

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605502C I <i>Small Business Innovation Research - MDA</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	89.507	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	89.507
MD45: <i>Small Business Innovation Research</i>	-	89.507	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	89.507

Program MDAP/MAIS Code: 362

Note

Funds are transferred into this PE in the execution year.

A. Mission Description and Budget Item Justification

MD45 This project explores innovative concepts pursuant to Public Law 106-554 (Small Business Reauthorization Act of 2000) and Public Law 107-50 (Small Business Technology Transfer Program Reauthorization Act of 2001), which mandates a two-phase competition for small businesses with innovative technology that can be commercialized. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs will develop new dual-use technology for future Missile Defense Agency (MDA) Ballistic Missile Defense Systems (BMDS) needs. Dual-use means that the technology will be judged on the potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new BMDS technology, and as a route to national economic growth through new commercial products. MDA will conduct the competition, award, and manage the contracts.

The MDA's SBIR/STTR investments are divided into 16 Research Areas for the following key components:

- Aegis Ballistic Missile Defense (BMD): Develops Naval BMD Capability
- Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR): Defines, develops and deploys an integrated Sensor and Command and Control (C2) capability for the Ballistic Missile Defense System
- Program and Integration: Supervises the non-Aegis portfolio including Targets, Terminal High Altitude Area Defense (THAAD), Ground-based Midcourse Defense, and the Israeli programs
- Test: Characterizes ballistic missile defense capability and supports fielding of an integrated and effective capability to the Warfighter
- Advanced Technology: Develops technology to counter future threats

SBIR and STTR topic areas for FY 2015 included:

- Advanced Cognition Processing and Algorithms for Improved Identification
- Kinematic Reach/Containment
- System Communications
- Lethality Enhancement
- Gaming Trainer
- Command and Control Human-to-Machine Interface
- Improved Track Accuracy for Missile Engagements

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency Date: February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6:</i> <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605502C / <i>Small Business Innovation Research - MDA</i>
--	---

- Innovative Methodologies for Modeling Fracture Under High Strain-rate Loading
- Thermally Efficient Emitter Technology for Advanced Scene/Simulation Capability in Hardware in the Loop Testing
- Innovative Antenna Arrays Enabling Continuous Interceptor Communications
- Multi-Object Payload Deployment
- Interceptor Thermal Protection Systems
- Low Light Short Wave Infrared Focal Plane Arrays
- Solid State High Power Amplifier for Communications
- Non-Destructive Testing Methods for Detecting Red Plague Within an Insulated Silver Plated Copper Conductor
- Passive Inter-Modulation RF Emissions Utilized for Identifying Galvanic Corrosion in Metal Structures
- Contextual Reasoning for Object Identification
- System of Systems Control Interactions
- Aerospace Vehicle Signature Modeling Technologies
- Spectral Crosstalk Reduction for Dual-band Long Wave Infrared Detectors
- Gold Contaminated Solder Joint Characterization for Quantifying Risks Associated with Gold Embrittlement
- Open Framework Planner with Embedded Training
- Irrefutable Tamper Evidence
- Self-Building/Establishing Networks
- Inline Threat Generation for Modeling and Simulation
- Innovative Ways to Shorten System Level Simulation Integration Time
- High Power Fiber Laser Tap Couplers for Phase and Polarization Control
- General Wave-Optics Based Scaling Laws for Multiple/Obscured Apertures
- Smart Readout Integrated Circuit for Dual Band Infrared Focal Plane Arrays
- Advanced Reserve Battery Technologies
- MEMS IMU Solutions for Missile Defense Applications
- Lithium Oxyhalide Battery Separator Material

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency	Date: February 2016
---	----------------------------

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605502C / <i>Small Business Innovation Research - MDA</i>
--	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	89.507	0.000	0.000	-	0.000
Total Adjustments	89.507	0.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	89.507	0.000			
• Other Adjustment	0.000	0.000	0.000	-	0.000

Change Summary Explanation

FY 2015 funds were transferred to Small Business Innovation Research/Small Business Technology Transfer from other Program Elements in accordance with the SBIR/STTR Reauthorization Act of 2011

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency										Date: February 2016		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605502C / <i>Small Business Innovation Research - MDA</i>				Project (Number/Name) MD45 / <i>Small Business Innovation Research</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MD45: <i>Small Business Innovation Research</i>	-	89.507	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	89.507
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

This project explores innovative concepts pursuant to Public Law 106-554 (Small Business Reauthorization Act of 2000) and Public Law 107-50 (Small Business Technology Transfer Program Reauthorization Act of 2001), which mandates a two-phase competition for small businesses with innovative technology that can be commercialized. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs will develop new dual-use technology for future Missile Defense Agency (MDA) Ballistic Missile Defense Systems (BMDS) needs. Dual-use means that the technology will be judged on the potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new BMDS technology, and as a route to national economic growth through new commercial products. MDA will conduct the competition, award, and manage the contracts.

The MDA's SBIR/STTR investments are divided into 16 Research Areas for the following key components:

- Aegis Ballistic Missile Defense (BMD): Develops Naval BMD Capability
- Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR): Defines, develops and deploys an integrated Sensor and Command and Control (C2) capability for the Ballistic Missile Defense System
- Program and Integration: Supervises the non-Aegis portfolio including Targets, Terminal High Altitude Area Defense (THAAD), Ground-based Midcourse Defense, and the Israeli programs
- Test: Characterizes ballistic missile defense capability and supports fielding of an integrated and effective capability to the Warfighter
- Advanced Technology: Develops technology to counter future threats

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
Title: Small Business Innovative Research	89.507	0.000	0.000
Articles:	-	-	-
Description: N/A			
FY 2015 Accomplishments:			
FY 2015 Accomplishments:			
Awarded 92 Phase I contracts (\$122K average) in the following research areas:			
-Advanced Technology			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502C / <i>Small Business Innovation Research - MDA</i>	Project (Number/Name) MD45 / <i>Small Business Innovation Research</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> -Aegis BMD -Anti-Tamper -Battle Management and Communications -Directed Energy -Future Capability -Ground-Based Midcourse Defense -Modeling and Simulation -Quality, Safety & Mission Assurance -Sensors <p>Awarded 68 Phase II contracts (\$884k average) in the following research areas:</p> <ul style="list-style-type: none"> -Advanced Technology -Aegis BMD -Anti-Tamper -Battle Management and Communications -Directed Energy -Future Capability -Ground-Based Midcourse Defense -Modeling Simulation -Quality, Safety & Mission Assurance -Sensors -Space Systems -Targets & Countermeasures -Test Instrumentation -THAAD <p>FY 2016 Plans: N/A</p> <p>FY 2017 Plans: N/A</p>				
Accomplishments/Planned Programs Subtotals		89.507	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)				
N/A				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502C / <i>Small Business Innovation Research - MDA</i>	Project (Number/Name) MD45 / <i>Small Business Innovation Research</i>

C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A