



# *44<sup>th</sup> Annual NDIA Symposium*

## *U.S. Navy Target Programs*

*Aerial Target and Decoy Systems  
Program Office  
PMA-208*

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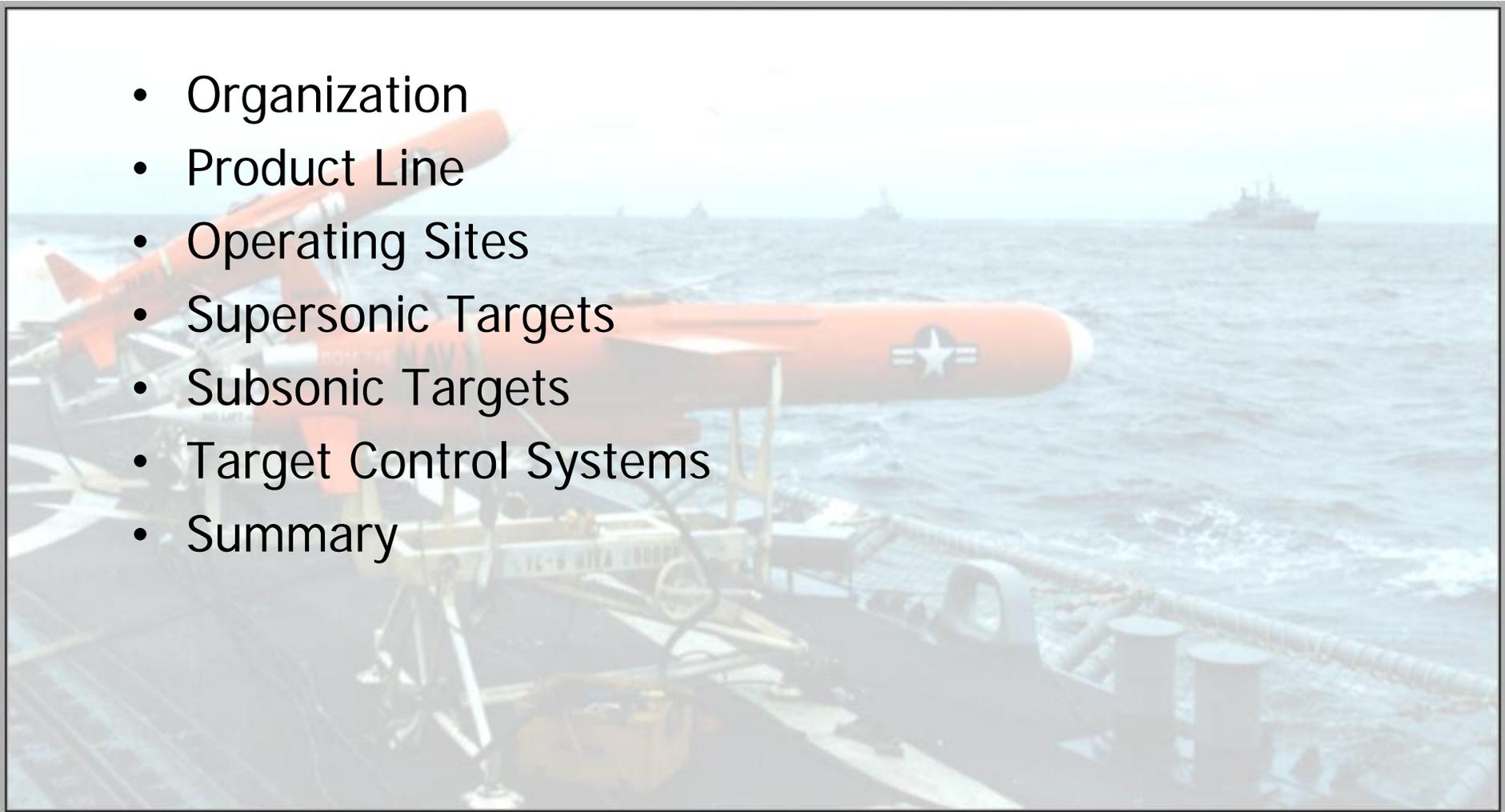
**1 November 2006**



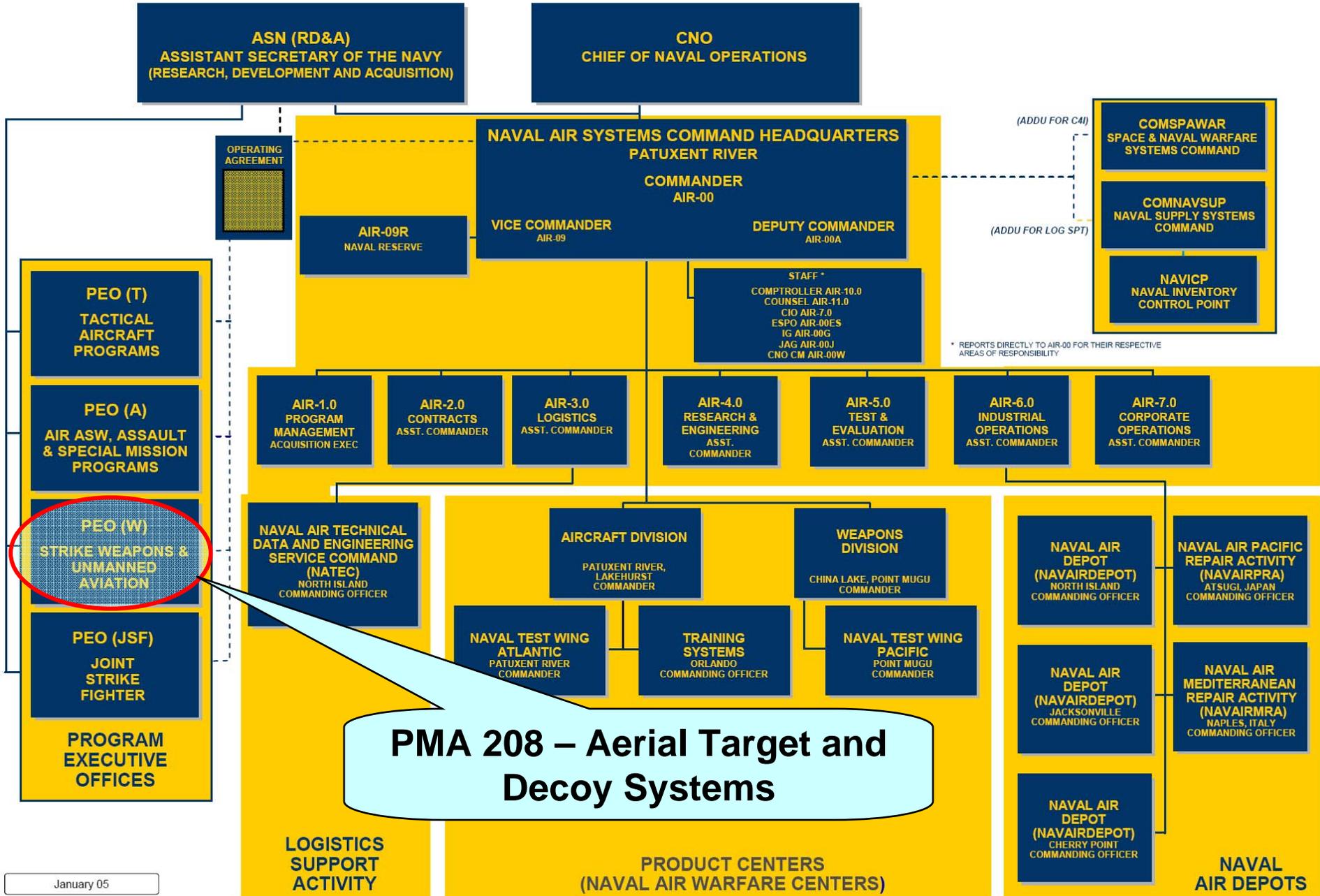
# Outline



- Organization
- Product Line
- Operating Sites
- Supersonic Targets
- Subsonic Targets
- Target Control Systems
- Summary

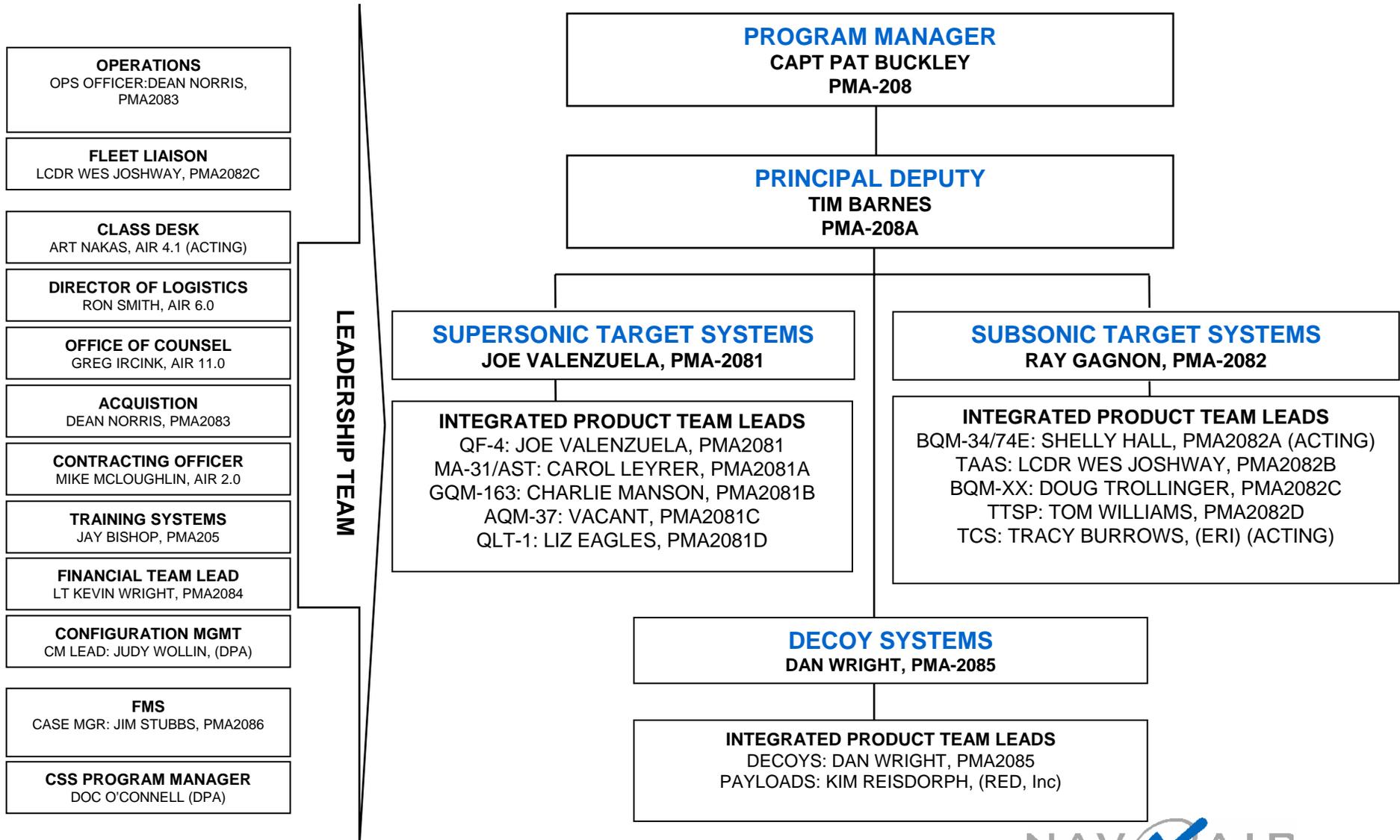


# NAV AIR REPORTING RELATIONSHIPS





# PMA-208 AERIAL TARGET & DECOY SYSTEMS PROGRAM OFFICE





# Aerial Targets and Decoys PMA-208 Product Line



## Subsonic

BQM-34S



BQM-74E



BQM-74F

## Supersonic

GQM-163A



AQM-37



MA-31



QF-4



## Decoys

TALD



ITALD



## Miscellaneous



Common  
TA/AS



QLT-1C



TDU-32



Threat  
Simulation

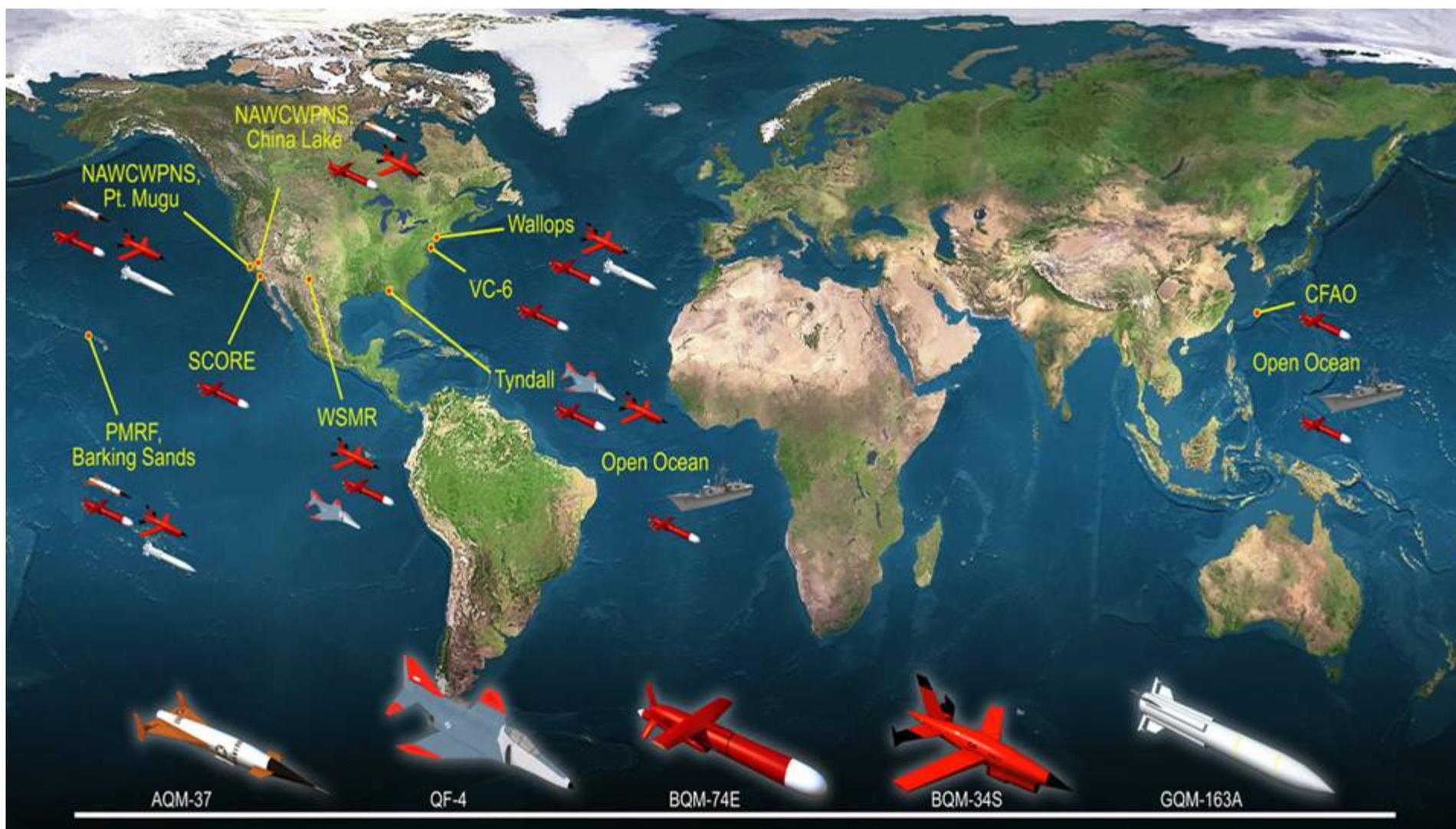


SNTC

ARME



# Operating Sites





# Supersonic Targets

GQM-163A EMD-5  
4-22-05

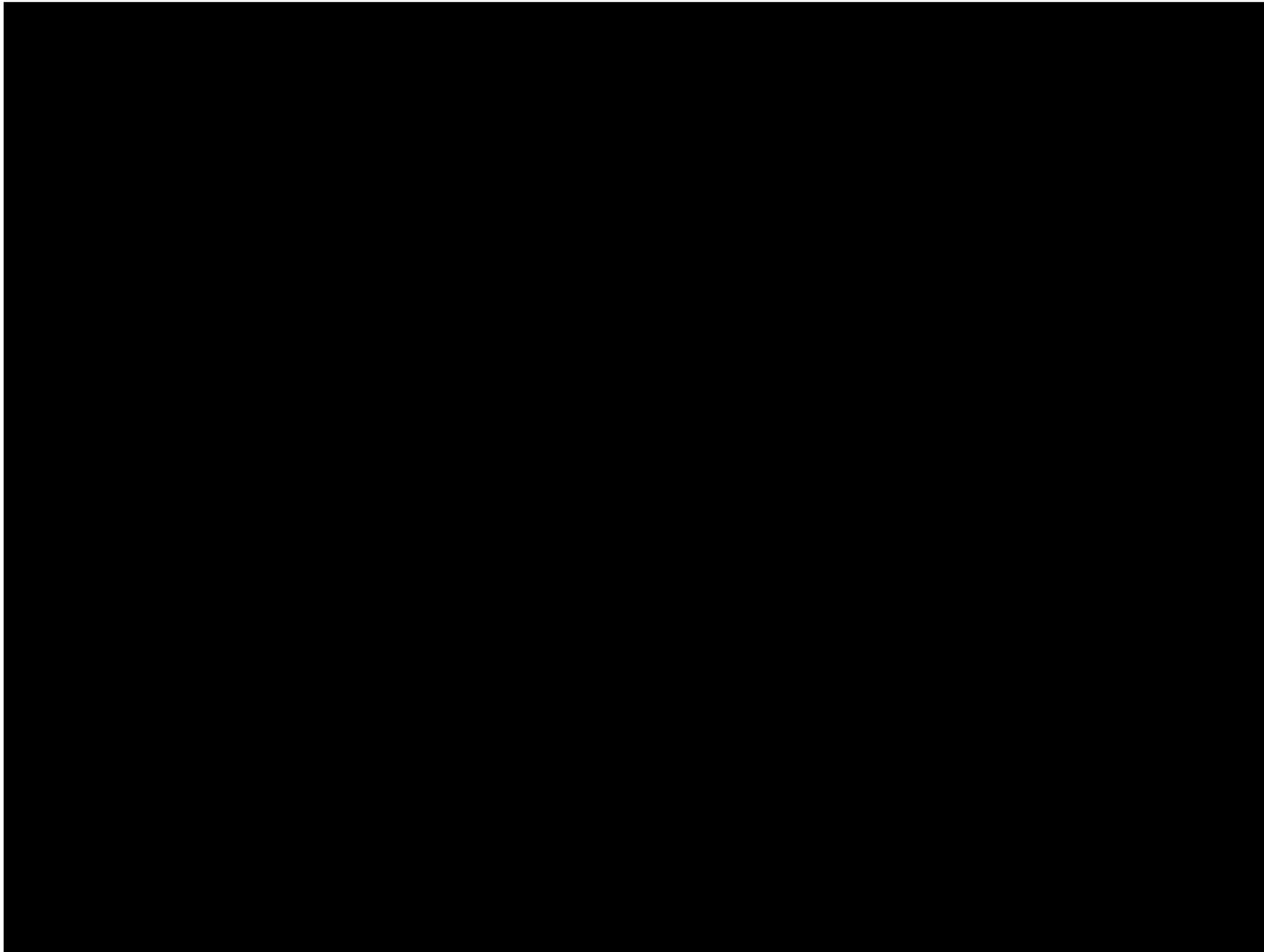


# GQM-163A Supersonic Sea Skimming Target





# GQM-163 First Operation Video





# GQM-163 Program Status

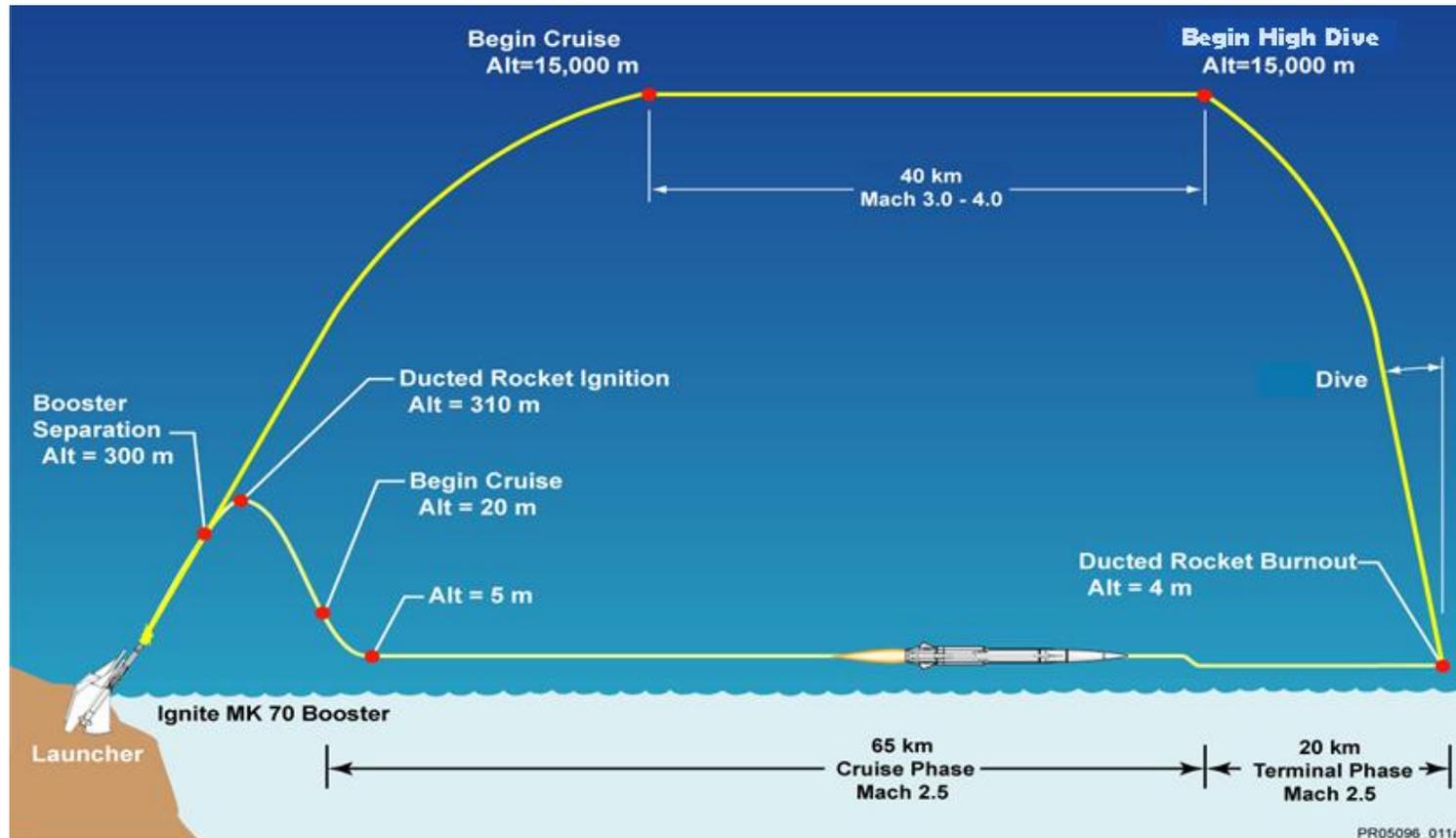


- Milestone III completed June 2005
- First Operation in support of Fleet completed 6 October 2005
- FRP-1 contract awarded December 2005
- Plan to award FRP-II December 06-January 07
- Completion of LRIP-I deliveries planned for February 07
- Prime Contractor: Orbital Sciences Corporation

**GQM-163 Supports Threat A, B & C requirements**



# GQM-163A High Diver Initiative



- High Diver development initiated in March 2006
- IOC expected in mid 2008



# MA-31





# MA-31 Update



- **Program initiated via Foreign Comparative Testing (FCT) from 1995-1998.**
- **The USN contracted with Boeing for the delivery of MA-31 targets. Original contract to Boeing let in 2000.**
  - Numerous setbacks beyond Navy/Boeing control
- **Completed F-16 integration and testing**

**Efforts ongoing to procure MA-31s**



# Threat D Update



- **Requirement**

- AoA completed March 2006
- April 2006 Threat-D Key Performance Parameters (KPPs) identified
  - Based on Johns Hopkins APL Sensitivity Study
- April 2006 sprint vehicle MACH boundaries based on the APL Study & input from DOT&E
- June 2006 CDD – OPNAV O-6 comments received

- **Resourcing and Acquisition**

- Funding the program
- Navy examining risk associated with an alternative to an end-to-end target solution
  - Use existing capabilities with understood limitations to test
    - » Discussions within DoD ongoing



# AQM-37



- **Medium to 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)
  - F-16 launch platform
- **Out of production system**
  - Last Delivery Dec 01
- **Conduct approximately 10-15 operations per year (~ half FMS)**
- **Potential high-diver surrogate**
  - Low fidelity





# Supersonic Summary



- **GQM-163 Coyote in production**
  - Meets Threat A, B, & C SSST requirements
  - Superb performance. Coyote will be long term workhorse for SSST mission
  - GQM-163 high dive capability being developed
- **MA-31**
  - Desired as sea skimming and as high diver threat target
  - Source of missiles remains difficult
- **Threat D**
  - Analysis of best approach to meet Threat D test requirements ongoing
- **AQM-37**
  - Potential near-term high diver surrogate



# Subsonic Targets





# BQM-34S



- **Sustainment**
  - Maintain required inventory
- **Missions**
  - Low fidelity A/C simulator
  - T&E workhorse – special configurations
    - Harpoon Seeker integration
- **Product Improvements**
  - **UIAU integration:**
    - Replace existing autopilots with UIAU from BQM-74
    - Common avionics, radar altimeter, Support Equipment with current production BQM-74E
    - Reduced logistics
    - Avoid obsolescence
    - Allows for performance growth if required
      - » LACE
      - » PAWN
- **Prime contractor – Northrop Grumman**

Current Inventory – 208  
FY05 Ops/Expenditures – 24/2  
FY06 Ops/Expenditures – 19/2





# BQM-74E



- **Production**

- Procurement rate 60/yr
- Training and T&E workhorse

- **Missions:**

- **High fidelity Anti-Ship Cruise Missile (ASCM) Surrogate**
- **Low-fidelity A/C simulator**
  - Altitude: 7 ft – 40 Kft
  - Endurance: 68 min
  - Ground Launch; Shipboard Launch;
  - Air Launch: C-130, Gulfstream, F-16

- **Product improvements**

- Low Altitude Control Enhancement (LACE)
  - Allows customer to choose from five preprogrammed maneuvers or program their own
  - Fielded now
- Programmable semi-autonomous waypoint navigation
  - Selectable Lost Carrier Sensitivity from waypoint to waypoint
  - Return to Recovery Area
  - FY08 fielding planned

- **Prime contractor – Northrop Grumman**

**Current Inventory – 235**

**FY05 Ops/Expenditures – 237/79**

**FY06 Ops/Expenditures – 235/62**





# BQM-74F



- Designed to address performance shortfalls of BQM-74E in meeting ASCM surrogate role

- Increased speed, range, endurance, maneuverability, payload capacity

Parameter	BQM-74E	BQM-74F
Minimum Speed @ 7ft MSL (Mach)	0.42	0.47
Maximum Speed @ 7ft MSL (Mach)	0.82	0.92
Design g Limit	6	8
Range @ 50 ft MSL (nmi) Maximum Speed M = 0.9	148	225
Range @ 20,000 ft MSL, 300 KTAS (nmi)	342	500
Endurance @ 20,000 ft MSL (min) 300 KTAS Unconstrained Airspeed	68	115
<b>Weights</b>		
Fuel Weight (lbs)	111	186
Gross Flight Weight (lbs)	450	588



**First Flight – 29 Aug 05**

- Four year development program, FY02-06
- Ground/shipboard launch, P<sup>3</sup>I for air launch Common Digital Architecture (CDA) compliant
- Prime contractor - Northrop Grumman

**NGC completing development flight tests**



# Alternative Subsonic Flight Demonstration



- **Navy strategy to “open aperture” to explore wider range of potential subsonic targets that may fulfill Navy needs**
  - Goal is to ensure long-term best value – performance & affordability
  - Demonstration initiative underway
- **Contract awarded to Composite Engineering, Inc. (CEi) of Sacramento, CA on 21 September 06**
  - Period of performance is one year
  - Design based on Air Force BQM-167A
- **Flight demonstration slated to begin May/June 2007**



# Tomorrow's Subsonic Aerial Target (SSAT)



- **Production need for a subsonic target vehicle that meets Navy requirements**
- **Performance requirements being reviewed**
- **Considering full and open competition for a fly-off and production**
  - **Potential for RFP release in late FY07/early FY08**
  - **Potential multiple award in FY08 for fly-off**
    - **Down select to single source for production**



# Subsonic Targets Summary



- **ASCM Threat capabilities drive Navy subsonic target requirements**
- **BQM-34 still a viable system**
  - Existing inventory will last indefinitely at current usage rate
- **BQM-74E remains Navy workhorse**
  - Relatively low cost
  - Shipboard launch / portability
  - Follow-on subsonic target needed that meets current requirements

**Navy pursuing strategy to identify tomorrow's subsonic target**



# Navy Target Control





# System for Naval Target Control

## FAS (Frequency Agile System)



### Current: SNTC System



- UHF 435–450 MHz
- Single Frequency at a time
- BQM-74/BQM-34 capable/Sea-borne Targets
- Low transponder cost
- 200 nmi line of sight
- 400 nmi via Relay
- Fly 8 subscales @ 7 Hz
- Training/T&E

### Future: SNTC System with FAS

- Senses RF interference or multipathing and automatically changes frequencies to avoid it
- Compatible with existing SNTC ground systems

- UHF 420–450 MHz
- Changes Freq to avoid interference
- BQM-74/BQM-34 capable/Sea-borne targets
- Low transponder cost
- 200 nmi line of sight
- 330 nmi via Relay
- Fly 32 subscales @ 10 Hz – LOS; 16 subscales @ 10 Hz – BLOS (Relay)
- Training/T&E



# Target System Challenges



## Evolution of the Threats

- Supersonic dive
- Subsonic/supersonic (Threat D)
- Asymmetric threats
- Enhanced threat capability

## Programmatic

- Cost control – acquisition & operations
- Meeting evolving requirements - more extensive and accurate representation of threat
  - Flight profile
  - IR
  - RCS
  - Countermeasures
- Obsolescence
- Reconfiguration, reuse, and versatility
- Inventory management



# The Way Ahead



*The threats will continue to evolve. The Navy Target Team will continue to work with all stakeholders to provide required threat representations to meet the needs of developmental testing and Fleet training*



**Teaming with our Industry partners and Service counterparts is key to our continued success**