Missile Defense Agency
Small Business Programs Conference
Ground Sensors Directorate Overview

To: MDA Small Business Program Conference
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Deputy Director Contracting, Sensors-FMS
Missile Defense Agency
May 14, 2020

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Missile Defense
Evolving Threat Environment

Adversaries are fielding diverse and expansive ranges of modern offensive missile systems

- Developing new missiles & improving existing systems
  - Precision strike
  - Penetration aids (e.g. decoys, jamming devices)
- Capable of maneuvering in midcourse or terminal phase
  - Maneuvering Reentry Vehicle (MaRV)
  - Multiple Independent Reentry Vehicle (MIRV)
  - Hypersonic glide vehicles and cruise missiles

Note: Range rings from Pentagon to show scale

Range

Speed
- Subsonic: < Mach 1 (< 770 mph)
- Supersonic: Mach 1-5 (770-3,800 mph)
- Hypersonic: Mach 5-10 (3,800-7,700 mph)
- High Hypersonic: Mach 10-25 (7,700-19,200 mph)

Ref: 2019 Missile Defense Review
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To develop and deploy a *layered* Missile Defense System to *defend* the United States, its deployed forces, allies, and friends from missile attacks in *all phases* of flight.

**Missile Defense Capability**

**Globally Deployed**

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Missile Defense Agency Lines of Effort
In Support Of The National Defense Strategy

• Build Warfighter confidence through focus on readiness and sustainment

• Increase engagement capability and capacity to outpace emerging threats

• Increase speed of delivery of new capability to address the evolving threat

“A robust and credible layered missile defense system paired with our conventional and nuclear force capabilities provides the ability to deter strategic attacks, deny benefits, and impose costs against any potential adversary.”

-- Admiral Charles A. Richard, U.S. Strategic Command
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Ground Sensors Directorate Overview

Thomas “Duane” Keller
Deputy Director Contracting, Ground Sensors-FMS
May 2020
Ground Sensors Directorate
Mission, Contributions to The Missile Defense System (MDS)

- Mission: Develop, Test, Acquire, Deploy, and Sustain MDS Ground Sensors

- Ground Sensors Contributions to Operational MDS
  - Provide Track, Discrimination, and Intercept Assessment Data
  - Global Ground Sensor Coverage (16 time zones, 3 continents)
  - Additional Ground Sensors Planned
  - Address Evolving Missile Threats

- Ground Sensors Contribution to MDS Testing
  - Integrated & Distributed Ground Tests
  - Flight Tests (Aegis, Terminal High Altitude Area Defense (THAAD), mid-course defense)
  - Operationally Representative Models & Simulations (M&S) Validation & Accreditation

- Supporting International Cooperation with THAAD Foreign Military Sales (FMS) Cases
Ground Sensors Around the World
Contribution to the MDS

As of Jan 2020
COBRA DANE
AN/TPY-2 #2
Shariki, Japan

SRDR
FY21
AN/TPY-2 #1
Kyogamisaki, Japan

Clear UEWR
FY20
AN/TPY-2 #7
INDOPACOM AOR

Beale UEWR
FY08
AN/TPY-2 #5
Guam
THAAD Battery #E-3

Thule UEWR
FY09
UEWR & CD

Cape Cod UEWR
FY20
X-Band

Fylingdales UEWR
FY08
PDRs

AN/TPY-2 #6 Site K
FY12
FMS X-Band

AN/TPY-2 #4 CENTCOM AOR

AN/TPY-2 #3 Site 512
FY12

Sea-Based X-Band Radar
FY06

HDR-H Postponed

AN/TPY-2 #8, #9, #11, THAAD Batteries
B-2, A-2, A-4 (Ft. Bliss, TX)

AN/TPY-2 #10, #12
THAAD Batteries
B-62, E-62 (Ft. Hood, TX)

AN/TPY-2 (x7) for KSA
AN/TPY-2 (x2) for UAE

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### MDS Radar Missions

#### COBRA DANE Radar (CD) Missions
- **GMD Midcourse Sensor**
  - Acquisition
  - Tracking
  - Classification
- **Space Domain Awareness**: Detects, identifies, and tracks man-made objects in earth orbit

#### Upgraded Early Warning Radars (UEWR) Missions
- **Ground-based Midcourse Defense (GMD) Midcourse Sensor**
  - Acquisition
  - Tracking
  - Classification
- **Integrated Tactical Warning & Attack Assessment (ITW/AA)**: Provides early warning of ballistic missile attack
- **Space Domain Awareness**: Detects, identifies and tracks man-made objects in earth orbit

#### Sea-Based X-Band Radar (SBX) Mission
- **GMD Midcourse Sensor**
- **Cued search, acquisition, track, discrimination, and hit assessment**
- Performs precision track
- Provides data on all target complexes to GMD interceptors

#### AN/TPY-2 Radars

#### Terminal Mode (TM) Mission
- **Sensor for Terminal High Altitude Area Defense (THAAD) Weapon System**
- Detects, tracks, and discriminates
- Communicates with THAAD fire control and interceptor to destroy threat

#### Forward-Based Mode (FBM) Mission
- Detection close to threat origin, boosting ballistic missile
- Tracks, discriminates and reports to C2BMC
- Target destroyed by Ground-Based Interceptor or Standard Missile

#### Long Range Discrimination Radar (LRDR) Mission
- 24x7 persistent long range midcourse discrimination, precision tracking and hit assessment in BMDS Pacific architecture
- Raid handling performance over wide range of threat trajectories
- Support conservation of Ground Based Interceptor (GBI) inventory
- Support multi-mission areas (e.g., Space Domain Awareness)

- 24x7 persistent tracking/discrimination against PACOM threats in complex countermeasure environment
- Improve BMDS to defend Hawaii
- Support multi-mission areas (e.g., Space Domain Awareness)

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Top Management Focus Areas

• **Build Warfighter confidence through focus on readiness and sustainment**
  - Sustain Deployed Army Navy/Transportable Radar Surveillance and Control Model-2 (AN/TPY-2) Radars, Sea-Based X-Band Radar (SBX), Upgraded Early Warning Radars (UEWRs), and COBRA DANE
  - Support Robust MDS Flight and Ground Testing
    - Complete FTX-26: Flight test with the Long Range Discrimination Radar (LRDR) and SBX
    - Complete Ground Test (GT)-20 Sprints and GTI-08a (N/I) evaluating both theater/regional and homeland defense capabilities
  - Improve Ground Sensor Reliability
    - Increase robustness to AN/TPY-2 and COBRA DANE radars through additional spares, hardware/software improvements, float components
    - Upgrade SBX radar cooling system, and thrusters
  - Improve Cybersecurity Posture

• **Increase engagement capability and capacity to outpace emerging threats**
  - Address Ground Sensor Coverage Gaps
    - Deploy LRDR to Clear, Air Force Station, AK
    - Improve Ground Sensor Discrimination, Debris Mitigation, and BMDS System Track
    - AN/TPY-2 and SBX Software Upgrades to maintain and improve performance against an evolving threat
    - Complete SBX x86 Processor upgrades and deploy AN/TPY-2 x86 upgraded Processors
  - Complete Clear/Cape Cod Early Warning Radars Upgrades
    - Continue AF-funded RAF Fylingdales and Thule processing equipment upgrades’
    - Complete RAF Fylingdales and Thule Operational testing and Ops Acceptance by United States Space Force (USSF)

• **Increase speed of delivery of new capability to address the evolving threat**
  - Develop AN/TPY-2 and LRDR Electronic Protection capabilities
## Potential Sub-Contracting Opportunities

<table>
<thead>
<tr>
<th>Contract</th>
<th>Description</th>
<th>Prime(s)</th>
<th>Current PoP End</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBX Mission Integration SBX</td>
<td>SBX vessel integration and coordination of services (tech, ops, supply, etc) through various sources</td>
<td>Gryphon Technologies</td>
<td>June 2024</td>
</tr>
<tr>
<td>Contractor Logistics Support (CLS)</td>
<td>◆ Operations and Sustainment activities for all AN/TPY-2 radars and SBX&lt;br◆ Deployment and Site Support&lt;br◆ Depot transition support</td>
<td>Raytheon Integrated Defense Systems (IDS)</td>
<td>October 2024</td>
</tr>
<tr>
<td>Radar Test Contract (RTC)</td>
<td>◆ Flight and ground test support to Upgraded Early Warning Radars (UEWRs) and COBRA DANE (CD) and X-Band Radars&lt;br◆ Models and Simulations</td>
<td>Raytheon Integrated Defense Systems (IDS)</td>
<td>January 2023</td>
</tr>
<tr>
<td>AN/TPY-2 FMS – Kingdom of Saudi Arabia (KSA)</td>
<td>◆ Production and initial CLS of 7 AN/TPY-2 radars in-country&lt;br◆ Spares, Sustainment, Maintenance, and Training</td>
<td>Raytheon Integrated Defense Systems (IDS)</td>
<td>August 2027</td>
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## Potential Sub-Contracting Opportunities (cont.)

<table>
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<td>Long Range Discrimination Radar (LRDR)</td>
<td>♦ Radar Development and Production ♦ Site construction ♦ Deploy ♦ Sustainment</td>
<td>Lockheed Martin</td>
<td>September 2023</td>
</tr>
<tr>
<td>COBRA DANE (CD) Recompete [USAF]</td>
<td>♦ Upgrade of CD to extend service life beyond 2030; parts obsolescence, DMSMS</td>
<td>Raytheon Information &amp; Intelligence Systems (IIS)</td>
<td>March 2023</td>
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**NOTE:** UEWR and CD are sustained via USAF. Small Business opportunities will be via the USAF. There are no future UEWR or CD MDA contracts planned at this time.
How Can Small Businesses Help?

◆ Support Ground Sensors Top Management Focus Areas
  ● Offer flexible technical expertise to support multiple Radars deployed worldwide
  ● Offer affordable acquisition and sustainment costs through open, non-proprietary, modular software architecture
  ● Leverage existing hardware/software reuse and economy of scale benefits
  ● Offer innovative solutions to parts obsolescence and DMSMS challenges

◆ Develop partnerships with Current Prime Contractors and other mission area partners

◆ Communicate with the Government
  ● Attend Industry Days when scheduled
  ● Provide feedback on Draft Request for Proposal
  ● Monitor beta.sam.gov for subcontracting opportunities

AN/TPY-2  SBX  UEWR  COBRA DANE  LRDR

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