Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Missile Defense Agency												Date: March 2014
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604883C / *Precision Tracking Space System*							
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	110.727	204.666	-	-	-	-	-	-	-	-	-	315.393
MD10: *Precision Tracking Space System (PTSS)*	109.228	193.137	-	-	-	-	-	-	-	-	-	302.365
MD40: *Program-Wide Support*	1.499	11.529	-	-	-	-	-	-	-	-	-	13.028
MDAP/MAIS Code: 362												

The FY 2015 OCO Request will be submitted at a later date.

Note

FY 2014 reflects termination of the program.

A. Mission Description and Budget Item Justification

Space-based sensors offer on-demand, geographically independent and persistent coverage of areas of specific concern for ballistic missiles with no need for indications and warning. Space-based sensors also expand the battle space of all BMD ships operating in the northern hemisphere with increased raid size handling and threat range capability. With the two Space Tracking & Surveillance System (STSS) demonstration satellites (launched in 2009), the Agency regularly and consistently demonstrated space-based remote sensor and fire control integration, initially in April 2011 in Flight Test Marine (FTM)-15 and most recently in May 2012, in FTM-16 Event 2A. These successes are informing the design, integration, and operations of the Precision Tracking Space System (PTSS).

The PTSS is a space and ground segment system that will provide persistent sensor coverage of enemy ballistic missiles. The PTSS is designed to be an integrated part of the BMDS: one that receives cues from all acquisition sensors and provides outputs to the BMDS battle manager & missile systems. The program mitigates cost, schedule and performance risk by: 1) simplifying the design by focusing on the BMDS mission, 2) incorporating components and subsystems with high technology readiness levels and on-orbit pedigrees and 3) involving industry and the military services up front & early to inform the design for producibility, operations and sustainment.

The PTSS has inherent capability for other missions such as Space Situational Awareness. The Agency expects that capability to be exploited by the joint warfighter when the PTSS is not engaged in a missile defense mission.

The Combatant Commands and Services have a need for a persistent ability to provide fire-control quality tracking of a raid of ballistic missiles over their entire trajectory for both homeland and regional defense scenarios, specifically, improve birth-to-death tracking, identification, and targeting, including the capability to detect, track, discriminate and counter large, dense raids, and structured attacks. Overhead Persistent Infrared (OPIR) systems acquire and track the boost and early post-boost phases of a missile`s trajectory, but the PTSS is required to continue to track ballistic missiles through their accent, apogee, and until they reenter into the earth`s atmosphere.

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Missile Defense Agency	Date: March 2014
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604883C *I Precision Tracking Space System*

Goals and objectives for the PTSS are:

- Develop an operational missile tracking capability from space, which will close the BMDS fire control loop, specifically the Aegis Ballistic Missile Defense and Ground Based Interceptor weapon systems, by way of the BMDS battle manager.
- Reduce operational, fire control risk by co-locating the national lab design teams for PTSS and Aegis Ballistic Missile Defense, and by embedding US Navy and US Air Force operations and sustainment experts in the PTSS hybrid program office.
- Focus on tracking raids of regional Medium-Range Ballistic Missiles, Intermediate-Range Ballistic Missiles and Intercontinental Ballistic Missiles from today`s regional threats.
- Develop and test the development satellite articles and the integrated ground system with the BMDS.
- Ensure early industry involvement by awarding contracts to join the Integrated Systems Engineering Team (ISET) during the development satellite article design. Six Industry partners (Ball, Boeing, Lockheed Martin, Northrop Grumman, Orbital, and Raytheon) contribute to the national lab development effort to improve the Precision Tracking Space System design for manufacturability and reduce the production risk.
- Use data from the on-orbit Space Tracking & Surveillance System (STSS) demonstration satellite testing events
- Benchmark models and simulations.
- Allocate requirements, interface controls, and evaluate operations concepts.
- Leverage experience gained from STSS test events to demonstrate capability and insight into Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance linkages and hand off to the Aegis Ballistic Missile Defense fire control system.
- Develop a government owned design to foster production competition over the life of the program.

The Precision Tracking Space System (PTSS) contributes to defense of the U.S. homeland and regional, missile defense, including large raid protection.

MD40 Program-Wide Support (PWS) consists of essential non-headquarters management costs in support of the MDA functions and activities across the entire Ballistic Missile Defense System (BMDS).

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Missile Defense Agency					Date: March 2014
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*			R-1 Program Element (Number/Name) PE 0604883C *I Precision Tracking Space System*		
B. Program Change Summary ($ in Millions)	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO**	**FY 2015 Total**
Previous President's Budget	297.375	-	-	-	-
Current President's Budget	204.666	-	-	-	-
Total Adjustments	-92.709	-	-	-	-
• Congressional General Reductions	-0.320	-			
• Congressional Directed Reductions	-55.000	-			
• Congressional Rescissions	-15.000	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.077	-			
• SBIR/STTR Transfer	-2.830	-			
• Other Adjustment	-19.482	-	-	-	-

Change Summary Explanation

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604883C / *Precision Tracking Space System*	Project (Number/Name) MD10 / *Precision Tracking Space System (PTSS)*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
MD10: *Precision Tracking Space System (PTSS)*	109.228	193.137	-	-	-	-	-	-	-	-	-	302.365
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

N/A

A. Mission Description and Budget Item Justification

This Program Element funds the development of a space-borne sensor constellation and ground system that closes the fire control loop with the BMDS shooters, specifically the Aegis Ballistic Missile Defense and Ground Based Interceptor weapon systems, by way of the BMDS battle manager. The PTSS also focuses on tracking large raids of regional Medium-Range Ballistic Missiles, Intermediate-Range Ballistic Missiles and Intercontinental Ballistic Missiles from today`s regional threats. As threats expand and mature the need for continuously available sensors and faster interceptors supports continued investment in a PTSS development. Lessons learned from the two Space Tracking & Surveillance System demonstration satellites currently on orbit are guiding our decisions on the development of a fiscally sustainable, continuously available, operational precision track space sensor constellation and ground system.

The PTSS provides the effectiveness of a highly available early missile tracking capability from space by developing, launching and operating a pair of development satellite articles using an integrated ground control system in FY 2017. The PTSS development satellite articles will demonstrate early, precise, real-time tracking of ballistic missiles to close the BMDS fire control loop from space. This capability significantly improves BMDS performance by effectively expanding the threat engagement range of all BMD ships operating in the northern hemisphere.

The PTSS avoids some of the challenges of terrestrial and airborne sensors.

- Provides reliable and constantly available ballistic missile tracking capability in the areas of the world of most concern.
- Eliminates the need for host nation agreements.
- Does not require transport to theater or limit our operational flexibility.
- Mitigates the impacts of weather effects (clouds, crosswinds and icing for airborne, and rain for radar).
- Deals with threats arising from unexpected locations or adversaries.
- Greatly lowers operation and maintenance costs.
- Observes and tracks launches beyond the range of airborne and terrestrial sensors.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604883C / *Precision Tracking Space System*	**Project (Number/Name)** MD10 / *Precision Tracking Space System (PTSS)*

PTSS supports essential BMDS functions by:

- Continuously observing the U.S. Homeland regional and rogue ballistic missile threat in post-boost.
- Sending fire-control quality tracks to the BMDS shooters, specifically the Aegis Ballistic Missile Defense and Ground Based Interceptor weapon systems, by way of the BMDS battle manager.
- Tracking large raids of nearly simultaneously launched missiles.
- Providing radiometric data supporting challenging post-boost detection requirements, object classification, and hit/kill assessments.
- Adding infrared-based tracking to the existing radio frequency sensors in the architecture for dual phenomenology.
- Providing coverage of the geographic regions and latitudes of concern.
- Contributing modeling and simulation (M&S) emulation models to the BMDS-level M&S environment. The Precision Tracking Space System models, when added to M&S products from other BMDS elements and advanced technology projects, will facilitate trade studies and analyses for Standard Missile-3 Block IIB development.

The PTSS team capitalizes on expertise from external organizations to aid the design process:

- US Air Force. The USAF, as lead service for the PTSS, provides operations and sustainment strategies and concepts to ensure the ground and space segments can be easily transferred to a service. The USAF has embedded its personnel in the PTSS hybrid program office to facilitate this function.
- US Navy. The USN, as operator of the Aegis Ballistic Missile Defense weapon system, is providing assured communications and weapon system expertise so that the PTSS can effectively close the fire control loop from space. To the same end, the USN will embed its personnel in the PTSS hybrid program office.
- Johns Hopkins University Applied Physics Laboratory (JHU/APL). As both the lead performer on the PTSS and design expert for the Aegis Ballistic Missile Defense weapon system, JHU/APL shortens the communications chain by leveraging the co-location of its two design teams. JHU/APL allows the government to manage BMDS interface changes effectively throughout the development articles and maintain intellectual property within the government for future competition.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Precision Tracking Space System	193.137	-	-
Articles:	-	-	-
Description: N/A			
FY 2013 Accomplishments: - Characterize and obtain measurements from the breadboard models of the optical tracking and communications payload subassemblies - Complete preliminary design for subsystems in the satellite bus, optical payload and communications payload			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604883C / *Precision Tracking Space System*	**Project (Number/Name)** MD10 / *Precision Tracking Space System (PTSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
- Develop initial test beds for system components including command and data handler, communication payload data handler, optical payload data processing unit and communications crosslinks - Complete first-pass of focal plane array (FPA) read-out integrated circuits and detectors; deliver the FPA prototype - Breadboard optical payload sensor cold-box subsystem - Complete primary manufacturing and production readiness studies with the ISET - Complete final Ballistic Missile Defense system test plan for flight and ground elements - Complete PTSS to Command, Control, Battle Management and Communications Interface Control Document(ICD) functional and physical interface definitions (signed ICD) - Complete system preliminary design review - Complete architecture and engineering of PTSS Ground Entry Point (GEP) ***FY 2014 Plans:*** N/A ***FY 2015 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	193.137	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	69.438	9.321	38.800	-	38.800	76.400	52.000	112.800	178.000	-	536.759
• 0603893C: *Space Tracking and Surveillance System*	45.420	40.347	31.346	-	31.346	33.697	34.542	35.317	36.316	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	344.431	405.319	443.484	-	443.484	456.182	462.525	452.937	465.638	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	438.114	337.993	386.482	-	386.482	340.811	369.920	417.712	413.194	Continuing	Continuing
• 0603915C: *Ballistic Missile Defense Targets*	438.523	491.170	485.294	-	485.294	419.537	512.098	426.085	429.822	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604883C / *Precision Tracking Space System*	**Project (Number/Name)** MD10 / *Precision Tracking Space System (PTSS)*

D. Acquisition Strategy

FY 2014 reflects termination of the program.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604883C / *Precision Tracking Space System*	Project (Number/Name) MD10 / *Precision Tracking Space System (PTSS)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Precision Tracking Space System - Space and Ground Segment	Various	Various : Various	96.720	176.248		-		-		-		-	-	272.968	359.796
		Subtotal	96.720	176.248		-		-		-		-	-	272.968	359.796

Remarks

None.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Remarks

None.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Remarks

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604883C / *Precision Tracking Space System*	Project (Number/Name) MD10 / *Precision Tracking Space System (PTSS)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Precision Tracking Space System - Contractor Support Services	C/CPFF	MDA : NCR, HSV, CoS	7.412	6.920		-		-		-		-	-	14.332	20.897
Precision Tracking Space System - FFRDC/UARC	MIPR	Aerospace, SDL, JPL : NCR, HSV, CoS	1.856	3.830		-		-		-		-	-	5.686	3.148
Precision Tracking Space System - MDA Civilians	Allot	MDA : Various	2.137	5.677		-		-		-		-	-	7.814	5.969
Precision Tracking Space System - OGA Civilians	MIPR	NRL : Washington, D.C.	0.720	0.217		-		-		-		-	-	0.937	1.091
Precision Tracking Space System - Travel and Transportation	Allot	MDA : NCR, HSV, CoS	0.383	0.245		-		-		-		-	-	0.628	0.610
		Subtotal	12.508	16.889		-		-		-		-	-	29.397	31.715

Remarks

None.

	Prior Years	FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	109.228	193.137		-		-		-		-	-	302.365	391.511

Remarks

Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604883C / *Precision Tracking Space System*	**Project (Number/Name)** MD10 / *Precision Tracking Space System (PTSS)*

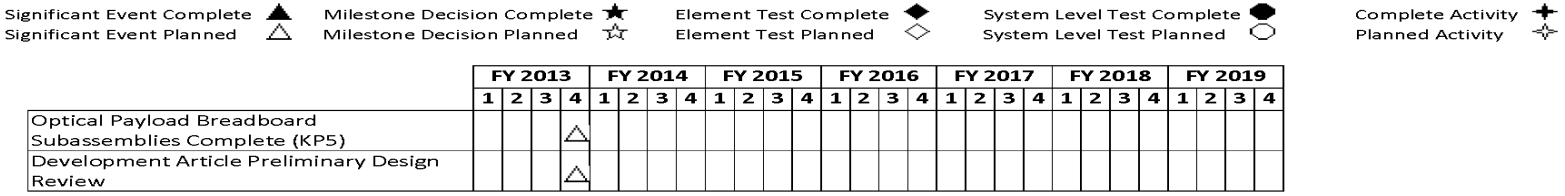

Exhibit R-4A, RDT&E Schedule Details: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604883C / *Precision Tracking Space System*	**Project (Number/Name)** MD10 / *Precision Tracking Space System (PTSS)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Optical Payload Breadboard Subassemblies Complete (KP5)	4	2013	4	2013
Development Article Preliminary Design Review	4	2013	4	2013

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604883C / *Precision Tracking Space System*	Project (Number/Name) MD40 / *Program-Wide Support*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	1.499	11.529	-	-	-	-	-	-	-	-	-	13.028
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

N/A

A. Mission Description and Budget Item Justification

Program-Wide Support (PWS) contains non-headquarters management costs in support of Missile Defense Agency (MDA) functions and activities across the entire Ballistic Missile Defense System (BMDS). It Includes Government Civilians, Contract Support Service, and Federally Funded Research and Development Center (FFRDC) providing integrity and oversight of the BMDS as well as, supporting MDA in enabling the development and evaluation of technologies that will respond to the changing threat. In addition, includes Global Deployment personnel and support performing deployment site preparation and activation. Other costs included provide facility capabilities for MDA Executing Agent locations, such as physical and technical security, legal services, travel and agency training, office and equipment leases, utilities, data and unified communications support, supplies and maintenance, materiel and readiness and central property management of equipment, and similar operating expenses. Also includes legal settlements. In keeping with congressional intent, Program Wide Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the total MDA budget.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Program Wide Support	11.529	-	-
Articles:	-	-	-
Description: N/A			
FY 2013 Accomplishments: See paragraph A, Mission Description and budget item justification			
FY 2014 Plans: PTSS program cancelled beginning FY 2014			
FY 2015 Plans: N/A			
Accomplishments/Planned Programs Subtotals	11.529	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604883C / *Precision Tracking Space System*	**Project (Number/Name)** MD40 / *Program-Wide Support*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604883C / *Precision Tracking Space System*	Project (Number/Name) MD40 / *Program-Wide Support*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance	MIPR	Various; Multi : ALless than CAless than CO, VA	0.000	0.981		-		-		-		-	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various; Multi : Al, CA, CO, VA	0.000	1.074		-		-		-		-	-	1.074	-
Program Wide Support - Agency Operations and Support Services (CPFF)	C/CPFF	Various; Multi : AL, CO, VA	1.499	9.328		-		-		-		-	-	10.827	-
Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Various; Multi : VA, CO	0.000	0.146		-		-		-		-	-	0.146	-
Program Wide Support - Agency Operations and Support Services (MIPR)	MIPR	Deputy Assist Secretary of Army for Policy and Procurement Business Operations and Enterprise System Directorate (DASA (P&P) BO & ESD) : VA	0.000	-		-		-		-		-	-	-	-
		Subtotal	1.499	11.529		-		-		-		-	-	-	-

Remarks

N/A

	Prior Years	FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.499	11.529		-		-		-		-	-	-	-

Remarks

N/A