

STELLAR TEAM

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September 6, 2022

**Missile Defense Agency (MDA)
SBIR/STTR Program
&
Office of Small Business Programs**

2022 Navy Gold Coast Conference

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SBIR/STTR Program Initiatives

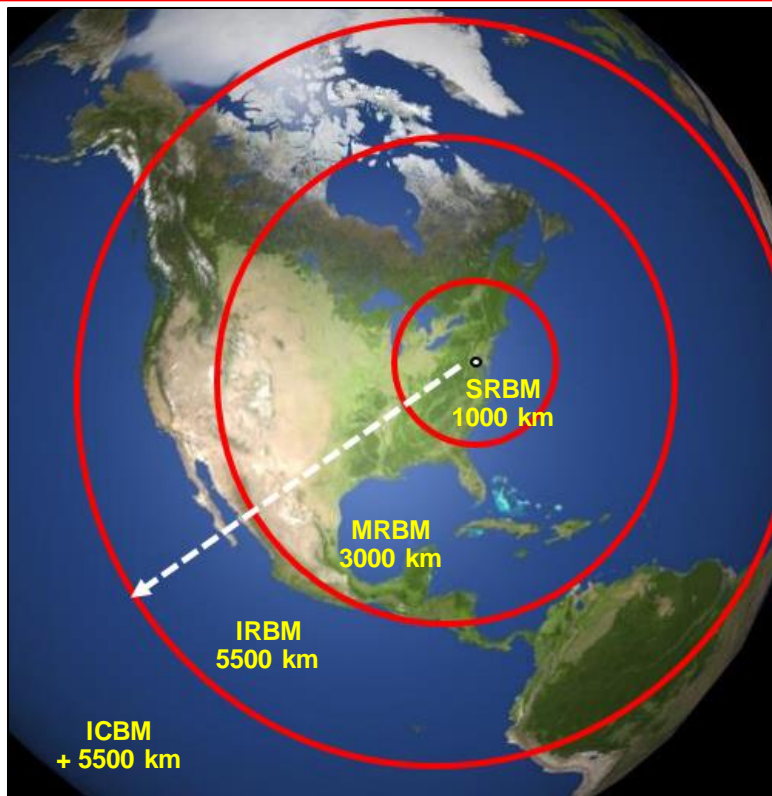
2022 Navy Gold Coast Conference

Christina Barnhill
SBIR/STTR Business Operations Manager



Missile Defense Evolving Threat Environment

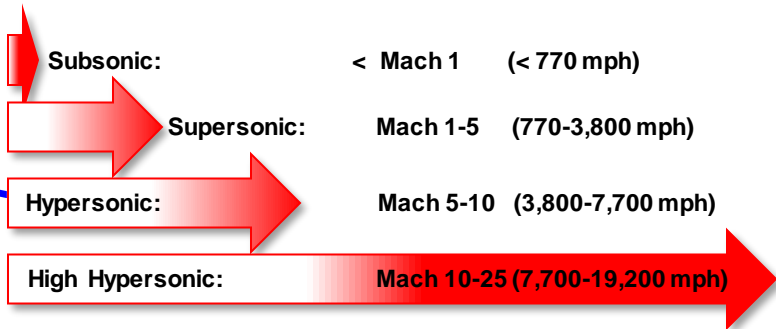
Range



Evolving Adversary Offensive Missile Systems

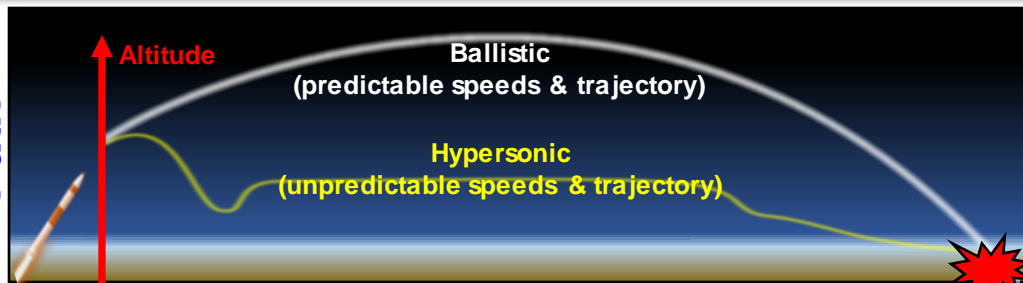
- Developing new missiles & improving existing systems
 - Precision strike
 - Penetration aids (e.g. decoys, jamming devices)
- Capable of maneuvering in midcourse or terminal phase
 - Multiple Independent Reentry Vehicle (MIRV)
 - Depressed Ballistic Trajectories
 - Maneuvering Reentry Vehicle (MaRV)
 - Hypersonic Global Maneuvering Missiles
 - Long Range Cruise Missiles
- Integrated ballistic, hypersonic, air, cruise missile, unmanned and non-kinetic attacks

Speed



Ref: 2022 Missile Defense Review

Path



Threats



North Korea
Hwasong-15 ICBM

Iran
Emad-1 MRBM
Approved for Public Release

China
DF-17 HGV
22-MDA-11250 (30 Aug 22)



Missile Defense Agency

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

WARFIGHTER CAPACITY

OPERATIONS
& READINESS

PRODUCTION,
FIELDING & DEPLOYMENT

TECHNOLOGY,
DEVELOPMENT & TEST

Delivering Capability by, through and with the Services
to meet Combatant Command Requirements



Today's Layered Active Missile Defense System

**BATTLE 1
HOMELAND DEFENSE**

**BATTLE 2
REGIONAL DEFENSE**

**BATTLE 3
SELF DEFENSE**

SENSORS



Surveillance & BMDS Overhead Persistent Infrared (OPIR) Architecture (BOA)



Cobra Dane Radar



UEWR Radars



Sea-Based X-Band Radar



TPY-2 Forward Based Radars



AEGIS BMD SPY-1 Radars



THAAD TPY-2 Radars



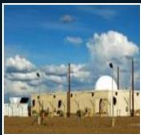
Patriot MPQ-65 Radars

COMMAND & CONTROL, BATTLE MANAGEMENT & COMMUNICATIONS (C2BMC)

COMBATANT COMMANDS, JOINT STAFF, SERVICES & MDA



GMD



AEGIS

THAAD

Patriot

WARFIGHTING ASSETS



Ground-based Midcourse Defense (GMD)



AEGIS Ashore



AEGIS



THAAD



Patriot

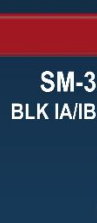
WEAPONS



GBI Ground Based Interceptor



SM-3 BLK IIA



SM-3 BLK IA/IB

THAAD Terminal High Altitude Area Defense



SM-6 Sea Based Terminal



MSE PAC-3 Missile Segment Enhancement



PAC-3 Patriot Advanced Capability-3



MDA Technology Maturation (DVR)

- Pursue a broad range of high-risk technologies
 - Capitalize on the innovation and creativity of the Nation's small businesses and universities
 - Develop and transform cutting edge technologies into actual applications for insertion into the Missile Defense System (MDS)
- Technology insertion into the MDS is Critical
- Technology Maturation utilizes the following research vehicles:
 - Small Business Innovation Research / Small Business Technology Transfer (SBIR/STTR) Program
 - 4th largest SBIR/STTR program in the Department of Defense





Technology Interest Areas



- **Interceptor Technology**

- **Guidance, navigation, and control**
- **Batteries and power systems**
- **Advanced materials**
 - High temperature
 - Lightweight
- **Seeker technology**
- **Radiation hardened technology**
- **Deployment systems**
- **Low Size, Weight and Power (SWaP) Inertial Measurement Units**
- **Lightweight composites**
- **Propulsion and control technologies**
 - Improved specific impulse

- **Command and Control, Battle Management, and Communications (C2BMC)**

- **Advanced tracking and discrimination algorithms**
- **Command and control algorithms**
- **Low latency and secure communications**
- **Battlespace management**
- **Data fusion**
- **Warfighter training**
- **Joint track management**
- **Combat identification**
- **Network management**
- **Artificial Intelligence / Machine Learning (AI/ML)**

- **Modeling and Simulation**

- **Lethality**
- **Battlespace environments**
- **Engagement**
- **Aerothermal environments**
- **Technology investment evaluation**
- **Test verification**

- **MDS Testing**

- **Affordable targets**
- **Scene generation**
- **Hardware-in-the-Loop (HWIL)**
- **Rapid analysis software toolkits**
- **Predictive analysis and modeling**
- **Range safety**

- **Sensors**

- **Electro-Optical InfraRed (EO/IR) and radar**
 - Track and receive modules
 - Focal Plane Arrays (FPAs)
- **Signal and data processing algorithms**
- **Radiation hardened technology**
- **Telescopes and antennas**
- **Windows and radomes**

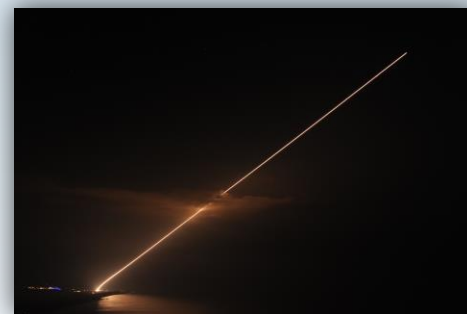
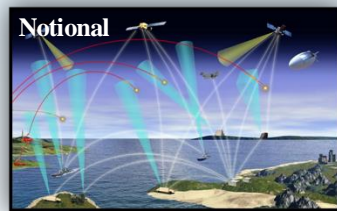
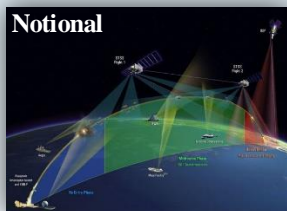


SBIR/STTR Solicitation Process



• SBIR / STTR program is \$100M Annual

- Phase I: Feasibility and concept development. 6 Months - \$150K
- Phase II: Technology and prototype development. 24 Months - \$1.5M
 - Technology may receive one sequential Phase II
- Phase III: Commercialization and Transition. Program Funded
- FY 21 Pilot Program Direct to Phase II: Prototype testing and technology demonstrations and validation



(SBIR/STTR Funded)

(SBIR/STTR Funded)

(SBIR/STTR Funded/Program Funds)

(Program Funded)

Phase I

Phase II

2 Phase II

Phase III

Feasibility Study

Technology Development & Prototype Demonstration

Prototype Testing & Evolution Technology Demo & Validation

Commercialization Transition



SBIR/STTR Research Areas

Research Area	Research Interests
Sea-Based Weapon Systems	Innovative Ejector Launch System, Standard Missile 3 (SM-3) Materials Design Improvements
C2BMC	Artificial Intelligence applied to Battle Management
Radar	Radar Systems Technology
Director for Technology Protection	Bare Metal Hypervisor and Anti-Tamper Protections
Industrial Manufacturing	Advanced Supercapacitors Based on Novel Low-cost Biocarbon Materials
Lethality	Modeling and testing of materials for Lethality Assessments
Survivability	RadHard Parts, Testing of Nuclear Survivability
Modeling & Simulation	Aerodynamic Controls for Hypersonic Vehicles, hypersonic vehicle modeling, upper stage motors



SBIR/STTR Research Areas

Research Area	Research Interests
Ground Based Midcourse Defense	IR signature modeling, Lightweight Multifunctional Components for Next-Gen Kill Vehicles
Targets & Countermeasures	Sensors and In-flight Communications
THAAD	Antennas, and Hypersonic Control Surfaces, Thermal Batteries
Test Instrumentation	Optics testing
Technology Maturation	Hypersonics, propulsion, advanced materials,
Sensors & Directed Energy	Fiber laser modeling and performance
Quality, Safety & Mission Assurance	Transparent SiC windows, Igniter Systems for Solid Rocket Motors



Beyond Phase II

- **Beyond Phase II may be granted an Enhancement and/or 2nd Phase II**
 - **2nd Phase IIs are funded by SBIR dollars**
 - **Phase IIIs are funded by Program dollars**
 - **Enhancements can be SBIR or Program funded**
- **Several means to pursue Phase III (non-SBIR) funding**
 - **Phase III Contract with the Government**
 - **Sub to a Prime Contractor**
- **Benefits of SBIR developed technology**
 - **Eligible for sole-source non-competitive contract**
 - **Help meet program small business goals**
 - **SBIR data rights for at least twenty years from the award date of initial SBIR contract (may be negotiated longer)**



The MDA IS&T BAA

- The MDA Innovation, Science and Technology Program Executive Office (herein referred to as “MDA/DV”) has established the following Broad Agency Announcements (BAA):
 - **Innovation, Science & Technology Innovation (IS&T) BAA**
- All qualified offerors who meet the requirements of the BAA are eligible to submit a white paper
- **IS&T BAA:**
 - **Private Industry (large and small businesses)**
 - **Qualified accredited domestic educational institutions**
 - **Non-profit organizations**
 - **Commercial contractors**
 - **Qualified accredited domestic educational institutions**



IS&T BAA Research Areas



- **Radar and Radio Frequency (RF) Sensor and Communication Systems**
- **Electro-Optical/Infrared Sensor and Communication Systems**
- **Directed Energy Systems**
- **Computer Science, Signal and Data Processing**
- **Algorithms, Probability and Decision Theory**
- **Materials and Processing**
- **Phenomenology**
- **Interceptor and Space Systems**
- **Modeling and Simulation (M&S)**
- **Cyberspace Operations, Cybersecurity, and Cyber resiliency of the Future of Large Scale Distributed Weapon Systems**
- **International MDS Cooperation**



Additional BAA Details

- **Period of Performance:**
 - Awards normally consist of one (1) base year period with the potential for up to two (2) severable option periods for subsequent performance
- **Funding Amount:**
 - Due to Government budget uncertainties, MDA does not have a specific amount of funding set aside for these BAAs
- **# of Awards:**
 - Multiple awards are anticipated; however, MDA reserves the right to make no awards pursuant to the announcement



Contact Information

www.mda.mil

- Missile Defense News, Images, Videos, Fact Sheets
- BMDS Overview, BMD Basics
- MDA Business Opportunities
(https://www.mda.mil/business/advanced_research.html)
- SBA SBIR/STTR website: <https://www.sbir.gov>

To Contact MDA

- SBIR / STTR 256-955-2020 sbirsttrindustry@mda.mil
- Commercialization 256-450-5343 SBIR-PhaseIII@mda.mil

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September 6, 2022

How to Do Business with the Missile Defense Agency (MDA)

2022 Navy Gold Coast Conference

Jerrol Sullivan
Director for Small Business (Acting)

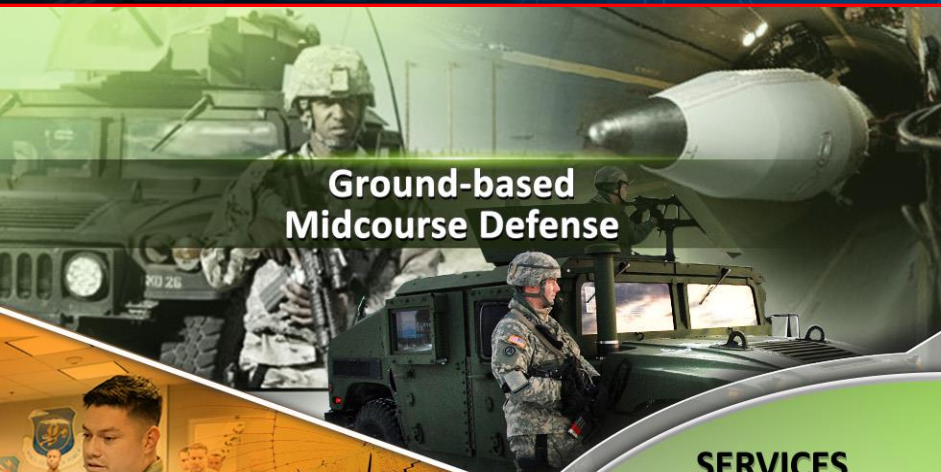


MDA OSBP Overview

- **Threat, Mission and Priorities**
- **Office of Small Business Programs (OSBP) Mission and Vision**
- **FY21 Small Business Utilization & Performance**
- **OSBP Web Resources**
- **Upcoming Acquisitions**
- **OSBP Staff**



Delivering Capabilities through the Services to Meet Combatant Command Needs



Ground-based Midcourse Defense



C2BMC Support to Combatant Commands



Sensors

SERVICES	MDA
<ul style="list-style-type: none"> • Warfighter Operations & Sustainment • Warfighter Training • Base & Facility Security Forces • Housing & Base Ownership • Maintenance (facilities, depot) 	<ul style="list-style-type: none"> • 2 Year Transition • MDS-Specific Sustainment • MDS-Unique Training Support • Selected Equipment Maintenance • System Spares & Obsolescence • Service Life Extension • System Modernization & Upgrades

Documented in Service Agreements



Aegis BMD At-Sea



Terminal High Altitude Area Defense



Aegis Ashore



MDA Office of Small Business Programs (OSBP) Mission/Vision



Mission: To facilitate access to ingenuity residing within the small business industrial base the Missile Defense Agency (MDA) relies on for missile defense.

Vision: We strive to remain an integral player and valued advisor to the workforce developing and implementing acquisition strategies supporting MDA's foundation for missile defense, while effectively advocating for use of small businesses in our procurements.



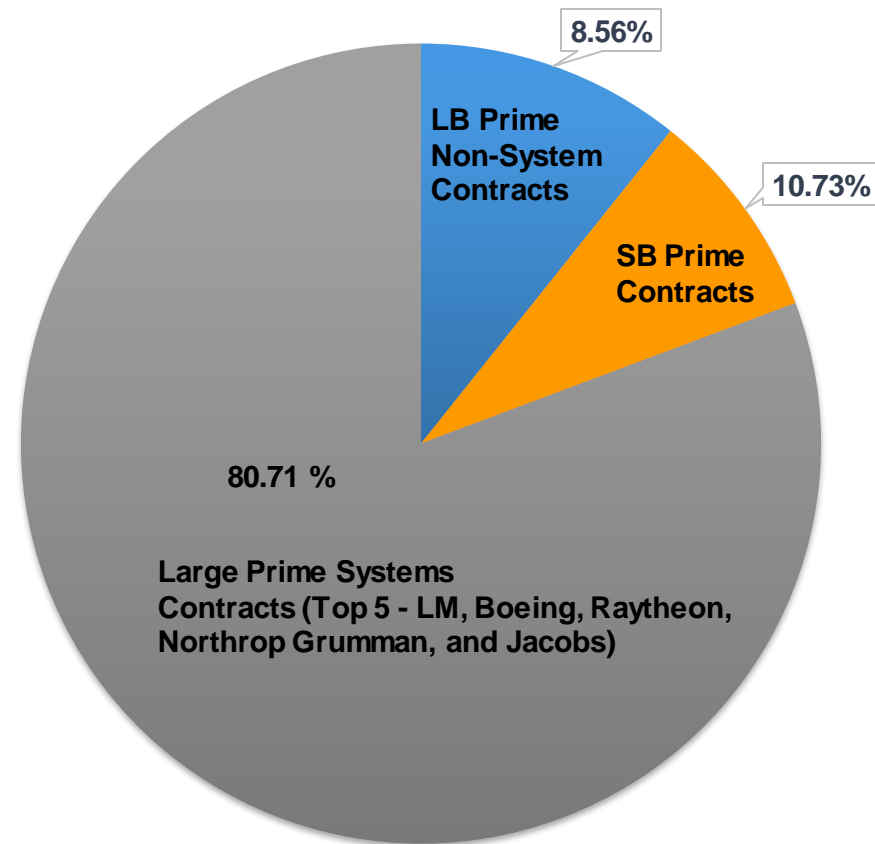
FY 21 Small Business Utilization in MDA

Strategic Objectives to Strengthen the Small Business Industrial Base

- Increase use of qualified small businesses to enhance operations and readiness
- Maximize use of small businesses to optimize production and fielding
- Increase use of SBIR/STTR programs to continue development of technology improvements for the Missile Defense System (MDS)

AbilityOne Program

- Increase MDA's participation



\$714M in Prime Contracts to Small Businesses

+693M in Subcontracts to Small Businesses

\$1.4B awarded to Small Businesses in FY21

Based on FY 21 FPDS-NG data as of 01/13/2022



FY 2021/2022 Small Business Goals/Performance to Date



<u>Category</u>	<u>FY21 Goal</u>	<u>Performance FY21</u>	<u>FY22 Goal</u>	<u>Performance FY22</u>	<u>Dollars FY22</u>
Small Business	5.3%	9.85%	9.0%	8.00%	\$478,873,773
Socio-Economic Categories					
Small Disadvantaged Business	1.0%	2.07%	2.2%	1.86%	\$111,393,190
Service-Disabled Veteran-Owned Small Business	0.7%	1.32%	1.0%	1.41%	\$84,310,395
Women-Owned Small Business	0.4%	1.36%	1.0%	2.20%	\$131,816,952
HUBZone Small Business	0.08%	0.68%	0.2%	1.44%	\$86,178,712

Note: Each goal above is calculated separately; any socio-economic small business may be included in more than one category.

Date range for this report is 10/1/2021 – 8/14/22

Total SB Eligible Dollars: \$5,986,045,411.72

Source: FPDS-NG

- Socioeconomic goals established by MDA Office of Small Business Programs (OSBP) Director
- Small Business goal established by The Office of the Secretary of Defense (OSD) OSBP



Upcoming Acquisitions

- **M & S Futures - Modeling and Simulations**
 - Draft Request for Proposal (RFP) - 4Q FY23
 - **Amended Request for Information (RFI) 4QFY22**
 - *(original was MDA21-DE-RFI01, 7 September 2021)*
 - Industry Day - 4QFY23
 - Request for Proposal (RFP) - 2Q FY24
- **Mission Support**
 - Mission Support Facility Sustainment - 3Q FY23
 - Security Operations Center (SOC) - 3Q FY23

Note: Time frames are estimates.



Upcoming Acquisitions (Cont'd)

- **Integrated R&D Enterprise Solutions (IRES) Follow-On**
 - Currently in tactical market research phase
 - Expected award: Spring 2025
 - Technical Areas (Scope)
 - **Enterprise Information Environment and RDT&E IT Services and Solutions**
 - **MDS Mission IT Support and Solutions**
 - **MDS Mission Operations**
 - **Missile Defense Integration & Operations Center (MDIOC) Facility Operations & Sustainment**
 - **Systems Engineering & Program Integration**

Note: Time frames are estimates.









Upcoming Acquisitions (Cont'd)

- **Agency Information Management Software Services (AIMSS) (MDDC Follow-on) to be awarded 2023/2024**
 - Collect, archive, control, distribute critical mission and MDS data
 - Ensure data required to perform data analysis is identified, collected
 - Develop technology ecosystem to enable data management mission

Note: Time frames are estimates.







Potential Sub-Contracting Opportunities

Contract	Description	Prime(s)	Current PoP End
SBX Mission Integration 	<ul style="list-style-type: none"> ◆ SBX vessel integration and coordination of services (tech, ops, supply, etc) through various sources 	Gryphon Technologies	June 2024
Radar Development Contract (RDC) 	<ul style="list-style-type: none"> ◆ Program Management ◆ Hardware & Software Development and Sustainment for AN/TPY-2 Radars and SBX ◆ Engineering Services 	Raytheon Technologies	October 2023
Contractor Logistics Support (CLS) 	<ul style="list-style-type: none"> ◆ Operations and Sustainment activities for all AN/TPY-2 Radars and SBX ◆ Deployment and Site Support ◆ Depot transition support 	Raytheon Technologies	October 2024
Radar Test Contract (RTC) 	<ul style="list-style-type: none"> ◆ Flight and ground test support to Upgraded Early Warning Radars (UEWRs) and COBRA DANE (CD) and X-Band Radars ◆ Models and Simulations 	Raytheon Technologies	January 2024
AN/TPY-2 FMS – United Arab Emirates (UAE) 	<ul style="list-style-type: none"> ◆ Operations and Sustainment of 2 AN/TPY-2 Radars in-country ◆ Spares, Sustainment, Maintenance, and Training 	Raytheon Technologies	September 2025
AN/TPY-2 FMS – Kingdom of Saudi Arabia (KSA) 	<ul style="list-style-type: none"> ◆ Production and initial CLS of 7 AN/TPY-2 Radars in-country ◆ Spares, Sustainment, Maintenance, and Training 	Raytheon Technologies	August 2032



Potential Sub-Contracting Opportunities (cont.)



Contract	Description	Prime(s)	Current PoP End
AN/TPY-2 US Radar Production 	<ul style="list-style-type: none"> ◆ Radar Production ◆ Spares Production ◆ Major components 	Raytheon Technologies	March 2025
Long Range Discrimination Radar (LRDR) 	<ul style="list-style-type: none"> ◆ Radar Development and Production ◆ Site construction ◆ Deploy ◆ Sustainment 	Lockheed Martin	July 2024
Homeland Defense Radar (HDR) 	<ul style="list-style-type: none"> ◆ Multi-Award Indefinite Delivery/ Indefinite Quantity (MAIDIQ) ◆ Radar Development and Production ◆ Site construction ◆ Logistics 	Lockheed Martin, Northrop Grumman, Raytheon Technologies	July 2025
Upgraded Early Warning Radar (UEWR)  Sustainment and Modification of Optical and Radar Sensors (SMORS) [USSF]	<ul style="list-style-type: none"> ◆ Upgrade of Early Warning Radars at Clear, Cape Cod, and Beale AFB, RAF Fylingdales, and Thule AB 	Raytheon Technologies	UEWR – June 2022 SMORS – June 2023

NOTE: MDA UEWR contracts are rapidly approaching completion without any planned follow-on activities. The USSF continues UEWR and CD sustainment under their contracts and will perform any future hardware and/or software upgrades.



MDA OSBP Website

U.S. DEPARTMENT OF DEFENSE
MISSILE DEFENSE AGENCY

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MDA MISSION

The Missile Defense Agency's (MDA) mission is to develop, test, and field an integrated, layered, ballistic missile defense system (BMDS) to defend the United States, its deployed forces, allies, and friends against all ranges of enemy ballistic missiles in all phases of flight.

NEWS

- October 3, 2016 [Missile Defense Agency Conducts Distributed BMD Ground Test](#)
- July 21, 2016 [MDA Opens Missile Defense System Data Terminal at Fort Drum \[Photos\]](#)
- July 19, 2016 [James N. Miller Receives Ronald Reagan Missile Defense Award](#)

May 25, 2016 - The Missile Defense Agency and U.S. Navy sailors aboard USS Hopper (DDG 70) successfully conducted two developmental flight tests of the Standard Missile-3 (SM-3) Block 1B Threat Upgrade guided missile on May 25 and 26 off the west coast of Hawaii.

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To make an appointment, contact Outreach@mda.mil.

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