Targets and Countermeasures (TC)
Next Generation Threat Front Ends
Industry Day Event
TC Mission Brief
Presented at:
Industry Day Event
Date: June 11, 2019
Presented by:
Mr. Stan Thomas
Program Director
Targets and Countermeasures

Next Gen Threat Front Ends Industry Day Event

• Develop quality, threat representative, cost-effective target solutions with systematic rigor enabling the Ballistic Missile Defense System (BMDS) to test system performance and demonstrate its effectiveness in threat relevant environments

• 97.5% Success Rate; 78 out of 80 successful targets launched since January 2010
Why Targets and Countermeasures?

Bottom Line Up:

1. **MDA develops and deploys the BMDS to defend the US and allies from ballistic missile attacks**

2. **MDA conducts realistic flight tests to validate BMDS modeling and simulations, and gather data to support acquisition milestones and capability assessments**

3. **TC provides threat-representative targets and countermeasures (aka Associated Objects) for MDA flight tests**
Today’s Ballistic Missile Defense System

**C2BMC** Command and Control, Battle Management and Communications

- **NMCC**
- **USSTRATCOM**
- **USNORTHCOM**
- **USINDOPACOM**
- **USEUCOM**
- **USCENTCOM**

**The System Of Elements**

- **Aegis**
  - Ballistic Missile Defense
  - **Aegis Ashore**
- **SM-3**
  - Standard Missile-3
- **GBI**
  - Ground-Based Interceptor
- **THAAD**
  - Terminal High Altitude Area Defense
- **PAC-3**
  - Patriot Advanced Capability-3

**Sensors**

- Satellite Surveillance
- Forward-Based Radar
- Upgraded Early Warning Radar
- AEGIS BMD SPY Radar
- Sea-Based X-Band Radar

**Boost / Ascent**

- Defense Segment

**Midcourse**

- Defense Segment

**Terminal**

- Defense Segment

**Command and Control, Battle Management and Communications**

- NMCC
- USSTRATCOM
- USNORTHCOM
- USINDOPACOM
- USEUCOM
- USCENTCOM

**Office of the Secretary of Defense**

**Today’s Ballistic Missile Defense System**
The Increasing Ballistic Missile Threat

**North Korea: Commitment to long-range missile technology**

- Road-mobile ICBM (> 5,500 km) shown in 2015
- 8 IRBM (3,500-5,500) km Launches in 2016
- 3 Sea-Launched Ballistic Missile launches in 2016
- Solid-propellant SLBM variant February 2017

**Iran: Developing advanced capabilities**

- Iranian Simorgh Space Launch Vehicle 2015
- Iranian Emad MRBM 2016
- Iranian Safir SLV February 2015

**Emerging Threat**

- Hypersonic Glide Vehicle

**Increasing Capability At All Ranges – Maneuvering Threats**
Emulating the Threat

• The BMDS requires targets that Emulate the Threat
Target Photos
Front End Background

- TC oversees design, development, production, fielding, and sustainment of threats for the Ballistic Missile Defense System (BMDS) testing representative, reliable, and cost-effective ballistic missile targets and countermeasures
- The Target System Baseline includes target classes of ICBMs, IRBMs, MRBMs, and SRBMs
- The mission specific target will include a specific target class and additional functionality within the Front End Section and Associated Objects
- “Front End/Payload/Kit” is henceforth known as “Front End;” Front End contains Kits for required enhanced capabilities

Target All-Up-Round (AUR)

- Modified Ballistic Re-Entry Vehicle (MBRV) / Front End / Payload
- Intermediate Range Ballistic Missile (IRBM)
- Medium Range Ballistic Missile (MRBM)
- Subscale/Short Range Ballistic Missile (SRBM)
- Intercontinental Ballistic Missile (ICBM)
Program Breakdown

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TARGETS AND COUNTERMEASURES PROGRAM

IRBM & ICBM Targets
- ICBM Multiple Configuration Types
- IRBM Multiple Configuration Types
- MRBM T3c2

PM – Angela Holmes

Prime Contractor
Northrop Grumman
Orbital ATK

MRBM Targets
- MRBM Multiple Configuration Types
- MBRVs
- Countermeasures
- Advanced Target

PM – Mike Bruno

Prime Contractors
Lockheed Martin
Aerojet Rocketdyne

Subscale Targets
- SRBM / MRBM
- *NEW: T4

PM – Dave Goodall

Prime Contractor
NAVS ea

PROGRAM SUPPORT ACTIVITIES
- Motor Inventory Sustainment
- Service Life Extensions
- Motor Demil

- Data Products Lab
- Systems Engineering
- Quality, Safety, and Mission Assurance

- Range Coordination
- MILAIR Coordination
- Component Testing
- Flight Test Execution

- Personnel Mgmt
- Acq/Contract Mgmt
- Financial Mgmt
- Facilities Mgmt
Evolving Target Portfolio

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Target Portfolio:
- SRBM: T4-G, T4-B
- MRBM: T4-E, T3c2, T1/T2
- IRBM: T5
- ICBM: T1/T2

Front End Options:
- MBRV-G, MBRV-B, MBRV-E, MBRV-5, MBRV-7, MBRV-9

Stage Details:
- Stage 3: Oriole GEM-22
- Stage 2: TVC Oriole, Oriole GEM-22, Terrier MK-70, M57, SR19, eSR19, Orion 50 XLT
- Stage 1: Talos MK-11, Terrier MK-70, C4, SR19, eSR19, Orion 50-S XLT
- Stage 0: C4

Launch Method Options:
- Ground, Ground, Ground, Air Launch, Air Launch, Air Launch, Ground

Launcher Options:
- Rail, Rail, Rail, Launch Stool, C-17, C-17, C-17, Launch Stand
Program Description
Ranges and Forward Staging Areas

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- Elmendorf AFB
- Air Launch Staging
- Pacific Space Complex – Alaska (PSCA)
- IRBMs
- Misawa AFB
- Air Launch Staging
- Andersen AFB
- Air Launch Staging
- Wake Island
- SRBMs, MRBMs, Air Launch Staging
- J/B Lewis-McChord
- Air Launch Staging
- Pacific Missile Range Facility
- SRBMs, MRBMs
- J/B Hickam-Pear Harbor
- Air Launch Staging
- Reagan Test Site
- SRBMs, IRBMs, ICBMs
- Pt Mugu
- Air / land
- SRBMs, MRBMs
- White Sands Missile Range (WSMR)
- SRBMs
- Vandenberg AFB
- SRBMs, MRBMs, IRBMs, ICBMs

Air / Land Launches

Hebrides Range, UK
Multinational exercises

NASA / Wallops SRBM raid scenarios
Program Director’s High Level Acquisition Objectives

- Meet customers’ performance, schedule, and service needs to counter an evolving threat

- Flexible/agile contract structure to quickly turn on reconfiguring/assembling evolving threat solutions to meet changing threat requirements

- Seek common internal components, multiple, adaptable, shapes, and kits that can be rapidly configured to represent evolving threats

- Reduce cost per threat solutions as well as contain costs and risks

- Incentivize Performance, Mission Assurance, Collaboration, and Design Innovation

- Sustain continuity of service and infrastructure to deliver relevant threat solutions and reliable targets that credibly demonstrate and validate BMDS defensive capabilities

- Continue communications and foster relationships that preserves and expands the industrial base to incorporate advanced or evolving threat capabilities for future deliveries
Acquiring Targets/Threat Solutions

**Target System Baseline Acquisition**

- Joint Working Team
  - MDA/DE
  - MDA/TC

**Mission Specific Target Acquisition**

- Target Requirements Working Group (TRWG)
  - Chaired by: DE
  - Participation by: TC, DT, and Elements

**Target Class Capabilities & Requirements Document (TCC&R)**

- Owner: MDA/DE
- Establishes Target Class Technical Baseline Requirements

**Target Data Products Requirements Document (TDPRD)**

- Establishes Data Product Requirements

**Target Trajectory Memorandum (TTM)**

- Specifies Final Mission Approved Target Trajectory with Traceability to Threat

**Target System Performance Specification (TSPS)**

- Owner: MDA/DE
- Establishes Performance Specification for Target Class Capability Configuration Item Procurement
- Establishes Target Class Configuration Items
- Primarily Consist of Launch Vehicles, Re-entry Vehicles, or Associated Objects

**Target Configuration Document (TCD)**

- Owner: MDA/TC
- Specific all Target Requirements used by TC for Contract Action, Establishes Missionized Target Configuration Item

**Target Class Product Development**

- Owner: MDA/TC
- Flight Target
- Target Model

**BMDS Targets Inventory**

- SRBM
- MRBM
- ICBM

**Mission Specific Target Product Development**

- Flight Target
- Target Model
Other Acquisition Consideration

- Expand and sustain the industrial base
- Collaboration with Industry builds good Market Research and encourages competition, innovation and best value
- TC Supports Small Business Utilization
- Enforce Cybersecurity, Security, and protection of information
- All TC Solicitations/Contracts include MDA Assurance Provisions (MAP)/MDA Parts, Materials, and Processes Mission Assurance Plan (PMAP)
- Incentives will be consistent with scope, risks, objectives, and contract structure
- Data
  - Tailoring data based on need, value, and use for multiple purposes
  - Acquire no more restrictive than Government Purpose Rights (GPR)
Contract Type Considerations

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• Task
  - Provide most appropriate and timely contractual solutions for procurement of real-world, threat-representative ballistic missile target vehicles and countermeasure articles to accommodate the successful testing of the BMDS

• TC Portfolio includes managing multiple contract

• Path Ahead: Look for a contract structure that supports uncertainty in future requirements and threat changes, reduces unneeded excess/quantities, and lessens cost growth due to programmatic and IMTP fluctuations

• Need Contract Flexibility for:
  - Ability to accommodate quick turn contract actions/changes
  - BMDS IMTP schedule changes
  - Specific test configuration changes
  - Test Performance Parameters and quantities are clearly defined
  - Incorporate advanced threat solutions; etc.

• Allows for long-term relationship with industry partners/suppliers
Challenges/Opportunities

- Keeping up with evolving and advance threats
- Design/Development/Qualification Process
- Solution may be affected by Intermediate-Range Nuclear Force (INF) Treaty
- Quick turn changes to deliver Threat Representative complex solutions
- Long Leads for advanced materials
- Manufacturing capabilities and forgings
- Extensible architecture to incorporate enhancements
- Quality/Mission Assurance processes
- Integration
THANK YOU