U. S. Navy Aerial Target Systems

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Outline

- Product Lines
- Operating Sites
- Supersonic Targets
- Subsonic Targets
- Full Scale Targets
- Target Control System
- Foreign Military Sales
- Challenges
Product Lines

Supersonic
- GQM-163A
- AQM-37C
- GQM-173 Multi-Stage Supersonic Target (MSST) (development)

Subsonic
- BQM-34S
- BQM-74E
- BQM-177 Subsonic Aerial Target (SSAT) (development)

Full Scale
- QF-4
- QF-16
- Moving Land Target (MLT) (Production)

Other/Support
- Tactical Air Launched Decoys
- Common Equipment / Augmentation
- Threat Simulation
- Banners
- System for Naval Target Control (SNCT)
Operating Sites

GQM-163 capability at Levant Island France (via FMS case) in 2012

Air Launch:
- BQM-34
- AQM-37
- BQM-74

Ground Launch:
- BQM-34
- BQM-74
- BQM-177
- GQM-163
- GQM-173 (threshold)

Ship Launch:
- BQM-34
- BQM-74
- BQM-177
GQM-163A
Supersonic Sea Skimming Target (SSST)

• Replicates a family of supersonic sea skimming Anti-Ship Cruise Missile (ASCM) threats
  – 15 ft sea skimming at 2.1 - 2.7 mach with 8 – 12g maneuver

• Program is in production
  – Produced by Orbital Sciences Corporation in Chandler, Arizona
  – Planned procurements of ~7 targets per year

• GQM-163 Initiatives
  – Closer Approach
  – Diver

• Successful “Live Fire” in Île du Levant, France on 4 April 2012
AQM-37C

- Med - high altitude supersonic cruise with dive
  - Mach 2.0 – 4.0
  - Range 100 mi
  - Altitude 1000 ft – 100 Kft
  - Demonstrated TBM profiles (300 Kft, 120 nmi downrange)
  - Expendable Target

- Out of Production (Last delivery Dec 01)
  - Inventory of 63
    - 33 AQM-37C
    - 30 AQM-37D (require flight certification)
    - Targets fueled as needed (6 “C”s fueled)

- F-16 Launch capability available
  - MOA with Air National Guard to provide launch services
  - Air National Guard (144FW, 150FW & 180FW)
  - 412 at Edwards Air Force Base

- GPS capability added for tracking/cooperative scoring (JAMI)
  - Provide better resolution for tracking/control of target
  - High precision time stamped GPS data for success determination

Current Inventory – 63
FY08 Ops/Expenditures – 5/8
FY09 Ops/Expenditures – 8/10
FY10 Ops/Expenditures – 7/7
FY11 Ops/Expenditures – 5/7
FY12 Ops/Expenditures – 9/14
GQM-173
Multi-Stage Supersonic Target (MSST)

- Replicates a family of multi-stage supersonic ASCM Threats with a subsonic cruise with transition to supersonic terminal phase

- Program in Engineering & Manufacturing Development (EMD) phase
  - Prime contractor is Alliant Techsystems Incorporated (ATK), Woodland Hills, California

- Program Status
  - Activities completed
    - System Requirements Review (SRR) – Jun 09
    - Integrated Baseline Review (IBR) – Jul 09
    - System Functional Review (SFR) – Dec 09
    - Software Specification Review (SSR) – Mar 10
    - Preliminary Design Review (PDR) – Apr 10
    - Critical Design Review (CDR) – Feb 11
    - Prototype phase and first flight – May 11
    - Test Readiness Review (TRR) / Flight Readiness Review (FRR) – Nov 11
    - Engineering Development Model (EDM) first launch (FLT #410) – Jun 12
  - Activities planned
    - Failure Review Board (FRB) investigation on EDM flight #410 in work
    - EDM-2 flight test pending out come of the FRB
BQM-34S

• **Mission**
  - Low fidelity A/C simulator
  - Special configurations requiring increase payload, power or survivability
    • Open Loop Seeker (OLS) integration

• **Sustainment efforts in progress**
  - Develop organic capability for Integrated Avionics Unit retrofits
    • Two targets to be converted in FY13
  - Parts obsolescence issues
    • Low Altitude Control cards
    • Heading Hold cards
  - Spares/repairs issues
    • Fuel pumps

• **Open Loop Seeker (OLS)**
  - On 25 July 2012, two BQM-34S OLS targets flown Point Mugu Sea Range
  - Preliminary data indicating a successful demonstration of the altitude bias correction

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Great T&E “Truck” but does not adequately represent many of today’s threat ASCMs

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**Current Inventory 187**
- FY08 Ops/Expenditures - 12/0
- FY09 Ops/Expenditures - 4/1
- FY10 Ops/Expenditures - 18/1
- FY11 Ops/Expenditures - 20/7
- FY12 Ops/Expenditures - 14/3 (Aug 12)
BQM-74E

- **Mission**
  - High fidelity Anti-Ship Cruise Missile (ASCM) Surrogate
  - Low-fidelity A/C simulator
  - Launch: ground, ship, air

- **Program in Sustainment**
  - FY09 was last buy with final delivery received Nov 10
  - Inventory planned to support requirements until BQM-177 is fielded

- **Programmable Autonomous Waypoint Navigation**
  - Full fielding planned for Oct 12

- **GPS location tracking system**
  - 100% COTS Web-based GPS tracker (SPOT)
  - Completely self-contained, minimal integration required
  - Successfully flown Mar 12

**Current Inventory – 358**

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<th>Ops/Expenditures</th>
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<td>146/26</td>
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<tr>
<td>12</td>
<td>72/13* (Aug 12)</td>
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Target still adequately represents many but not all threat ASCMs.

Recoverable targets. Typically 3-4 flights per vehicle.
BQM-177
Subsonic Aerial Target (SSAT)

• Provides increased subsonic performance capabilities to improve fidelity in representing aircraft and missile threat characteristics

• Program in Engineering & Manufacturing Development (EMD) phase
  – Prime contractor is Composite Engineering Inc. (CEi) in Sacramento, California
  – Initial Operational Capability estimated in FY16

• Program Status
  – Activities completed
    • EMD contract awarded Jan 11
    • System Requirements Review Aug 11
    • Integrated Baseline Review Sep 11
    • Systems Functional Review May 12
    • Test/Flight Readiness Review Aug 12
  – Activities planned
    • Target roll-out Oct 12
    • First contractor flight Oct 12
QF-4 / QF-16
Full Scale Aerial Targets

• Provides Threat Representative Target capabilities to meet Title 10 US Code 2366 requirement that New & Improved Weapon Systems demonstrate Lethality prior to Production

• QF-4 Full Scale Aerial Target, ACAT III
  - Air Force led procurement
  - Air Force provides operational services at Tyndall & White Sands Missile Range
  - Last Navy buy was in FY10 and plans to utilize existing inventory until QF-16 is fielded
  - PMA-208 funds maintenance & sustainment costs including Ramp Fees

• QF-16 Replaces QF-4, ACAT II
  - Air Force led development with Army & Navy participation
  - Air Force awarded Engineering and Manufacturing Development (EMD) contract to Boeing St. Louis Mar 2010
  - Low Rate Initial Production buy 3QFY13
  - Full Rate Production 2QFY14
  - Planned Initial Operating Capability in FY15
  - Planned Full Operating Capability in FY16

Navy QF-4 Inventory – 15 targets
FY08: Ops/Expenditures – 2/2
FY09: Ops/Expenditures – 4/1
FY10: Ops/Expenditures – 5/1
FY11: Ops/Expenditures – 5/1
FY12: Ops/Expenditures – 4/3
Moving Land Targets (MLT)

- Provide threat representative MLT to train aircrews in the demands of Close Air Support, Time Sensitive Targeting, Target Identification and Forward Air Controller Procedures

- Program in Production & Fielding
  - Prime contractor is Kairos Autonomi, Inc., Sandy, Utah
  - Initial Operational Capability – Jun 2012
    - Fallon, Nevada – Jun 2012
    - MCAS Yuma / El Centro, CA – Jun 2012
    - Navy DARE, NC – Jul 2012
    - Pinecastle, FL – Sep 2012

MLT now fielded and operational at Navy Training Ranges
Target Control Systems (TCS)

• Provides command and control of Navy’s subsonic, aerial, and seaborne targets
  – Controls:
    • BQM-34S, BQM-74E, BQM-177 & GQM-173 aerial targets
    • HSMST & QST-35 surface targets
  – Supports Training and Test & Evaluation

• Program in production
  – Prime Contractor is Micro Systems Inc. Fort Walton Beach FL
    • UHF 435–450
    • 200 nm line of sight
    • 330 nm via Relay
  – Sustainment efforts through FY17
    • New radio frequency 358-380 Mhz (FY13)
    • Ruggedized laptops & address Information Assurance issues (FY13)
  – Navy Common Data Link upgrade
    • Provides a common government owned system
    • Upgrades to hardware, datalink, ground control system software
    • Implement OSD standard Data Link Interface

Modernize to meet IA requirements, address obsolescence & future target capabilities
Foreign Military Sales (FMS)

**Description**

- **PMA-208 Hardware Case**
  - USN is reimbursed for Targets & TAAS expended from USN inventory in support of international operations on US ranges
  - Some are managed by PMA-208, but can also be a line on range case

- **Range Services Case** (Typically not managed by PMA208)
  - Separate FMS Case to fund target presentation at US Range
  - NCEA

- **Presentations on OCONUS Ranges**
  - Target presentations performed on foreign range
  - France: GQM-163A
  - Normally managed by PMA-208

- **New Activities:**
  - Japan: (1) GQM-163A & (6) AQM-37 (WSMR launches)

- **FY12 LOA requests:**
  - India: (3) GQM-163A
  - Australia: (2) GQM-163A & (14) Subsonic (BQM-34/74)

- **Potential FY13 LOA requests:**
  - Japan: more GQM-163A & AQM-37 (WSMR launch)

- **Typical FMS Range Sites**
  - Pt. Mugu / China Lake, CA
  - PMRF Barking Sands, HI
  - Atlantic Range Facilities, VA

**Background**

PMA-208 manages 8 active cases / 1 Lease Agreement
- 7 countries / Case Values Total: $ 53M

Other international funding of target operations = FMS case managed by NAVSEA, Range or some other source such as a cooperative program

If the USN is hosting an event for a country not noted here (FMS case or ‘other’) the funding source for target reimbursement may be in question
Target System Challenges

• Keep pace with evolution of threats
  – Electronic emission, vehicle capability, other characteristics
• Develop and field new targets
  – GQM-173, BQM-177, MLT, & QF-16
• New capabilities to existing targets
• Evolve target control systems to a more common, government-owned solution across the services
• Manage target production
• Maintain out of production targets
• Support test and training presentations
• Control and reduce cost of acquisition, maintenance, and operations
• Inventory and obsolescence management

A critical enabler to the successful development & fielding of future Naval combatants and their associated defensive weapons systems . . .

“Just Targets”
Questions?

U.S. Navy Aerial Target Systems

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