U.S. Navy Aerial Target Systems

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Outline

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

PMA-208 Target Product Lines

Supersonic

GQM-163A

AQM-37C

GQM-173A
Multi-Stage
Supersonic Target (MSST)
(development)

Subsonic

BQM-34S

BQM-74E

Subsonic Aerial Target
(SSAT)
(development)

Full Scale

QF-4

QF-16

Moving Land
Target (MLT)
(development)

Other / Support

Tactical Air
Launched
Decoys

Common
Equipment /
Augmentation

Threat
Simulation

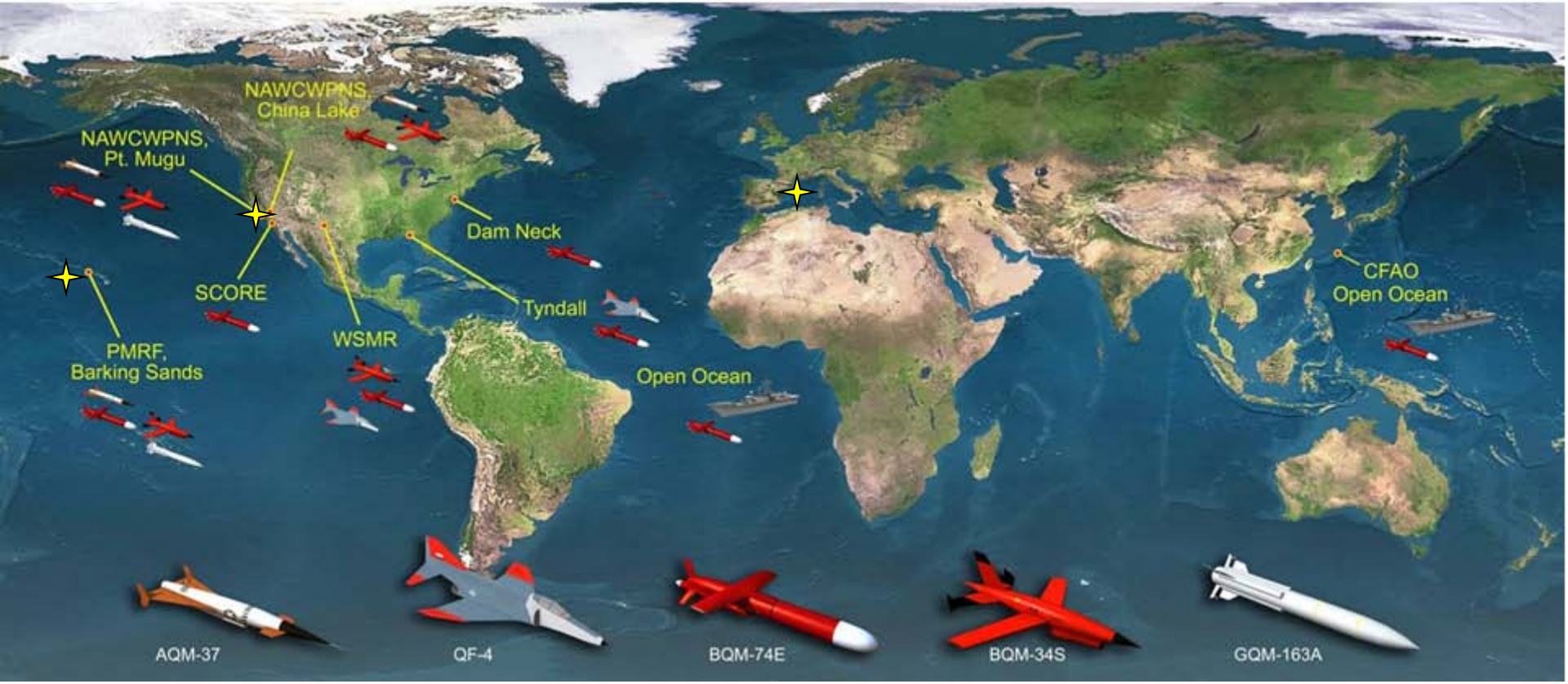
Banners

System for Naval Target
Control (SNTC)

Operating Sites

GQM-163 capability at Point Mugu CA and the following ranges:

- Stood up Pacific Missile Range Facility Hawaii in 2010 - Stood up Levant Island France (via FMS case) in 2011, first launch 2012



Air Launch:

BQM-34

AQM-37

BQM-74

Ground Launch:

BQM-34

BQM-74

SSAT

GQM-163

GQM-173

Ship Launch:

BQM-34

BQM-74

SSAT

GQM-163A
Supersonic Sea Skimming Target

- Prime Contractor: Orbital Sciences Corporation
- Production
- Emulates supersonic sea skimming anti-ship cruise missile threats
- Targets Expended to date: 17
- Operations to date: 11
  - 6 Oct 2005 (1)
  - 12 and 13 Jun 2007 (2)
  - 12 Dec 2007 (2 as stream raid)
  - 3 Dec 2008 (1)
  - 18 Dec 2008 (2 as stream raid)
  - 9 Dec 2009 (2 as stream raid)
  - 15 Jan 2011 (1)
  - 29 June 2011 (1) – PMRF HI
  - 30 June 2011 (2 as stream raid) – PMRF HI
  - 29 Sep 2011 (2 as stream raid)
- Demonstrations to date: 3
  - 8 June 2010 (1 as EPOD)
  - 8 July 2010 (1 as High Diver)
  - 8 December 2010 (1 as Orbital Front End Subsystem (OFES))

Current Inventory <u>33</u>

28 targets in work

(1 Heritage / 27 OFES)

Preparations to support two operations at SNI Oct-Dec 2011

AQM-37

- Medium to high altitude supersonic cruise with dive capability
  - Mach 2.0 – 4.0
  - Range 100 mi
  - Altitude 1000 ft – 100 Kft
  - Demonstrated TBM profiles (300 Kft, 120 nmi downrange)
  - F-16 launch platform (MOA with ANG)
- Out of production system
  - Last Delivery Dec 2001
  - 48 AQM-37C in inventory; 30 AQM-37D (USAF flight clearance expected 2nd Qtr FY2012)
  - GPS range tracking/scoring capability (JAMI)
  - Capability to provide power dive
- Historically have conducted approximately 6-12 operations per year (some FMS)
- Low fidelity high-diver

Current Inventory 78

FY08 Ops/Expenditures – 5/8
FY09 Ops/Expenditures – 8/10
FY10 Ops/Expenditures – 7/7
FY11 Ops/Expenditures – 7/8

GQM-173A
Multi-Stage Supersonic Target (MSST)

- Replicates a family of multi-stage supersonic ASCM Threats
  - Subsonic cruise with transition to supersonic terminal phase
- Program in Engineering & Manufacturing Development (EMD) phase
  - MS B completed August 2008
  - EMD contract awarded to Alliant Techsystems Incorporated (ATK), Woodland Hills, CA
  - EMD effort planned for 4.5 years
  - Planned Initial Operational Capability in FY14
- Program Status
  - Program designated nomenclature GQM-173A
  - Technical activities completed
    - System Requirements Review (SRR) Jun 09
    - Integrate 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
    - EEU prototype flight test May 11
  - Activities planned
    - Test Readiness Review and Flight Readiness Review planned for Nov 11
    - First EDM flight test planned for Feb 12

BQM-34S

- Prime Contractor: Northrop Grumman
- Sustainment
- Missions
  - Low fidelity A/C simulator
  - T&E workhorse – special configurations
    - Open Loop Seeker (OLS) integration
  - Launch: ground, ship, air
- Product Improvements
  - Upgraded Integrated Avionics Unit (UIAU) integration fielded Oct 09:
    - Replaced existing autopilots with UIAU from BQM-74
    - Common avionics, radar altimeter, Support Equipment with current production BQM-74E
    - Addressed obsolescence issues
    - Reduced logistics
    - Allows for performance growth if required
    - 20 retrofits completed

Current Inventory ~ 191

FY07 Ops/Expenditures - 14/3
FY08 Ops/Expenditures - 12/0
FY09 Ops/Expenditures - 4/1
FY10 Ops/Expenditures – 18/1
FY11 Ops/Expenditures – 18/6

Great T&E "Truck" but does not adequately represent many of today's threat ASCMs

BQM-74E

- Prime Contractor: – Northrop Grumman

Current Inventory ~ 339
FY07 Ops/Expenditures - 158/52
FY08 Ops/Expenditures - 231/68
FY09 Ops/Expenditures - 207/46
FY10 Ops/Expenditures - 200/49
FY11 Ops/Expenditures - 129/24

- Sustainment
  - Training and T&E workhorse
  - Final delivery ***Dec 10***

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

- Product improvements
  - Programmable semi-autonomous navigation
    - Selectable Lost Carrier Sensitivity from waypoint to waypoint
    - Return to Recovery Area
    - Planned fielding FY12

Target still adequately represents many but not all threat ASCMs

Subsonic Aerial Target (SSAT)

- Provides increased subsonic performance capabilities to improve fidelity in representing aircraft and missile threat characteristics
- Prime Contractor: Composite Engineering, Inc. (CEi), Sacramento, CA
  - Three Year EMD program
  - Two production options
  - Options for Contractor Logistics Support
- Chronology
  - ✓ Contract Awarded 28 Jan 2011
  - ✓ Wind Tunnel Testing successful May 2011
  - ✓ SRR 8th-9th Aug 2011
  - ✓ IBR 26th-30th Sep 2011
  - SFR/PDR/SSR Feb 2012

KPP's (Complete details in CDD)	OBJECTIVE	THRESHOLD
Maximum Speed at Low Altitude [Mach (M) at feet (ft) above wave crest]	≥ 0.95 M @ 6.6 ft in WMO SS 5	≥ 0.90 M @ 10 ft in WMO SS 3
[Terminal Altitude [ft above wave crest]	≤ 6.6 ft @ 0.95 M in WMO SS 5	≤ 10.0 ft @ 0.9 M in WMO SS 3
Terminal Maneuverability [Constant Gravitational Force (g)]	8.0 g sustained	6.0 g sustained
Maneuverability During Programmable Weave [Instantaneous g at Minimum Altitude and Maximum Speed]	≥ 8.0g instantaneous at 6.6 ft altitude and 0.95 M	≥ 6.0g instantaneous at 10 ft altitude and 0.9 M
Radar Cross Section (RCS) Reduction [X-band, monostatic]	≤ -17.0 dBsm	≤ -14.6 dBsm
Target Size Characteristics [inches (in)]: Length/ Diameter	Threshold = Objective Threshold = Objective	149.0 - 258.0 in 13.0 - 21.0 in
Material Availability (A_M)	≥ 95%	≥ 85%

QF-4/QF-16
Full Scale Aerial Targets

- Provides Threat Representative Target capabilities to meet Public Law Title 10 US Code 2368, that New and Improved Weapon Systems demonstrate Lethality prior to Production

- QF-4 Full Scale Aerial Target
  - A/F led procurement
  - A/F provides Operational, Maintenance & Sustainment services at Tyndall and Holloman
  - Navy procurements from USAF (FY03 –FY10)
    - Total Navy quantity procured: 27
  - Navy trading QF-4's for BQM-167's to support (N)WSEP
    - 1 QF-4 traded for 4 BQM-167's in FY08
    - 3 QF-4's traded for 10 BQM-167's in FY10

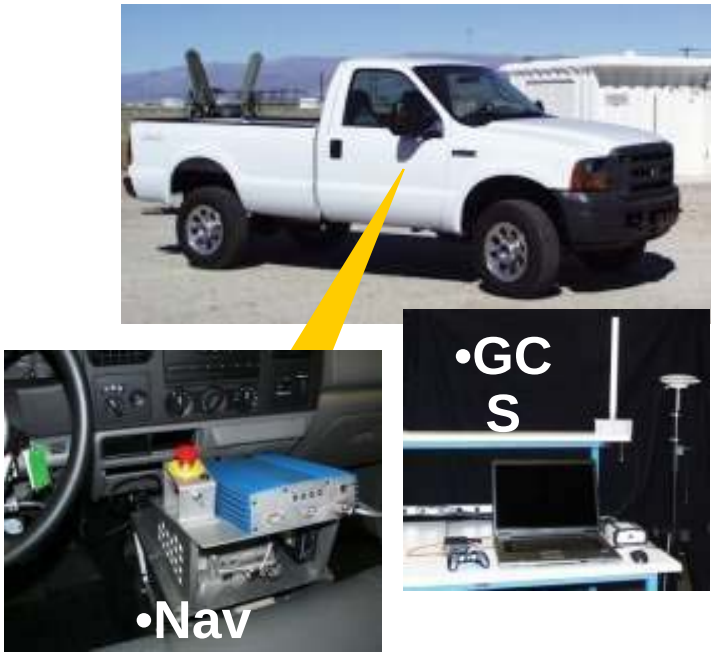
Available QF-4 Inventory 17
FY07 Ops/Expenditures - 4/2
FY08 Ops/Expenditures - 2/2
FY09 Ops/Expenditures - 1/1
FY10 Ops/Expenditures - 1/0
FY11 Ops/Expenditures –2/1

- QF-16 Provides 4th Generation to replace QF-4
  - A/F led development with Army/Navy participation
  - A/F awarded pre EMD contract to Boeing St. Louis Mar 10
  - MS B/Low Rate Initial Production buy 3QFY13
  - MS C/Full Rate Production 2QFY14
  - Planned Initial Operating Capability in 3QFY15
  - Planned Full Operating Capability in 2QFY16

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
  - Abbreviated Acquisition Program (AAP)
  - Full & Open Competition held for production of logistics support
    - Base year contract with 4 priced options
    - Firm Fixed Price Production and Cost Plus Incentive Fee for logistics support
  - Contract awarded to Kairos Autonomi, Inc., Sandy, UT 1 Apr 2011
  - Milestone C conducted Mar 2011
  - Initial Operational Capability 1QFY12

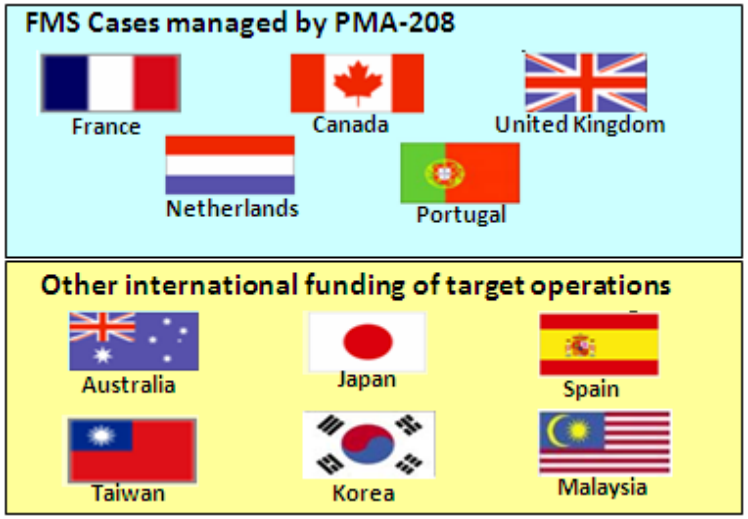


System for Naval Target Control (SNTC)

- SNTC
  - Prime Contractor: Micro Systems, Inc
  - Controls BQM-74/34 aerial targets & seaborne targets
  - UHF 435–450 & 358-380 MHz
  - 200 nm line of sight
  - 330 nm via Relay
  - Supports Training and T&E

- Several hardware and software upgrades scheduled due to:
  - frequency limitations and interference
  - information assurance requirements
  - hardware obsolescence
  - new target types

Foreign Military Sales (FMS)



Background

PMA-208 manages 8 active cases / 1 Lease Agreement

– 8 countries / Case Values Total: $ 29M

•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

FMS Activities

- **Potential FY11/12 LOA requests:**
  - France: GQM-163A follow on case
  - Japan & Germany: GQM-163A
  - Canada, Australia, Japan: BQM-74E/BQM-34S
- **OCONUS FMS deliveries:**
  - FR-P-LGV; 1 GQM-163A sent to France in CY10
- **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
  - MSST, SSAT, 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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