



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

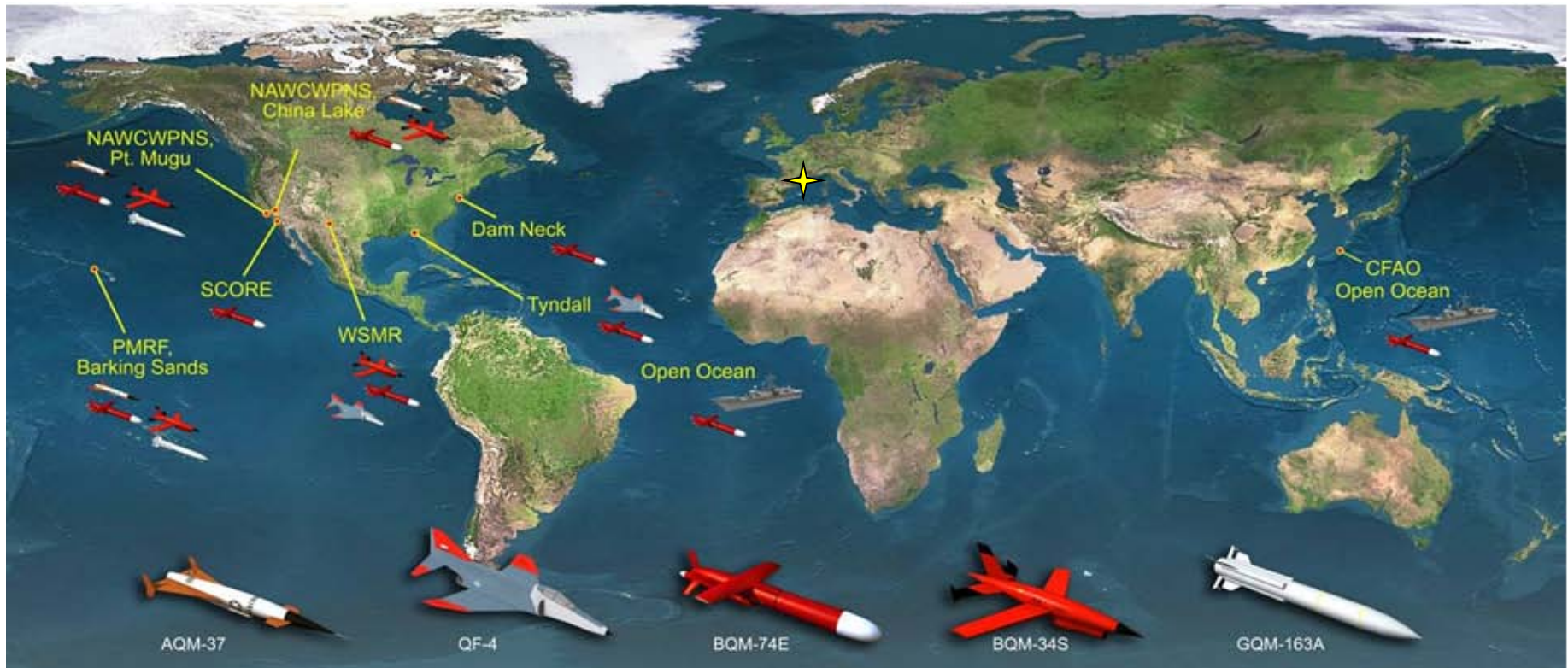


System for Naval Target
Control (SNTC)



Operating Sites

✦ QM-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
- QM-163
- QM-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**



Current Inventory – 44

FY08 Ops/Expenditures – 2
FY09 Ops/Expenditures – 3
FY10 Ops/Expenditures – 2
FY10 DEMOs - 2
FY11 Ops/Expenditures – 7
FY11 DEMOs - 1
FY12 Ops/Expenditures – 4



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



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)

- **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

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



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



Recoverable targets.
Typically 3-4 flights per vehicle.

Current Inventory – 358

FY08: Ops/Expenditures – 220/67

FY09: Ops/Expenditures – 207/44

FY10: Ops/Expenditures – 200/49

FY11: Ops/Expenditures – 146/26

FY12: Ops/Expenditures – 72/13* (Aug 12)

Target still adequately represents many but not all threat ASCMs



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

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

- **QF-16 Replaces QF-4, ACAT II**

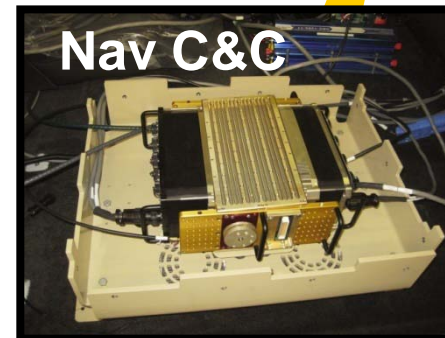
- Air Force led development with Army & Navy participation
- Air Force awarded Engineering and Manufacturing Development (EMD) contract to Boeing St. Louis Mar 2010
- Low Rate Initial Production buy 3QFY13
- Full Rate Production 2QFY14
- Planned Initial Operating Capability in FY15
- Planned Full Operating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





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)



FMS Cases managed by PMA-208

France, Canada, United Kingdom, Netherlands, Portugal

Other international funding of target operations

Australia, Japan, Spain, Taiwan, Korea, Malaysia

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

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



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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