd.mil)

EXAMPLE JMP Technology Transition Opportunity
Micro-Monolithic Capacitive Discharge Unit (M^2CDU)

Overview



Click on link to DOTC to express interest

PoC: Paul Butler, SNL, pcbutle@sandia.gov; 505-844-7874

Transition Intent

Transition the M^2CDU technology for wide range of applications. One non-exclusive license has been executed with component supplier Novacap to develop, manufacture, and distribute the M^2CDU in accordance with export controls.

Applications

Applications include harsh-environment, miniaturized electronic fuzes for military uses, and for industrial purposes such as the drilling industry.

Development Milestones

X = TRL

Milestones	FY06	FY07	FY08
• Built 1st prototype	3		
• Demonstrated in harsh environments		6	
• Redesign for reliable assembly techniques		5	
• Redesign for manufacturability		4	

Technical Description

Miniaturization technologies and assembly methods harden the module against harsh deceleration environments. Technologies include Low-Temperature Co-Fired Ceramics for hardened transformers and high-k dielectrics for multi-layered-ceramic capacitors. Assembly of the unit is non-trivial.

Warfighter Payoff

The M^2CDU enables the survivability and performance of smart fuzes for defeat of hard and deeply buried targets. Their small volume also benefits missile/rocket ancillary systems such as rocket motors, gas generators, separation charges, and may enable safer and more reliable fuze architectures.

The Technology Transition Challenge

- DOTC is a technology transfer point for the DOE/DoD Joint Munitions Program
  - Technology can be transferred directly to industry with laboratory oversight
- No technology transitions to industry via DOTC to date
  - “Industry Day” events held in 2003, 2005
  - Technologies from Livermore, Los Alamos, Sandia presented
- Seeking to improve the transition process, but….cannot succeed without commitment from industry

DoD Ordnance Technology Consortium

DoD Laboratories

National Warheads & Energetics Consortium

Rapid & Agile Acquisitions

Section 845
Other Transaction

- OUSD (AT&L) LW&M
- Department of The Army
- Department of the Navy
- Department of the Air Force
- Department of Energy
- Special Operations Command
- Other Agencies and Departments

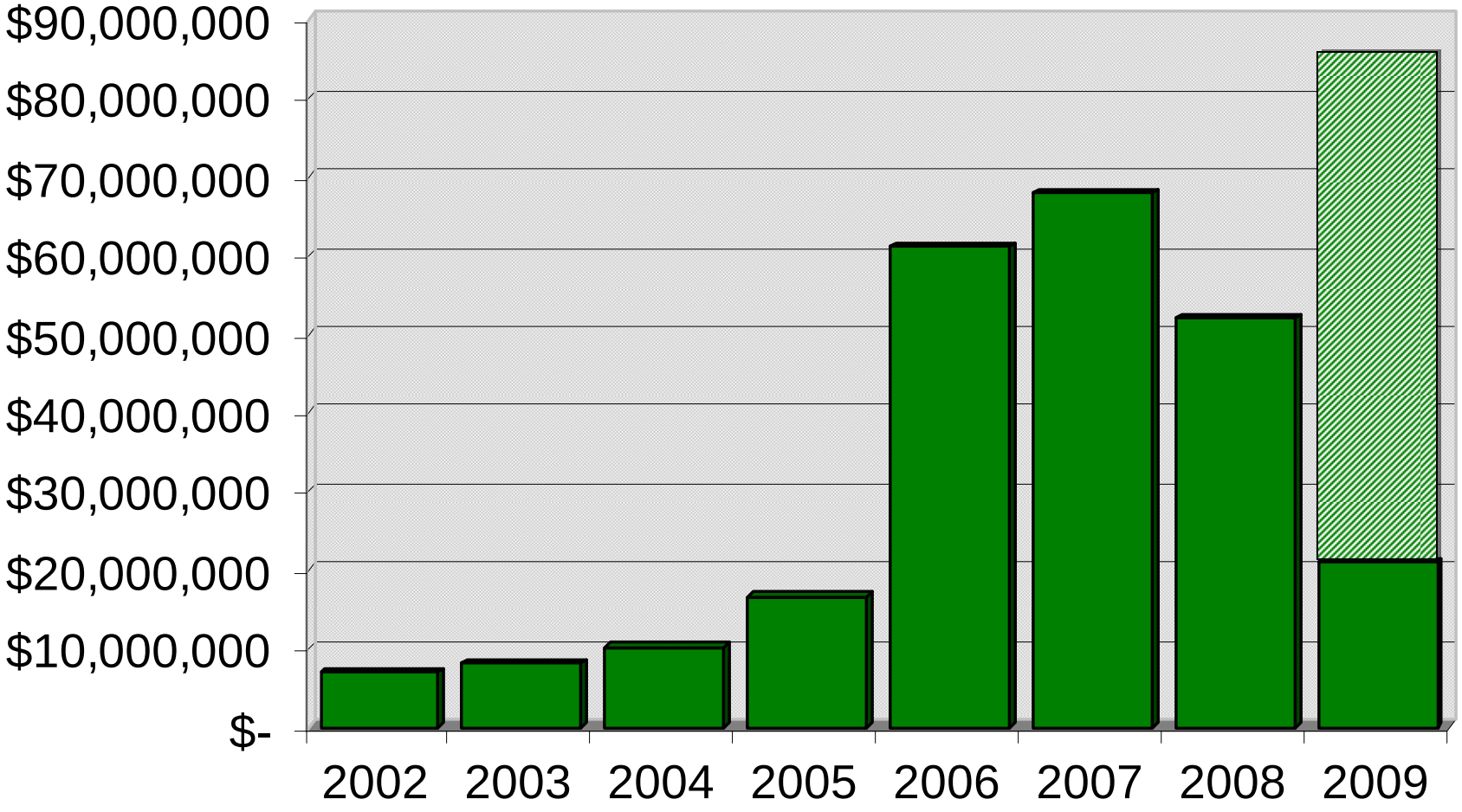
- Defense Contractors
- Traditional & Non-Traditional
- Academic Institutions
- Not-for-Profits Organizations

DoD and NWEC… Partnering to Leverage Capabilities and Investment

DOTC Mission

- Demonstrate Feasibility and Transition Advanced Explosives, Propellants, Pyrotechnics, Warheads, Fuzing and Demilitarization Prototype Technologies
  - Advocate a critical mass of world-class technologists to meet the Department of Defense needs for conventional energetics (explosives, propellants, pyrotechnics), warheads, fuzes and demilitarization
  - Operate as an “open” center in which industry, academia, and other Government organizations and departments can freely participate
  - Be a focal point to rapidly transfer technology to the war fighter
  - Develop strong working affiliations with private and public energetics, warhead, fuze and DEMIL facilities and technology organizations
  - Leverage governmental and private sector research and development resources to maximize return on investment
    - Promote non-traditional defense contractor involvement
    - Promote innovation

DOTC Resources



DOTC Success =

- Stronger partnerships between Government and Industry
- Better collaboration among Government labs
- Increasing contributions of non-traditional defense contractors
- *Transitioning technology to system development and to the field*

Questions?

PM CLOSE COMBAT SYSTEMS

NDIA
2009 Munitions Executive Summit

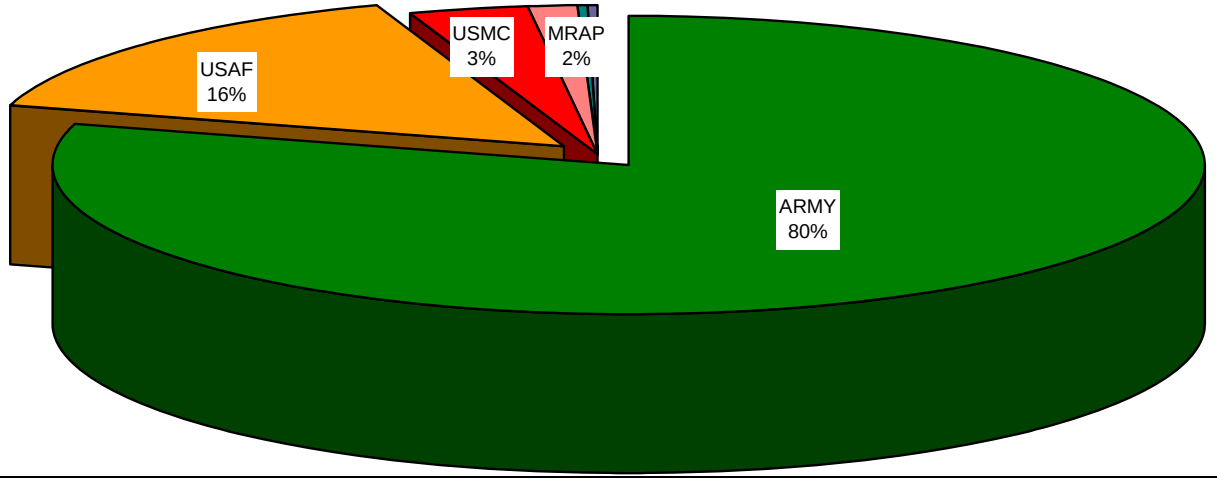
PM Close Combat Systems

February 2009

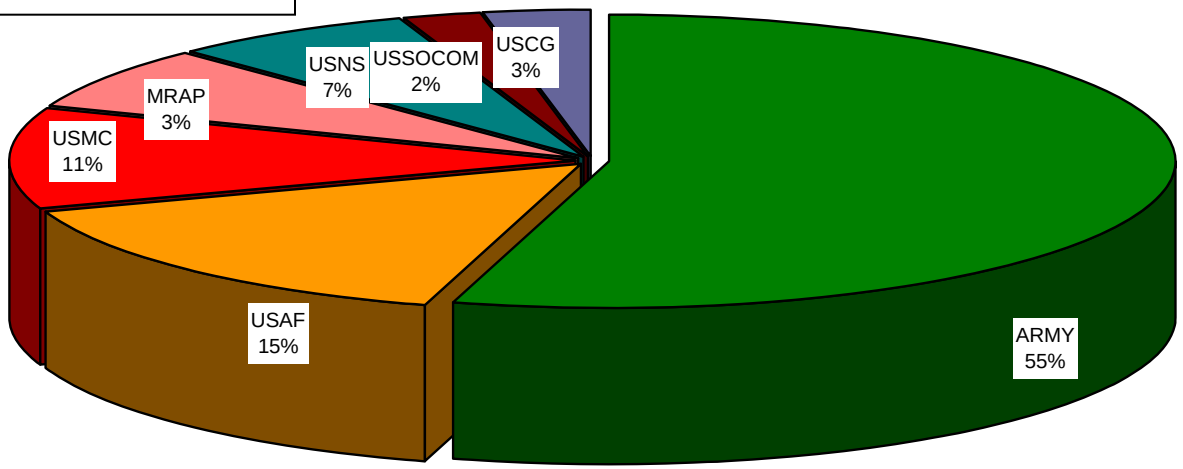
COL Ray Nulk
Project Manager
(973) 724-7041
raymond.nulk@us.army.mil

PM CCS FY09 Program Funding By Customer

% of $Value



% of #Lines



(IN MILLIONS $)

SERVICE	FY09 PROGRAM FUNDING		
	#Lines	Basic	Total w/Suppl
ARMY	93	635.5	853.5
USAF	26	164.5	164.5
USMC	19	36.6	36.6
NSOF	12	12.8	12.8
USNS	12	3.5	3.5
USSOCOM	4	1.9	1.9
USCG	5	1.8	1.8
TOTAL	**172**	**$857.7**	**$1,075.7**
ARMY	**93**	**$635.5**	**$853.5**
OTHER SERVICES	**79**	**$222.2**	**$222.2**

Source: ARMY/ARMY SUPPL: PBAS P1 Amt, RAP ; OTHER SERVICES: 09 Suppl Request

Major Areas of Concentration

PM CLOSE COMBAT SYSTEMS

PM CCS Focus Areas

Development of New Systems

- Spider
- IMS
- ASTAMIDS
- GSTAMIDS

Fielding New Non-Developmental Capabilities

IED Defeat

- SPARK Rollers

Protect Force (Non-lethal Non-Ammo)

- VLAD
- TASER

Shoulder-Launched Munitions

- AT4 Family
- IAM

Modernizing Production Ammunition

- MDI
- M67 Grenade
- M211/M212 CM Flares
- AT4/AT4-CS
- M18 Smoke Grenade
- Bangalore Torpedo

PM CLOSE COMBAT SYSTEMS

Ammo Acquisition Philosophy

- Best Value Competition based on technical capability/quality
- Restricted to NTIB IAW Section 806
- Long-term (5yr) partnerships with high quality suppliers
- Contracts for logical, economical groups of products (families)
- Strong cooperation/collaboration between contractor & government engineers
- Continuous product & process improvement
  - Modernization of materials, design & production processes
- Allow for risk, & invest savings in improvements/future risk mitigation
  - Reliability, producibility, weight reduction, environmental compliance, logistics supportability

Modernization through Acquisition

Best Value Competition

Emphasizing Technical Excellence, Process Control & Continuous Improvement

PM CLOSE COMBAT SYSTEMS

In Request for Proposal, require from proposers:

- Manufacturing Plan
  - Describing production process & critical points for process control
- Quality Plan
  - How quality will be assured at critical production points
  - Allow contractors to propose process/facility different from (better than) what currently exists
    - Assess risks based on current reality
- Management Plan
  - Production Schedule Management
  - Supply Chain Management
  - Anti-obsolescence/Technical insertion approach

We don't dictate process, but we can evaluate it & we can pay more for better-controlled process. Requires detailed technical evaluation

PM CLOSE COMBAT SYSTEMS

Results of PEO Ammo/ PM CCS Acquisition Improvements

- Best Value Competition is beginning to shape PM CCS Supplier Base
- New contracts introduce new quality management expectations & requirements
- Government engineers & contractors are collaborating productively
- New contractors are proposing good initiatives for product/process modernization & improvement

PM CLOSE COMBAT SYSTEMS

Back-up

PM Close Combat Systems
Product Lines

- Networked Munitions/Legacy Mines
  - Intelligent Munitions Systems (IMS)
- Countermine
- EOD Equipment
- IED Defeat
- Demolitions

~200 Products Managed in FY09

- Grenades
- Pyrotechnics
- Shoulder-Launched Munitions
- Non-Lethal Systems & Munitions
- Special Projects (for SOCOM)

http://www.pica.army.mil/pmccs/

ARMY MATERIEL COMMAND

RESHAPING THE MUNITIONS ENTERPRISE:
Responding to Evolving Requirements

3-5 February 2008

LTG James H. Pillsbury
Deputy Commanding General

As of: 12 Jan 2009

Mission and Vision

Proposed Vision: The Preeminent Global Life Cycle Materiel Manager

Proposed Mission: Develop, synchronize, deliver, and sustain materiel life cycle capabilities to ensure a dominant joint force for the U.S. and our Allies

"If a Soldier shoots it, drives it, flies it, wears it, communicates with it, or eats it – Materiel Enterprise provides it."

Responsive Adaptive Materiel Solutions

AMC – A Changing Organization

"Always make ammunition your number one priority because it's critical to have ammunition at the right time, at the right place…always be dedicated to your job, the warfighter depends upon you."

- The Ultimate Logistics Warrior
- Ammo Production/Modernization
- LSS/Continuous Process Improvements
- LCMC Transformation
- DEMIL

GEN Ben Griffin

Retired After 39 Years of Service

AMC – A Changing Organization

- Support to the Warfighter
- RESET
- People
- Increasing Efficiency
- Ammunition
- Transformation

GEN Ann E. Dunwoody

The Right Leader At The Right Time!

AMC – A Changing Organization

Joint Munitions & Lethality

- Formalized and Integrated ARDEC, JMC and PEO AMMO into a joint structure.
- Sustain, Enhance, and Support the Joint Warfighter.
- Munitions Industrial Base Modernization
- Single Manager for Conventional Ammunition.

  - Critical strategies to meet joint warfighter requirements; e.g., Mortar and Artillery Illum

BG William Phillips

AMC – A Changing Organization

Joint Munitions Command

- **Continuous Improvement/LSS**

  -277 projects, $43.5M realized since Sept 2005
  -In house teaching /project generation capability

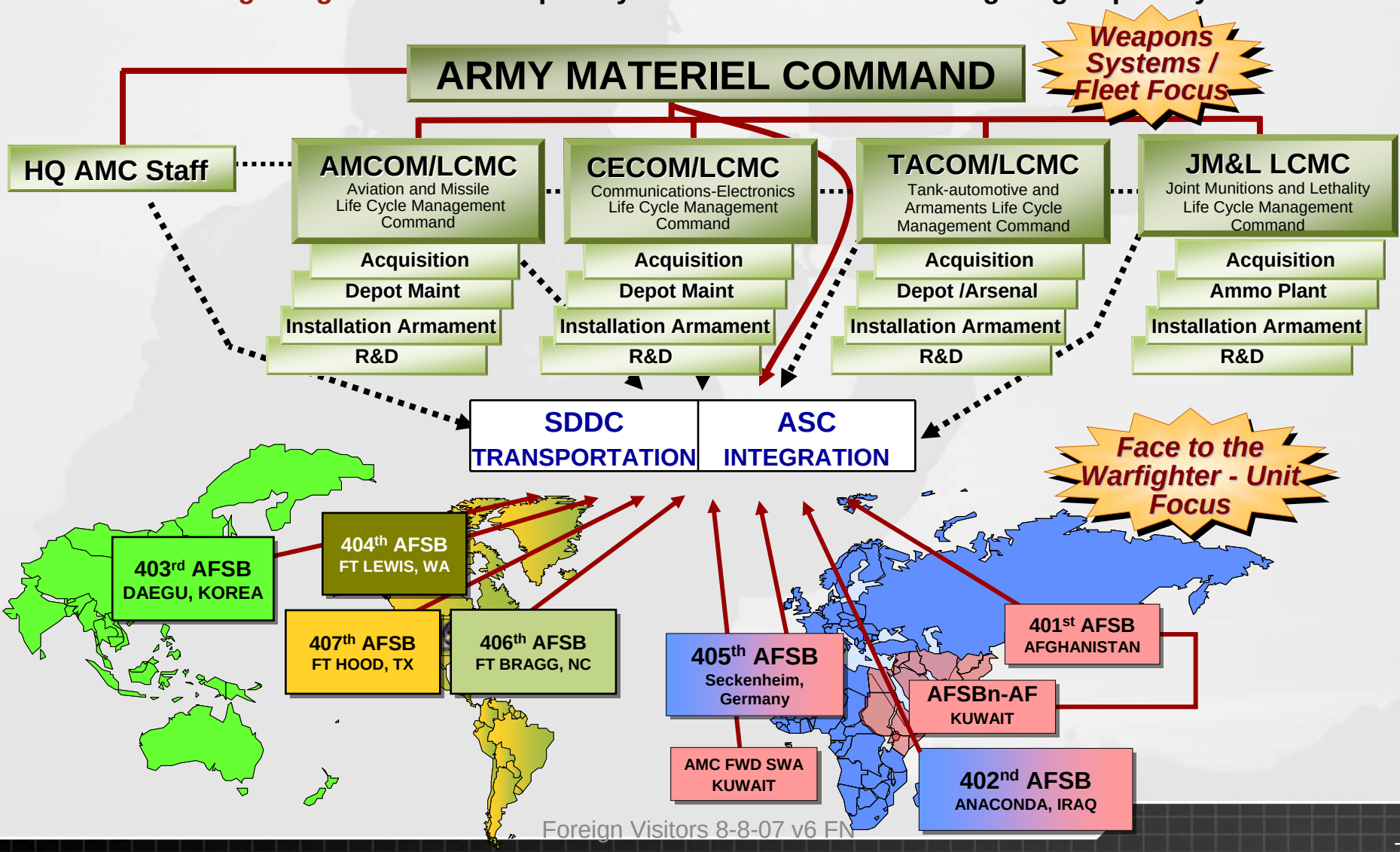
- **OIF/OEF Warfighter Support**

  - Shipped over 87K tons of Ammo
  - Deployed 42 Logistics Assistance Reps
  - Ammunition Assessment Team
    - 26 FOB visits
    - Assessed 250 battalion-sized units

BG Larry Wyche

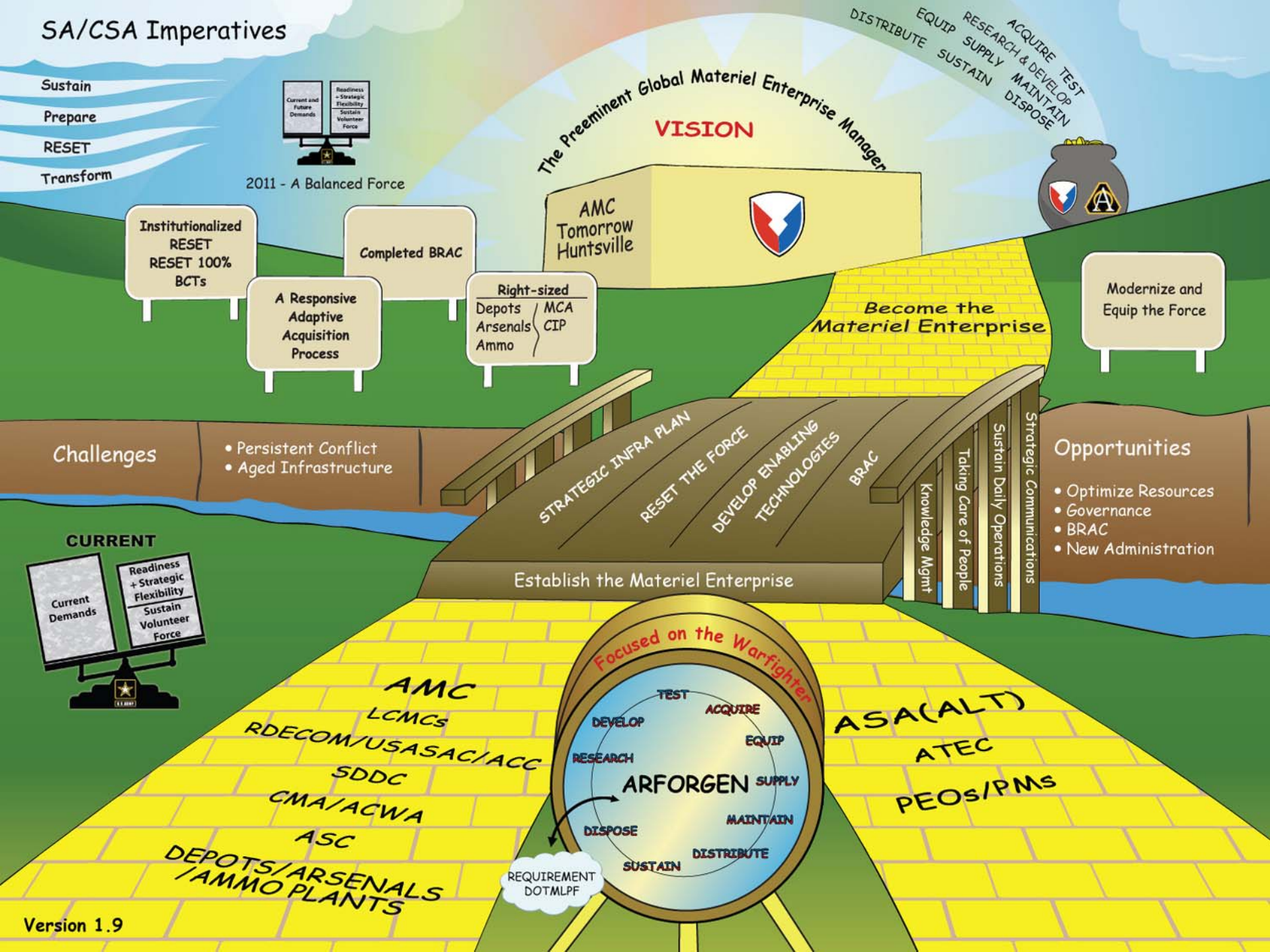
Life-Cycle Management Commands & Army Sustainment Command

Integrating the Unit & Weapon System View to Deliver Warfighting Capability



Army Field Support Brigades (AFSB) and Contracting Support Brigades (CSB)

Commanders


SA/CSA Imperatives
Sustain
Prepare
RESET
Transform
Current and Future Demands
Readiness + Strategic Flexibility
Sustain Volunteer Force
2011 - A Balanced Force
The Preeminent Global Materiel Enterprise Manager
VISION
ACQUIRE
TEST
RESEARCH & DEVELOP
SUPPLY
MAINTAIN
DISPOSE
DISTRIBUTE
SUSTAIN
EQUIP
AMC
Tomorrow
Huntsville
Institutionalized RESET
RESET 100% BCTs
Completed BRAC
A Responsive Adaptive Acquisition Process
Right-sized
Depots
Arsenals
Ammo
MCA
CIP
Become the Materiel Enterprise
Modernize and Equip the Force
Challenges
• Persistent Conflict
• Aged Infrastructure
STRATEGIC INFRA PLAN
RESET THE FORCE
DEVELOP ENABLING TECHNOLOGIES
BRAC
Knowledge Mgmt
Taking Care of People
Sustain Daily Operations
Strategic Communications
Opportunities
• Optimize Resources
• Governance
• BRAC
• New Administration
Establish the Materiel Enterprise
CURRENT
Current Demands
Readiness + Strategic Flexibility
Sustain Volunteer Force
Focused on the Warfighter
TEST
ACQUIRE
DEVELOP
EQUIP
RESEARCH
ARFORGEN
SUPPLY
MAINTAIN
DISPOSE
DISTRIBUTE
SUSTAIN
REQUIREMENT DOTMLPF
AMC
LCMCs
RDECOM/USASAC/ACC
SDDC
CMA/ACWA
ASC
DEPOTS/ARSENALS /AMMO PLANTS
ASA(ALT)
ATEC
PEOs/PMs
Version 1.9

AMC 2015 Vision

The Joint Warfighter Is Priority Number ONE

- Expansion of and greater integration of the joint sustainment capabilities we provide to the joint warfighters.
  - Operation Golden Cargo
  - Ocean/Air Terminals
  - Joint Basing
  - Cross Leveling Inventory
- Developing and acquiring breakthrough technologies
  - Excaliber
  - Objective Gunner Protection Kit
  - M110 Semi Automatic Sniper System
  - Green Ammo
  - Demil R3

AMC 2015 Vision

The Joint Warfighter Is Priority Number ONE

- Enhanced collaboration with our strategic partners to realize unprecedented efficiencies.
  - DLA
  - TRANSCOM
  - Public Private Partnership
  - Industry/MIBTF
- Lean manufacturing and Six Sigma applied in a common sense approach.
  - Implementing Continuous Improvement in our business process to become more efficient and effective in our ability to deliver munitions to the warfighter.

2008 Shingo Award Recipients

SILVER AWARD WINNER

Red River Army Depot
Heavy Expanded Mobility Tactical Truck (HEMTT)

- ✓Improved productivity from 2003 hrs/vehicle to 1100 hrs/vehicle
- ✓Increased output from 13 vehicles to 32 vehicles per month
- ✓Decreased lead time from 120 days to 30 days

THE SHINGO PRIZE for OPERATIONAL EXCELLENCE

BRONZE AWARD WINNERS

Tobyhanna Army Depot
AN/TYQ-23
Tactical Air Operations Module

- ✓ Reduced cycle time from 180 days to 120 days
- ✓ Decreased direct labor hours per unit from 5,019 to 4,240
- ✓ Cost savings of $386K through July 08

Red River Army Depot
Trailers

- ✓Decreased Tanker Trailers mhrs per trailer from 290 to 230 mhrs per trailer
- ✓Decreased Flatbed Trailers mhrs per trailer from 244 to 136 mhrs per trailer
- ✓Increased total trailer production from 20-25 per month to 100 per month

Letterkenny Army Depot
Biological Integrated Detection System (BIDS)

- ✓ Overall manpower cost to the Army reduced by nine employees
- ✓ Reduced repair cycle time from 30 to 20 days
- ✓ Increased first yield pass by 24%
- ✓ Cost savings per unit of $1130

Red River Army Depot
Patriot Missile

- ✓Reduced direct labor hours from 116 to 72.5 per unit
- ✓Improved first pass yield from 86% to 97.64%
- ✓Increased output from 2 units to 7 units per day
- ✓Reduced cycle time from 7 days to 3 days per unit

Tobyhanna Army Depot
AN/ASM-189
Electronic Maintenance Shop Van

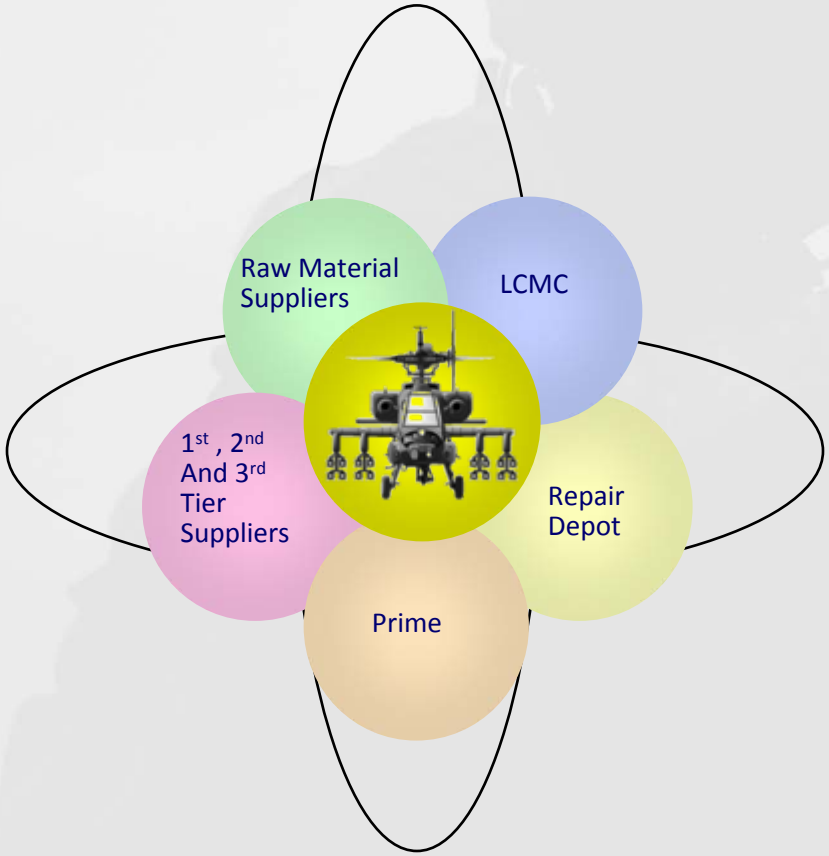
- ✓Reduced cycle time from 115 days to 81 days
- ✓Increased on-time delivery from 79% to 94%
- ✓Cost savings of $290K through July 08

Core Competencies

- Lifecycle management for all equipment, end items, and systems.
- Worldwide pre-positioned stocks and strategic flotillas
- Ammunition sustainment for all service components and strategic foreign customers
- Transportation and distribution services

Core Competencies (Con't)

Integrated Supply Chain Mgt



- Multiple supply chains to be linked
  - AMC customers
  - AMC suppliers (and their sub-vendors)
  - AMC procurement, maintenance and retrograde
- Minimizing the "bullwhip" effect via improved information flow and visibility
  - AMC sharing demand forecast with vendors
  - Vendors sharing production forecasts with AMC
  - Less "unknowns" reduce likelihood of future shortages
- From "tactical" to "strategic" sourcing
  - Procurement spend analysis
  - Rationalizing the supplier base
  - Forming strategic partnerships with key vendors
  - Increased use of longer-term contracts
- Holistic approach incorporates
  - Lean Six Sigma analysis capabilities
  - Performance-Based Logistics (PBL) efforts
  - 2005 BRAC law joint strategic sourcing guidance
  - Enhancing maintenance and distribution operations as well as new procurement supply chains

Where We're Going…

AMC's Role Is to <u>Enable and Sustain the Force</u>

- Full spectrum operations conducted by Joint, multi-functional, expeditionary forces distributed across non-linear battlefields.
- Winning requires forward support and ever increasing industrial base responsiveness with rapid re-supply.
- The Joint Warfighter requires cutting-edge technology, asset visibility, strategically positioned stocks around the globe, and a responsive industrial base and rapid re-supply.

Opportunities Ahead

WHO

"We will continue to have a central role in implementing our national security strategy."

-GEN Casey

WHY

21st Century Security Environment

Four Challenges: Traditional, Irregular, Catastrophic, Disruptive

A Persistent State of Conflict Will Endure

WHEN

Restore Balance by 2011

WHERE

- OIF
- OEF
- Evolving?

HOW

- Grow The Army
- Develop The Future Army
- Modernize The Army
- Business Transformation

Questions ?

BACK UP SLIDES

AMC 2015 Vision

The Joint Warfighter Is Priority Number ONE

- Expansion of and greater integration of the joint sustainment capabilities we provide to the joint warfighters.
  - Operation Golden Cargo
  - Ocean/Air Terminals
  - Joint Basing
  - Cross Leveling Inventory
- Developing and acquiring breakthrough technologies
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  - Green Ammo
  - Demil R3

AMC 2015 Vision

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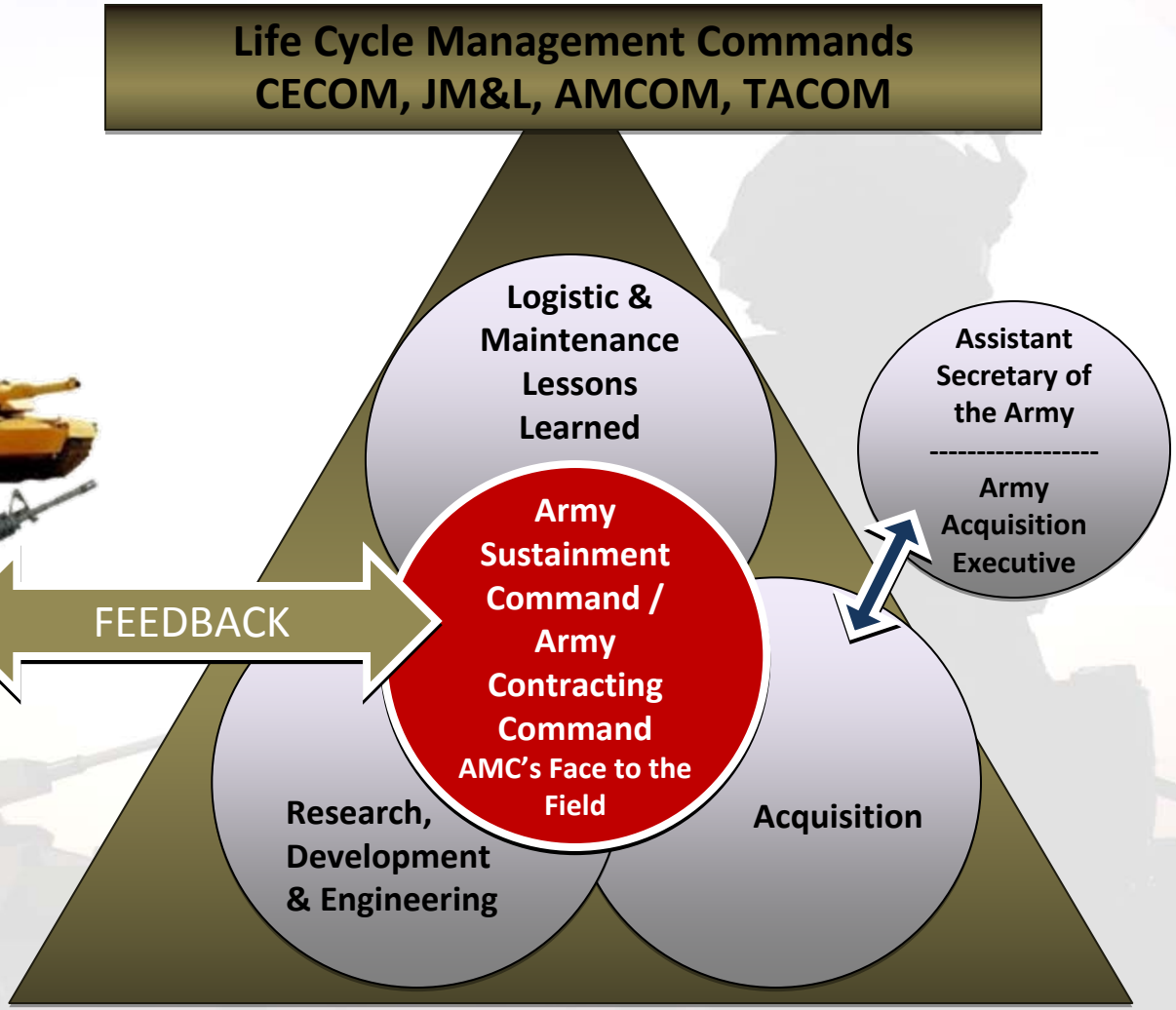
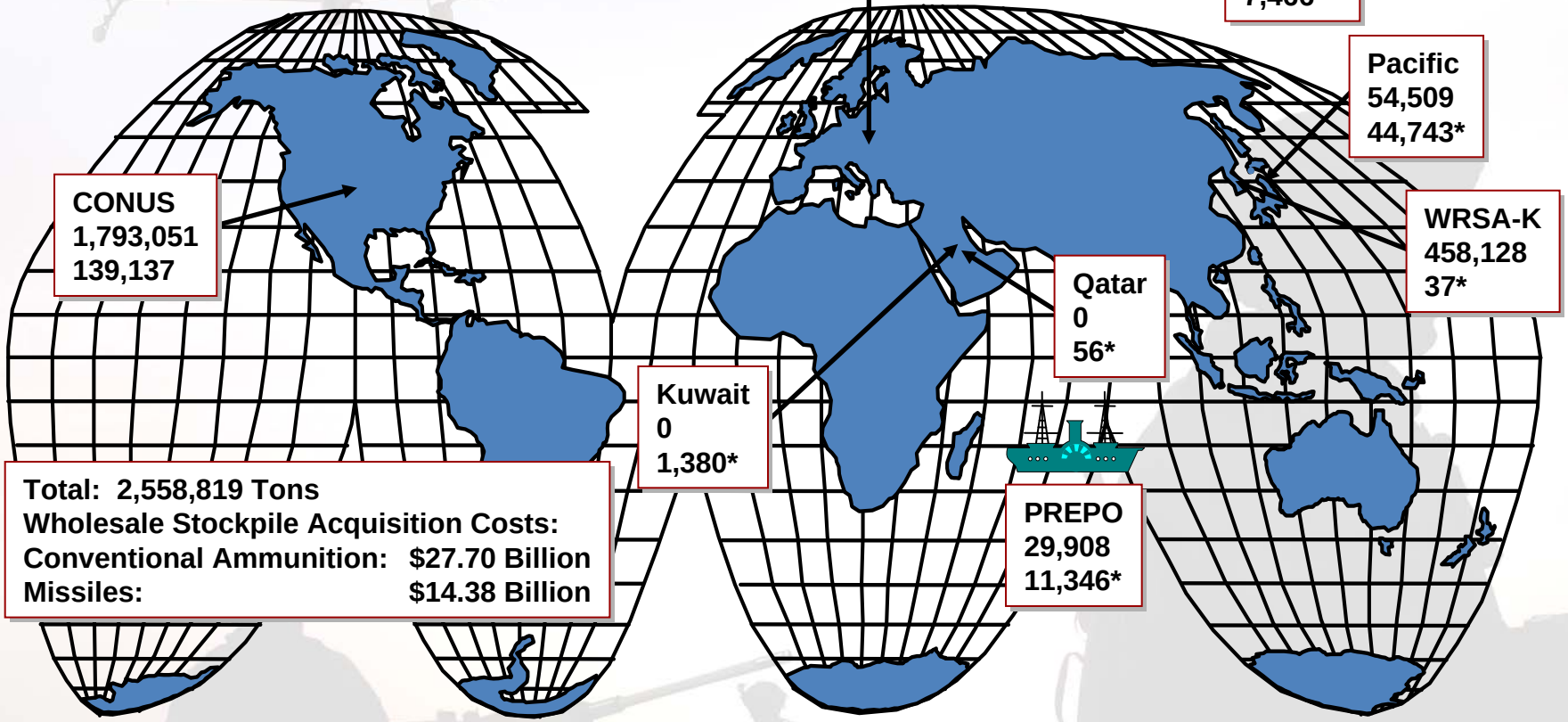
  - Demil R3

Life Cycle Management
Soldier Focused – Foxhole to Factory Enterprise



Worldwide Asset Posture



Total: 2,558,819 Tons
Wholesale Stockpile Acquisition Costs:
Conventional Ammunition: $27.70 Billion
Missiles: $14.38 Billion

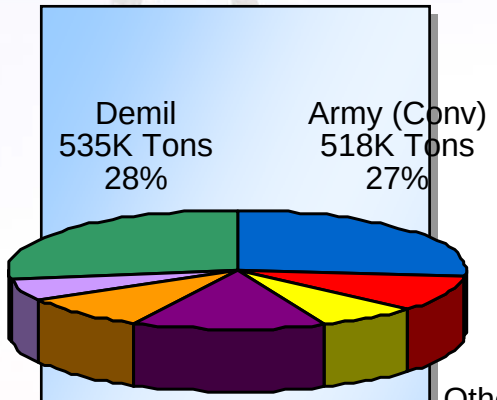
Notes:
OCONUS = AMC Accountable (Army Only)
CONUS = AMC Accountable (All Services)
*Missiles
Sources: Conventional Ammunition: CCSS/SAAS
Missiles: NLAC

POC: Carrie Krulik, AMSJM-LIS, DSN 793-6804
Bob Sharp, AMSAM-IMMC, DSN 476-1237

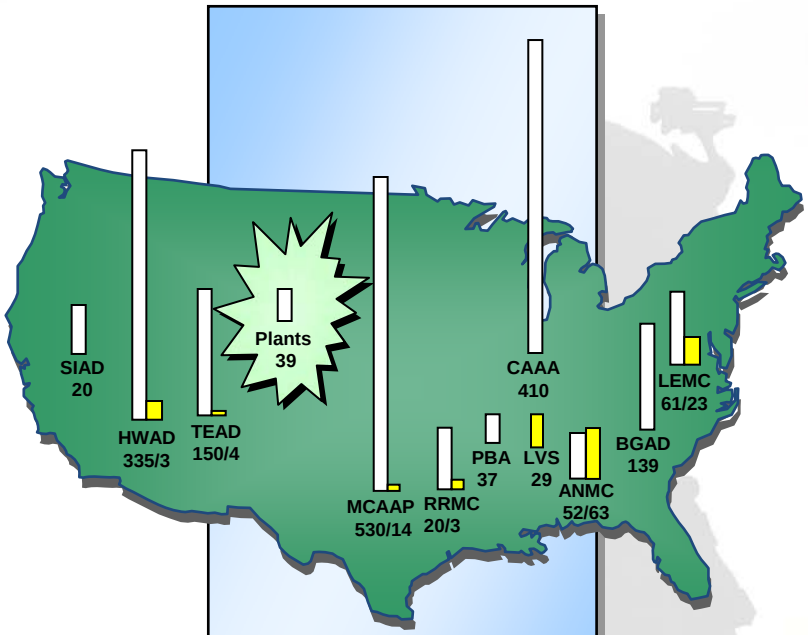
As of Sep 08

CONUS Wholesale Stockpile

All Services



CONUS Customers
Total Tons: 1,932,188



CONUS Locations

Source: **Feeder Data, CCSS MASSET**
Missiles: VISTA

POC: **Carrie Krulik, AMSJM-LIS, DSN 793-6804**
Bob Sharp, AMSAM-IMMC, DSN 476-1237

As of Sep 08

Fortune 100 and Army Materiel Command

	Company Names	Revenues ($Millions)
13	American Electric Power	61,257.0
14	Duke Energy	59,503.0
15	AT&%	59,142.0
16	Boeing	58,198.0
17	El Paso	57,475.0
	Army Materiel Command	**Over 56,000.0**
18	Home Depot	53,553.0
19	Bank of America Corp	52,641.0
20	Fannie Mae	50,803.0
21	J.P. Morgan Chase	50,429.0
22	Kroger	50,098.0
23	Cardinal Health	47,947.6
24	Merck	47,715.7

ISO-Certified AMC Organizations

ISO is a non-governmental organization that consists of national standards institutes of 157 countries. It serves as a bridging organization in which a consensus can be reached on solutions that meet the requirements of business and society, such as the needs of stakeholder groups like consumers and users.

Adopting Commercial Best Practices

ISO 9001:2000 Quality Management Systems

- Corpus Christi Army Depot
- Lone Star Army Ammunition Plant
- Letterkenny Army Depot
- McAlester Army Ammunition Plant
- Sierra Army Depot
- Milan Army Ammunition Plant
- Tobyhanna Army Depot
- Radford Army Ammunition Plant
- Toole Army Depot
- Riverbank Army Ammunition Plant
- Red River Army Depot
- Scranton Army Ammunition Plant
- Anniston Army Depot
- Rock Island Arsenal – Joint Manufacturing
- Crane Army Ammunition Activity & Tech Center
- Hawthorne Army Ammunition Plant
- Watervliet Arsenal
- Holston Army Ammunition Plant
- Pine Bluff Arsenal
- Iowa Army Ammunition Plant
- Kansas Army Ammunition Plant
- Letterkenny Munitions Center
- Lake City Army Ammunition Plant

ISO 14001:2000 Environmental Management Systems

- Lettermen Army Depot
- Tobyhanna Army Depot
- Iowa Army Ammunition Plant
- Milan Army Ammunition Plant
- Riverbank Army Ammunition Plant
- Scranton Army Ammunition Plant
- Radford Army Ammunition Plant
- Anniston Army Depot
- Tobyhanna Army Depot

AS 9110 2003-01 2003-01 International Aerospace Quality Systems Standards

- Corpus Christi Army Depot

ISO 9001:2000 + AS9100B Aviation Maintenance System

- Corpus Christi Army Depot

Safety Voluntary Protection Program (VPP)

- Tobyhanna Army Depot

OHSAS 18001 Occupational Health & Safety Administration System

- Anniston Army Depot

Product Director

Non-Standard Ammunition
Munitions Executive Summit
3-5 February 2009

Product Director For
Non-Standard Ammunition
Bill Sanville

Non-Standard Ammunition

Timeline of Events

Lowest Price

4/08 Established Task Force

4/08 Awarded 1st Urgent Needs Contract

5/08 1st DCMA Source Inspection

5/08 General Specifications

5/08 1st Delivery of Small Cal

6/08 Industry Day

6/08 Theater Visit to Afghanistan & Iraq

6/08 Assess Arsenal Co (Bulgarian Co)

7/08 JCC-IA defers contracting NSA to PEO Ammo

7/08

8/08 1st Competitive Solicitation Released

8/08 ASA (AL&T) Policy Letter

9/08 Assess RomArm Co (Romania Co)

9/08 USMC Delivery

9/08 RPG Contract Awarded

10/08 Industry Day

10/08 Established Product Director

11/08 PEO SOF Warrior Systems

11/08 Briefed Incoming CSTC-A CG

12/08 Assess Arsenal & VMZ (Bulgarian Cos)

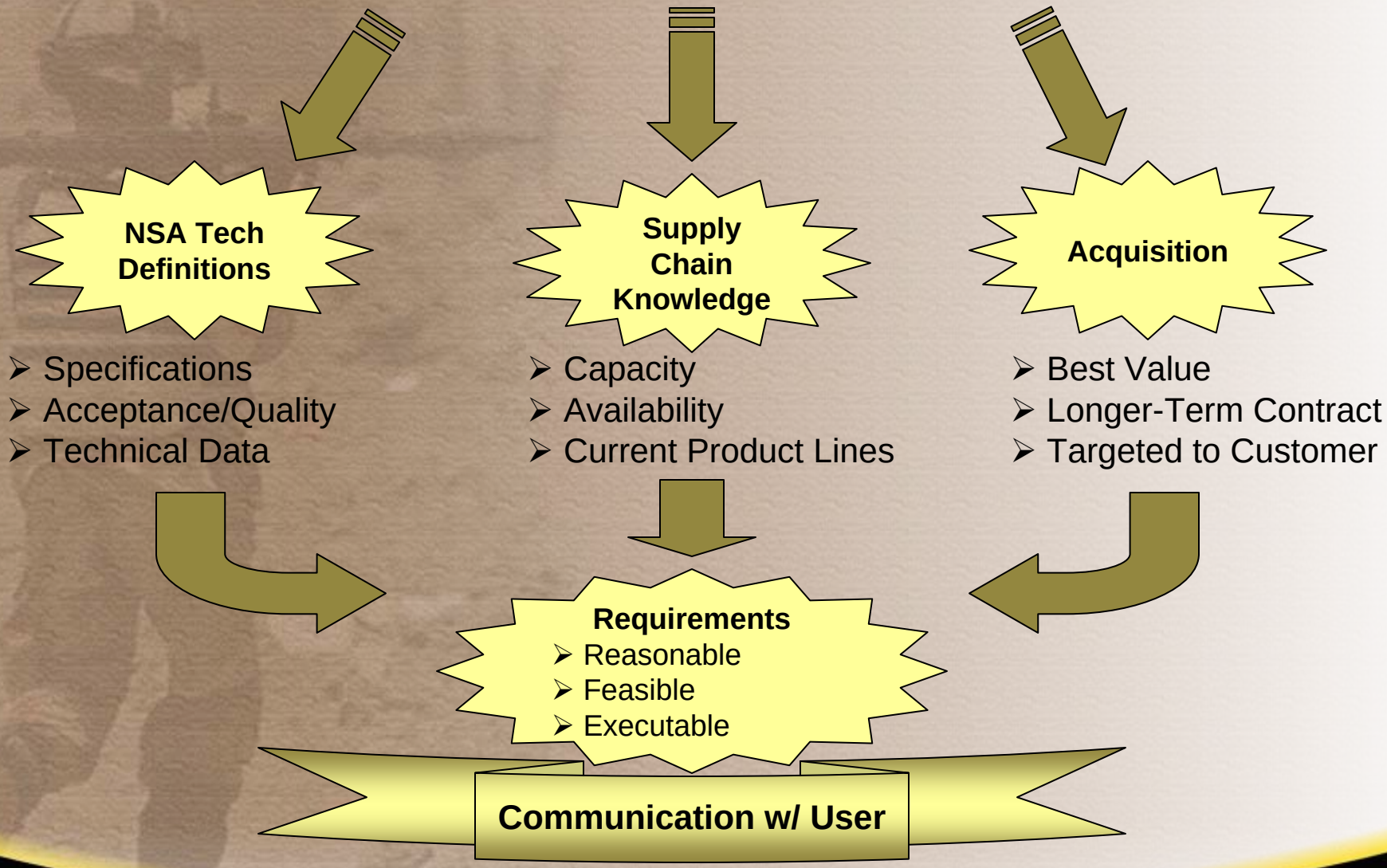
12/08 Award AEY Reprocurement

Best Value

Acronyms

RPG – Rocket Propelled Grenade
JCC-IA – Joint Contracting Command – Iraq/Afghanistan
SOF – Special Operations Forces

Taking the Next Step



Where can Industry Help

- Supply Chain Knowledge
  - Capacities, availability, and current product lines
- Quality Assurance and Acceptance
- CONUS Manufacturing
  - How does government get Best Value
- Long-Term Acquisition Strategy
  - Target to customer
- Department of State
  - Know the requirements for exporting

AIR FORCE SPECIAL OPERATIONS COMMAND

Quiet Professionals

MSgt Mike West

Combat Control Team (CCT)/Special Tactics Squadron (STS)

Joint Terminal Attack Controller (JTAC)

U.S. AIR FORCE

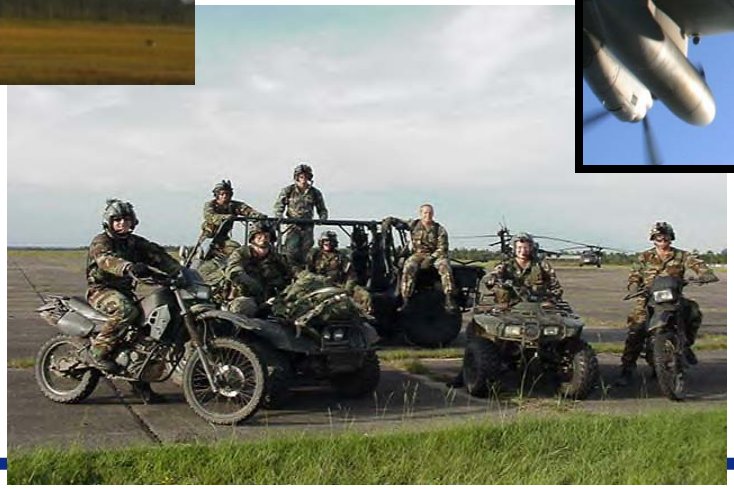
U.S. AIR FORCE

AFSOC

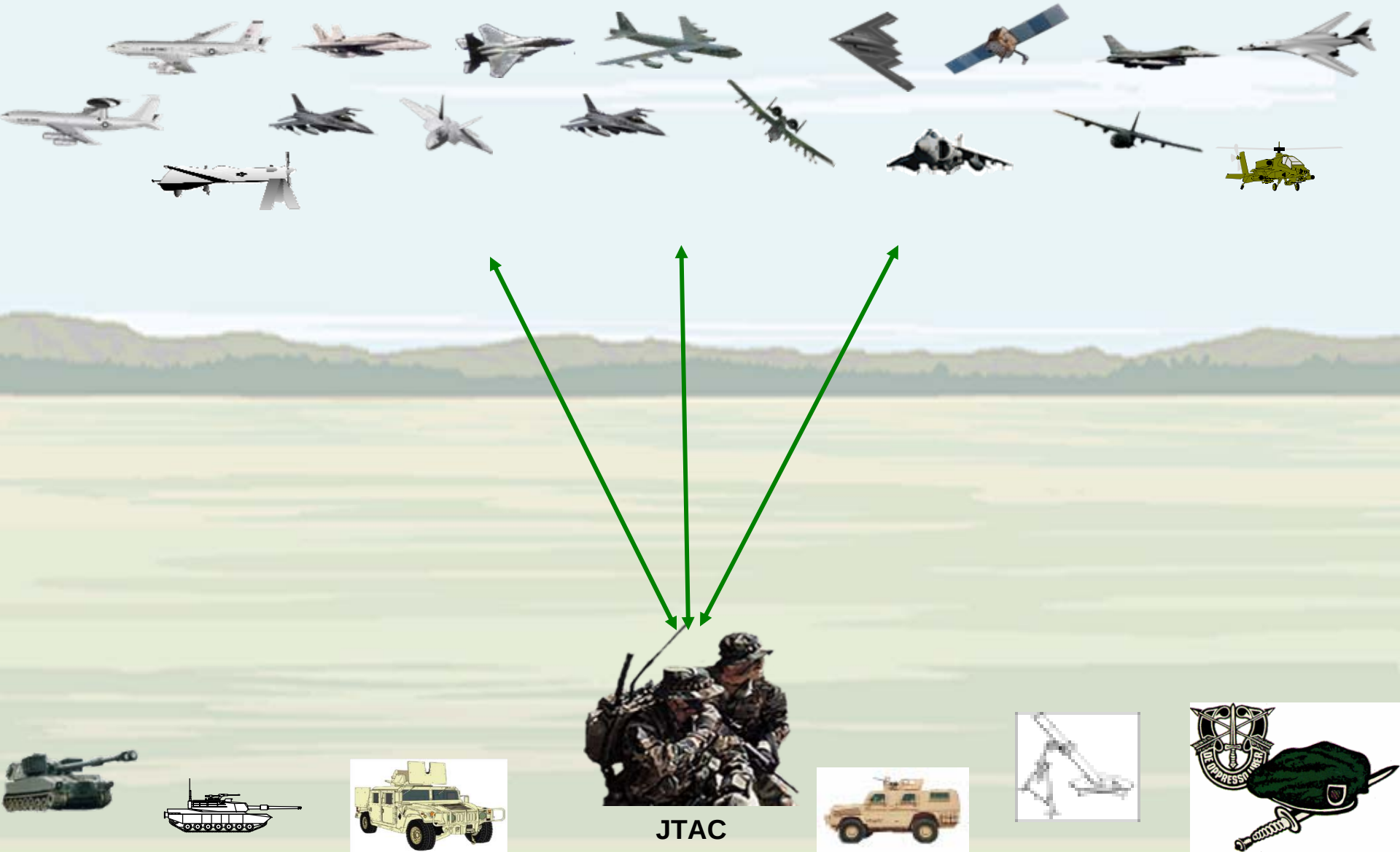
- Mission
- Responsibilities
- Area of Operations
- Mission
- Troops in Contact
- Supporting Aircraft/Weapons
- Enemy

USAF Special Tactics

The Air Force's premier ground combat team… integrating, synchronizing, and controlling Air and Space Power on the battlefield



Air Integretion



Uzbekistan
Turkmenistan
Iran
Keleft
Jeyretan
BALKH
KONDUZ
JOWZJAN
Mazar-e Sharif
Konduz
Taloqan
TAKHAR
Sar-e Pol
Baghlan
Samangan
Meymaneh
SAR-E POL
SAMANGAN
Pol-e Khomri
FARYAB
BAGHLAN
KONAR
LAGHMAN
BADGHIS
KEPIGA
Charikar
BAMIAN
PARVAN
Mehtarlam
Asadabad
Qal'eh-ye Now
Bamian
KABUD
Herat
Kabul
Jalalabad
Chaghcharan
WARDAK
Kowt-e Ashrow
LOWGAR
NANGARHAR
HERAT
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Baraki
ORUZGAN
PAKTIA
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Lashkar Gah
Zaranj
NIMRUZ
QANDAHAR
HELMAND

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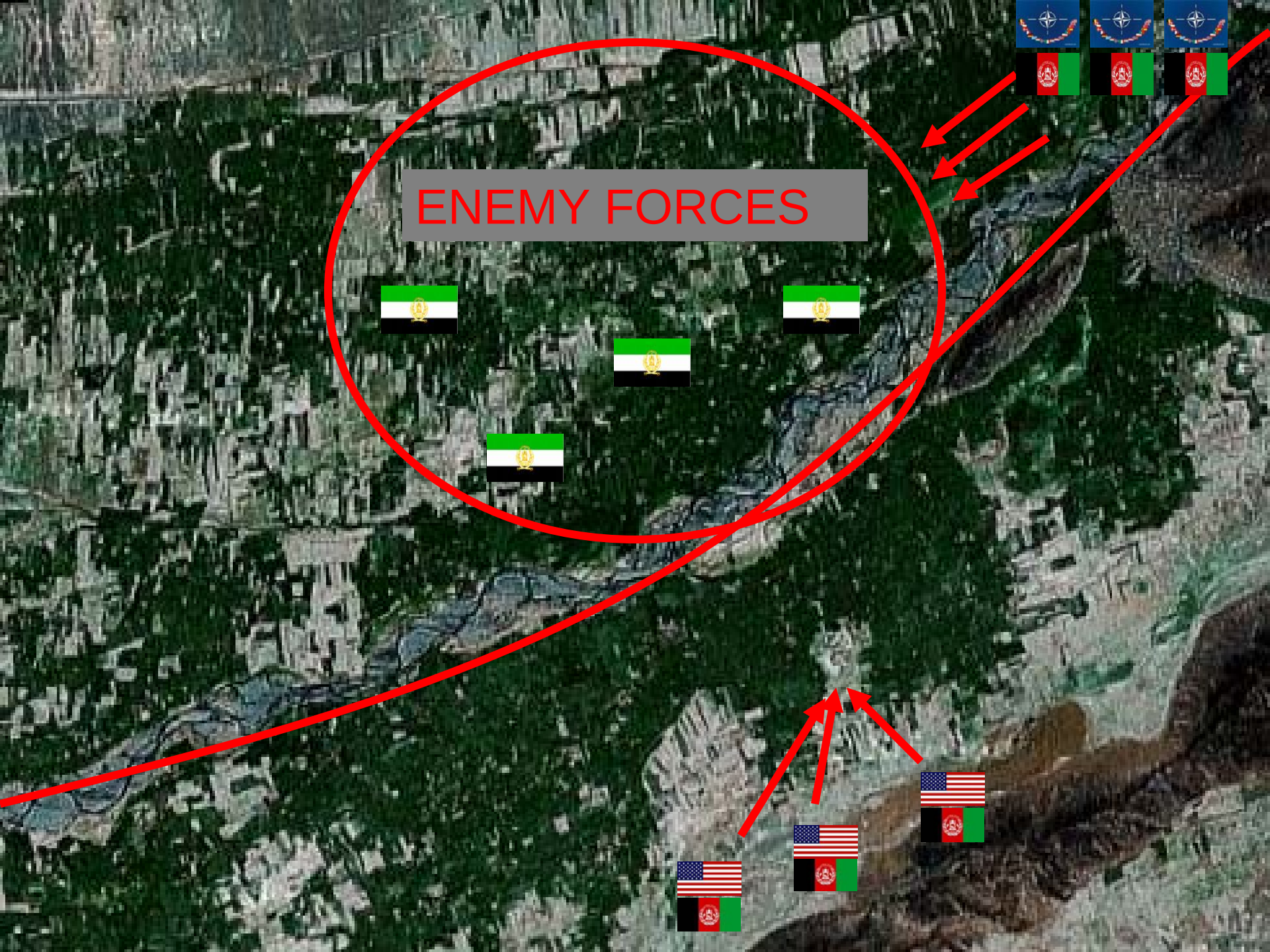
ENEMY FORCES

ANA SOLDIER
STEPS ON APM
GUN TRUCK RUNS OVER
DOUBLE-STACK MINE
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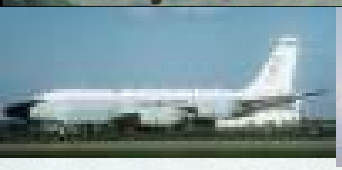
SPERWAN GHAR
N 31.49771 E 065.41829

Z
Y
X

OPERATION MEDUSA

Day 1 TIC	Day 2 TIC	Day 3 TIC	Day 4 TIC	Day 5 TIC	Day 6 TIC	Day 7 TIC	Day 8 TIC
2 AH-64s		MQ-1 (PRED)	2 AH-64'S			2-F-18s	
MQ-1 (PRED)	2 A-10s	2 A-10s				2 AH-64s	105mm Howitzer
B-1B		2 A-10s	MQ-1 (PRED)	MQ-1 (PRED)	MQ-1 (PRED)	2 F-18s	
81MM MORTAR	MQ-1 (PRED)	2 AH-64s				MQ-1 (PRED)	MQ-1 (PRED)
A-10s (IED Strike)		2 A-10s	A-10's			B-1B	
AC-130H	AC-130H	2 AH-64s					AC-130H
		2 GR-7s	AC-130H	AC-130H	AC-130H	2 AC-130H	
		2 AC-130H					

INTEGRATION OF AIR POWER



FINAL EFFECTS

GROUND EFFECTS

- 183 Combat Recon Patrols
- 55 “Troops in Contact”
- Confirmed 900+ Enemy KIA
- 137 Gunship Kills
- 50,000lbs of munitions dropped
- Treated numerous local nationals
- Recovered Caches
- 4 High Value Targets (HVTs)
- 12 Different airframes utilized safely
- 15,000 rounds fired

OVERALL EFFECTS

- “The single most important and successful combat operation conducted in Afghanistan since 2002” – Commander Regional Command South
- Over 900+ Taliban Killed by Air & Ground Forces
- Decimated Taliban Control of the South
- Taliban Fighters have Exfiltrated the Area
- Civilian returned to the homes

Munitions Executive Summit

Industrial Base Panel

GOCO Perspective

Day&Zimmermann

We do what we say.®

Michael H. Yoh
President & CEO
Munitions and Government
Day & Zimmermann, Inc.
Munitions Executive Summit
2009

Day & Zimmermann

- Government Owned Contractor Operated
  - **WWII** Designed, built and operated the Iowa Army Ammunition Plant
  - **1951** Received the operating contract for the Lone Star Army Ammunition Plant
  - **1970** Received the operating contract for the Kansas Army Ammunition Plant
  - **1981** Received the operating contract for the Hawthorne Army Depot
  - **1998** Acquired Mason and Hanger
    - 50% of American Ordnance JV that operates the Iowa and Milan Army Ammunition Plants
    - Operating contract for the Newport Chemical Depot
  - **2007** Acquired the other 50% of American Ordnance

Day&Zimmermann
We do what we say.®

Day & Zimmermann

- Happy to say we have been successful in all competitions

So this part of the Ammo Base is working perfectly!!

Day&Zimmermann
We do what we say.®

What is the Ammo Base doing right

- **First and Foremost**

- We are meeting the Services' requirements for High Quality, Effective Munitions that are Delivered On Time.

Day&Zimmermann
We do what we say.®

What is the Ammo Base doing right

- Adapting to a significantly reduced supplier base
  - Developing and qualifying new sources
  - Standing up new capabilities internally
- Utilizing new and enhanced technologies
  - Qualifying new materials and processes
  - Qualifying, incorporating and expanding the use of new technologies such as
    - Improved digital x-ray systems
    - Enhanced vision systems

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We do what we say.®

What is the Ammo Base doing right

- Continual process improvement for products and services
- ISO 14000 certifications for Environmental Management
- The MIBTF continues to be a very strong advocate for the industrial base.

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What is the Ammo Base doing wrong

- The consolidation of the base has:
  - Driven a lot of capability and flexibility from the base.
  - Created more single points of failure
  - Increased our dependency on foreign produced munitions and components
  - Reduced the ability to replace aging talent
- Taking far too long to update technical data to latest configuration
- Still imputing a rent factor in competitions even though facilities contract requirements more than make up for any possible advantage

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What is the Ammo Base doing wrong

- Micro-managing operating contractors rather than focusing on the results.
  - Old cost plus mentality in a fixed priced reality
  - Forcing sub-optimized use of resources rather than focusing on improvements
- Lack of recognition of the cost of operating and maintaining these large facilities and its effects on competition
  - Recognized for GOGOs, but not GOCOs
- The GOCOs are being re-competed to test the competitiveness of the contractor operator (good thing), the same should be done for GOGO operations and for the same reason.

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What can the Ammo Base do better

- Don’t pay for more quality than is required
  - Develop acceptance criteria which meets the users requirements
  - Pushing for absolute perfection generally adds little to effectiveness but can have significant impact on cost and schedule.
- Eliminate non-value added criteria from the technical data and don’t add more that aren’t listed;
  - Just because you can measure it, does not mean you should.

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What can the Ammo Base do better

- There needs to be more thought on the Teaming concept.
  - When it works, it is a fantastic tool and better promotes cooperation and yields win-win relationships – better serves the ultimate customer
  - It is sometimes used to press a different agenda
  - And in its really bad form, its used as a PR club – if you don't comply with our demands, you really aren't teaming.
- There has been renewed energy around life cycle mgmt of munitions, this is great, but its been at the expense of other critical disciplines such as producibility engineering

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What can the Ammo Base do better

- As capacity is reduced, there needs to be a better look at mobilization and surge needs to insure we always have what we might need
- As the requirement for ammunition is adjusted, there needs to be a strong look at the base within the United States. Buy America becomes more important
  - Reduction of foreign dependency is needed more than just in the oil fields
  - GOCOs are major employers in small economic areas. Given the economy in general, this employment is critical

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GOCO Perspective
Ammo Base

Thank You

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