Robert A. Grubbs
Deputy Division Chief, DA G3 Munitions
NIPR: robert.grubbs@us.army.mil
SIPR: robert.grubbs@hqda-s.army.smil.mil

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

- DA G-3/5/7 Munitions Mission
- Current Operational Trends and Observations
- Munitions Requirements Process (MRP)
- 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**
- CIC: Capability Rqts
- SSW: War Plans
- FM: Force Structure
- TRA: Develop Requirements
- CIR: Develop priorities

**G-4**
- Sustainment
- Munitions Div

**G-8**
- Programming & Budgeting
- BOS Div’s (Missiles)
- Ammunition Div

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

---

**Requirement Generators**

- **DoD MRP**
- **Joint Staff JCIDS**
- **AR2B**

**Integration**

- **TRADOC**
  - STRAC, POI, CBT Loads
- **CAA QWARRM**
- **ATEC TEST**
- **OTHER CMDS ONS**

---

**Acquisition and Logistics**

- **AMC**
- **AMCOM LCMC**
- **JM&L LCMC**

**Long-Term**

**Near-Team**

**Life-Cycle Mgr of Acquisition & Production of Missiles, Logistics Readiness, and Sustainment**

**Life-Cycle Mgr of Acquisition & Production of SMCA, Logistics Readiness, and Sustainment**
Current Operational Trends and Observations
Modernization of conventional munitions stocks is well underway; missile stocks are approaching obsolescence.

Our inventory is not necessarily tuned for “full spectrum” operations, and change is slow going (e.g. 2.75” rockets, 40mm NL).

We must not “prepare” for the last fight (2.75” rockets, VL/IR Illum).

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

Anti-armor does not always equal anti-personnel.

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)
Continued…

- We are and will continue to fly (fixed and rotary) 155mm and more (intra and inter theater)

- Buying foreign to make up for shortfalls should never happen again (e.g. UK small arms)

- 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)

- Non-lethals must quickly transition to lethal effects to best support Escalation of Force, detainee operations, etc. (no more FN303’s). Extended range (150m) for NL is critical to buy standoff time.
Current Operational Trends and Observations

Continued…

- Just in time production does not equate to just in time logistics

- Precision vs dumb munitions balance is not easy. TRADOC is conducting a detailed study to support senior decision makers

- TRADOC also working a study to help focus PEO- Missiles and Space RDT&E and S&T funding requests in FY12-17 POM

- Operational Needs System (ONS) system is working

- Significant increase in ammunition and explosive related accidents with fatalities

- We have a knowledge gap among junior to mid-grade officers
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.
QWARRM Development

Account for Everything; Double-count Nothing

Army Simultaneity Stack

- Major Combat Operations
  - MCO WD + MCO SDTE
  - Stability OPS (OIF/OEF expenditures)
  - Post-MOB / CONOPS training
  - Residual Capability
  - Main rounds modeled + Combat loads

- Deter Aggression
  - 4 Baseline Security Postures
  - Current Operation / Fwd Presence
  - SOF Operational
  - Combat-load based RQMT

- On-going Operations

- Homeland Security
  - DRBs & OP Projects
  - CCMRF
  - Generating Force
  - Combat-load based RQMT

- Transformation

- Generating Force

Translation

MRP Stack

- Major Combat Operations

- Current Ops & Forward Presence

- Strategic Readiness

QWARRM

Translation

Army Simultaneity Stack

- Strategic Planning Guidance (SPG)

- CCDR OPLANS

- DIA Threat Report

- TAA Force Structure

- Strike Unfavorable Conditions
QWARRM does not address immediate operational needs. These are approved and resourced through the Army Requirements and Resourcing Board (AR2B) via Operational/Urgent Needs Statements (ONS/UNS) (e.g. Pen Flares)

QWARRM requirements + training (6 years) + testing (6 years) = Total Army Munitions Requirements (TAMR)

FY10-15 TAMR provided to OSD o/a 1 Jan 08
Total Army Munitions Requirements (TAMR)

Account for Everything; Double-count Nothing

Army Simultaneity Stack

- Major Combat Operations
  - MCO WD + MCO SDTE
  - Stability Ops (OIF/OEF expenditures)
  - Post-MOB / CONOPS training
  - Residual Capability
  - Main rounds modeled + Combat loads

- Deter Aggression
  - 4 Baseline Security Postures
  - Current Operation / Fwd Presence
  - SOF Operational
  - Combat-load based RQMT

- On-going Operations
  - DRBs & OP Projects
  - Generating Force (11th ACR NTC; 1-509 IN (ABN) JRTC; 1-4 IN JMRC; NG IN BCT ISO Post-MOB)
  - Combat-load based RQMT

- Homeland Security
  - Combat-load based RQMT

- Transformation
  - Generating Force

- Training & Test
  - STRAC, POI & CTA 50-909
  - Stockpile Reliability / RDTE

Translation

- Major Combat Operations

MRP Stack

- Current Ops & Forward Presence

- Strategic Readiness

TOTAL ARMY MUNITIONS REQUIREMENT

QWARRM

QWARRM

Army Simultaneity Stack

- Strategic Planning Guidance (SPG)
- CCDR OPLANS
- DIA Threat Report
- TAA Force Structure
- "Strike Unfavorable" Conditions

Training & Test

- STRAC, POI & CTA 50-909
- Stockpile Reliability / RDTE
Army War Reserve / Operational MRP

TRADOC
Combat Developers

Army CMDS
Deploying Units

ASCCs
Deployed Units

G-3/5/7
Capabilities Development Document (CDD)
Combat Loads
Operational Needs Statement

G-37/CI
Capabilities JCIDS AR2B
G-35/SS
War Plans
G-37/FM
Total Army Analysis

Munitions Requirements Resourcing Integrator
- Publish Study Directives
- Validate Combat Loads
- Staff / refine CAA outputs
- Conduct QWARRM CoC
- Collect inventory data
- Sufficiency Assessment
- Publish approved requirements

G-37/TRA
Guidance Requirements

OSD MRP
AT&L
(DoD 3000.4)
Joint Staff
J8-FAAD
Out-year PTD
OPLANS
Near-year PTD

QWARRM Process Modeling
Key inputs:
- CCDR OPLANs IAW SPG
- DIA Threat Report
- Projected TAA resourced force
- Projected munitions
- AMSAA system performance data
- TRADOC Combat Loads
- OIF / OEF MUREP data
- Munitions caps
- “Strike Unfavorable” conditions

Key outputs:
- Near-year constrained / unconstrained RQMT
- Out-year constrained / unconstrained RQMT

OIF
OSD
Stockage
Objective

JMC
Forecast
TAMIS
$ POM

TA4C
Authorize

Procure/Produce

G-3/5/7
Approval
TAMR

War Fight
Training Munitions Requirements Process

- **Combat Developers**
  - TRADOC
  - Validates, Approves, Authorizes
  - **G-3/5/7**: Validates and approves capabilities requests.
  - **G-37/-CI**: (Munitions Council of Colonels) approves weapons resourcing strategies.

- **Training Developers**
  - (Develops weapons training strategies)
  - **Commandants**
    - Approve POIs; Recommends Wpns Strategies
  - **G-37/TRA/C/I**: (Munitions Council of Colonels) approves weapons resourcing strategies.

- **Warfighter**
  - **Army Organizations**
    - (Execute training strategies)
  - **CAM**
  - **Forecast**
  - **Authorizations**
  - **TAMIS**
  - **TAMR**
  - **DA PAM 350-36 & POIs**
  - **ATSC**
  - **Living documents**
  - **Procure/Produce**
  - **G-37/TRA: (TA4C)** authorizes ammunition against approved requirements.
On-going Actions/Initiatives
Ongoing Actions/Initiatives

- **Sustain the Warfight**
  - Hellfire (AP/AT)
  - Fast Obscurant Grenade (FOG)
  - 2.75" rockets (HE, flechette)
  - Unitary Guided MLRS
  - 30mm
  - Excalibur
  - 12ga breaching rounds
  - Non-lethal (40mm, CS, 12ga)
  - Escalation of Force (EOF)

- **Manage Army Munitions Requirements and Prioritization**
  - Overarching Army Munitions Strategy
  - Highlight current and pending shortfalls
  - Munitions/Missile Industrial Base
  - Green Ammo
  - COCOM missile distribution
  - ATACMS shelf life extension program (SLEP)
  - Operational Needs Statements (e.g. PGMM, Thermo LAW, PGK)

- **Army Munitions Strategy**
  - Support Reposture/Reset of munitions stockpile
  - Joint Materiel Release Process
  - Currently Working DRAFT

- **FY10-15 POM / Total Army Munitions Requirements (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

- **Army Ammunition Vision- 2030**
  - Soldiers/Civilians
  - Equipment
  - Training
  - Organizations
  - Strategic reach back

Chief of Ordnance initiative
Committed to fixing knowledge gap
Don Chrans DA G8
Programming and Budgeting
Backup
50m line represents the distance where less than 3% of the population is capable of throwing an object large enough to cause serious injury.

Experimental extended range rounds shipped to SWA in 2006.

Proposed optimal range for nonlethal munitions.

Launched from 12ga shotgun.
Modeling Guidance to CAA

- Model OSD-directed Major Combat Operations.
- Develop constrained / unconstrained near- and out-year requirements.
- Use MUREP to develop PH IV requirement.
- Develop Strategic Readiness requirements, to include Homeland Defense, treaty obligations, etc.
- Update the Theater Sustainment Model to reflect munitions needed to support a modular force.
- Special emphasis items include: FCS systems, Patriot, ATACMS, Hellfire, DPICM (all types), 30mm, 25mm, and Precision Guidance Kit (PGK) requirements.
**Old Process**

G8 develops missile requirements

**Unconstrained:**

- CAA model allowed to fight theater war fight without constraint.
- Model defaults to the most lethal, suitable weapon / munition available for the target set.

**Constrained:**

- Requirements based on programmed quantities.
- Provided by EE PEG BOS reps.
- No missile UFRs. Procurement = requirement.

**Note:** OSD directs each Service to provide unconstrained and constrained requirements.

**New Process**

G3/5/7 develops missile requirements

**Unconstrained:**

- No change.

**Constrained:**

- CAA models unconstrained requirement.
- G3 (DAMO-TRA) develops operations-based critical requirement.
- DAMO-TRA briefs proposed RQMT to G-3/5/7 for approval.
- EE PEG provides assessment of how much of the RQMT it intends to fund.
- CAA models programmed quantities provided by EE PEG BOS reps.
- Funding < critical RQMT = CUFR.
- Funding > CUFR but < full RQMT = UFR.

**New Process**

G3/5/7 develops missile requirements

**Unconstrained:**

- No change.

**Constrained:**

- CAA models unconstrained requirement.
- G3 (DAMO-TRA) develops operations-based critical requirement.
- DAMO-TRA briefs proposed RQMT to G-3/5/7 for approval.
- EE PEG provides assessment of how much of the RQMT it intends to fund.
- CAA models programmed quantities provided by EE PEG BOS reps.
- Funding < critical RQMT = CUFR.
- Funding > CUFR but < full RQMT = UFR.

**Previous missile requirements process** was fiscally driven vice operations-based.

**G-3/5/7** can’t determine where he may have risk.
**Unconstrained Requirement**

- CAA model is allowed to fight theater level war fight without constraints
- This is the very top level munitions requirements estimate, by DODIC

**Constrained Requirement**

- G-37/TRA uses the CAA generated unconstrained requirement to develop an operations based Critical Requirement
- EE PEG provides assessment of how much of the RQMT it intends to fund
- Critical Requirement is briefed to G-3/5/7 leadership for approval
- CAA models programmed quantities provided by EE PEG BOS
- CUFR = Funding < Critical Requirement
- UFR = Funding > CUFR but < Full Requirement

* Missile X TAMR requirement will be the capped qty, but show the Full and Critical Requirements for reference
ATACMS SLEP Process

**Expired Missile**

**ATACMS Block I (M39)**
- 950 APAM Sub-munitions
- 165 KM Range
- Inertial Guidance

**SLEP PROCESS**
(New Warhead, New Electronics, New Guidance System)

**New Missile**
- 10 Year Shelf Life

**ATACMS Unitary (M57)**
- 500# Unitary Warhead
- 270 KM Range
- Vertical Attack capability
- GPS-aided Inertial Guidance
War Reserve Requirements Process

Validate, Prioritize

- **DAMO-CI**: Validate capabilities
  - JCIDS
  - AR2B

- **DAMO-TRA**: Validate resourcing
  - Combat Loads (CoC)
  - Other Army inputs.

**G-3/5/7**

- **SSW**: War Plans
- **FM**: Force Structure

Validated inputs

Study results

**Total Army MRP**

Quantitative War Reserve Requirements for Munitions (QWARRM)

- OSD Scenarios
- DIA Threat Report
- Projected munitions
- Projected force structure
- TRADOC Combat Load
  - Modularity + OIF/ OEF
  - Munitions caps
  - Add-on factors
  - “Strike Unfavorable”

**Requirements**

- MCOs
- Major Combat Operations
- Ongoing Operations
- Deter Aggression
- Generating Force
- Transformation
- Homeland Security
- Strategic Readiness

**Procure/Produce**

- POM
  - $ (RE06)

**Deploying / deployed units**

- TRADOC
  - Combat Developers
  - Capabilities Development Document (CDD)
  - Combat Load Study

**Army CMDs/ ASCCs**

- Operational Needs Statement

**Long-term**

- DAMO-CI: Validate capabilities
  - JCIDS
  - AR2B

**Near-term**

- DAMO-TRA: Validate resourcing
  - Combat Loads (CoC)
  - Other Army inputs.

**G-3/5/7 Approval**

- ASCC / COCOM Collaboration

**ASCC / COCOM Collaboration**

- TAMR

**Procure/Produce**

- POM
  - $ (RE06)
The Army’s QWARRM process produces a Requirements Estimate that:

- Reflects the quantities of munitions the Army needs to successfully execute ground-based maneuver force Campaign Plans (versus achieving specific target attrition goals).

- Considers the objectives and munitions demand for each phase of the campaign plan.

- Is derived from detailed functional analysis of Division/BCT-level performance of opposing force weapons systems in an environment representative of the theater.
  - Uses approved shooter / munitions / target probability-of-kill data from AMSAA.
  - Reflects appropriate doctrine and tactics for employment of the weapons systems.

- Provides a comprehensive theater / scenario-specific, auditable estimate of munitions requirements throughout a campaign.
Validation of Campaign Results

CAA’s Campaign Analysis Review (munitions):
- Rounds per Tube per Day
- Inventory caps
- Tonnage
- Kills and hits
- Phasing
- Quantities Expended vs Carrying Capacity
- Sequence of Expenditures

Only after validation is complete are study results briefed to the Director, CAA, for release to the Army G-3 (DAMO-TRA).

Army G-3 (DAMO-TRA) conducts Council of Colonels to further validate QWARRM outputs, leveraging input from “Team of Teams.”

Outputs approved by DA G-3 before release to OSD
QWARRM Summary

- The QWARRM process has evolved over time, as the Army and CAA have refined it to meet the demands of the munitions requirements process and the OSD MRP.

- CAA’s OPLAN analysis support to ASCCs that are associated with major Defense Planning Scenarios significantly enhances the Army’s ability to faithfully represent the ASCCs’ intent during the campaign.

- The Army is confident that scenario based munitions requirements accurately reflect what the Army needs to successfully execute a specified theater campaign plan (vice the estimated munitions required to kill a specific number of targets).