

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency										Date: February 2015		
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 0603884C I Ballistic Missile Defense Sensors							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	500.670	340.391	270.901	233.588	-	233.588	228.437	142.363	140.740	141.733	Continuing	Continuing
MD11: BMDS Radars	429.107	273.056	246.107	222.076	-	222.076	216.365	133.764	131.901	132.694	Continuing	Continuing
MC11: Cyber Operations	-	1.543	1.212	1.239	-	1.239	1.272	1.308	1.341	1.361	Continuing	Continuing
MT11: BMDS Radars Test	43.953	49.925	-	-	-	-	-	-	-	-	Continuing	Continuing
MD40: Program-Wide Support	27.610	15.867	23.582	10.273	-	10.273	10.800	7.291	7.498	7.678	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note												
Beginning in FY 2015, funding for the BMDS Radars Test (MT11) Budget Project will be realigned to the Ballistic Missile Defense Sensor Test Program Element (0604879C).												
Beginning in FY 2015, funding for the Long Range Discrimination Radar (MD96) Budget Project will be realigned to the Long Range Discrimination Radar Program Element (0604873C).												
A. Mission Description and Budget Item Justification												
The Ballistic Missile Defense System (BMDS) network of layered Sensors provides essential situational awareness and fire control data for the command and control of BMDS weapon systems, such as Ground-based Midcourse Defense (GMD), Aegis Ballistic Missile Defense, and Terminal High Altitude Area Defense (THAAD). The suite of remote ground-based sensors provide early warning, midcourse and terminal ballistic missile defense threat data enabling layered detection and tracking of ballistic missile targets, providing fire-control quality position, velocity, and discrimination data through Command and Control, Battle Management, Communications (C2BMC).												
Overlapping coverage of geographically diverse sensors provides improved threat track data as well as reducing the loss of any one sensor and reducing the potential impact of countermeasures. The extended coverage and accuracy provided by a network of layered sensors increases the defensive footprint and reduces the number of target engagements required, thereby conserving interceptor inventory and ensuring a high probability of successful engagement. Networked forward-based sensors enables C2BMC to pair the best sensor coverage with the best available weapon system to provide the most effective defense against ballistic missile threats.												
This Program Element includes support for the Discrimination Improvements for Homeland Defense (DIHD) effort. The goal of this effort is to develop and field an integrated set of Element capabilities to improve BMDS reliability, lethality, and discrimination. The end result will be a deployed future BMDS architecture more capable of discriminating and destroying a reentry vehicle with a high degree of confidence that will improve Warfighter shot doctrine and preserve inventory. This effort will encompass a Near-Term, Mid-Term capability, and Far-term DIHD capability fielding. DIHD is a combined effort between Systems Engineering, Ground-based Midcourse Defense (PE 0603882C), BMD Sensors (PE 0603884C), C2BMC (PE 0603896C), Aegis BMD (PE 0603892C) and Advanced C4ISR (PE 0603179C).												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>
<p>The BMD Sensors Program contributes to regional missile defense through the following activities:</p> <p>Development, delivery and deployment or redeployment of remote, forward based Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) radars to include radars for tests or operations. Radars provide early warning, track, and discrimination data through all phases of ballistic missile flight. Through the BMDS C2BMC and coalition data links, the AN/TPY-2 provides fire control data to enable remote Standard Missile (SM)-3 engagements by Aegis BMD, to allow earlier engagement by the Arrow Weapon System, and to cue deployed THAAD and U.S. and partner PATRIOT batteries.</p> <p>Provides the enhancements/development of AN/TPY-2 software across the fleet of radars. Lessons learned from each radar are addressed in new software builds that are developed, tested, and subsequently installed at each radar.</p> <p>AN/TPY-2 radars can be configured to operate either as a THAAD Fire Unit Radar (terminal mode) or Forward-Based Radar. These radars are transportable, adding flexibility to respond to geographical changes in threats. The AN/TPY-2 used in a Forward-Based role detects and acquires ballistic missile threats and provides precision track and discrimination data during the boost and midcourse phases of flight. The BMDS C2BMC provides this track and discrimination data, for cueing and engagements, to GFC for GMD defense of the homeland and to Link 16 for Aegis and other regional missile defense systems to support defense of U.S., deployed forces, friends and allies. This track and discrimination data identifies the lethal object, significantly reduces the target uncertainty, and provides additional reaction time to increase the probability of successful BMDS engagements. The AN/TPY-2 used in terminal mode is an integral component of the THAAD Battery. The THAAD battery radar is capable of tracking multiple threats and multiple interceptors during engagements in the terminal phase. It provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The current and planned utilization of the AN/TPY-2 radars supports GMD, THAAD, and the Aegis Weapon System via C2BMC.</p> <p>The Ballistic Missile Defense System (BMDS) network of sensors also includes the COBRA DANE Radar at Eareckson Air Force Station in Alaska, and the Upgraded Early Warning Radars (UEWR) at Beale Air Force Base, CA, Fylingdales Royal Air Force, United Kingdom, and at Thule Air Force Base in Greenland.</p> <p>These Ultra High Frequency Early Warning Radars (EWR) have been upgraded to include missile defense functionality. This upgrade expands the capabilities of the U.S. to include defense against limited long-range threats.</p> <p>The Clear EWR, located at Clear Air Force Station, AK, and the Cape Cod EWR, Located at Cape Cod Air Force Station, MA are also being upgraded to include missile defense functionality. Upgrade activities began in FY 2012 and are expected to be completed in FY 2017. The addition of the Clear UEWR and Cape Cod UEWRs the BMDS sensor architecture will improve BMDS sensor coverage and provide new engagement options against long-range missile threats.</p> <p>The BMD Vision Study, conducted by MDA with USSTRATCOM, identified the need to enhance the discrimination capabilities of our sensors and weapon systems. There is an Enhanced Discrimination and sensors program that will improve discrimination capabilities of the AN/TPY-02, Cobra Dane, Sea Based X-Band, and the UEWR radars against the long range missile threat.</p> <p>The BMDS Sensors Program also contributes to the testing and proving of the U.S. missile defense systems through the following activities:</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency	Date: February 2015
---	----------------------------

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603884C <i>I Ballistic Missile Defense Sensors</i>
---	--

-Modeling and simulation (M&S) efforts to include: enhanced sensor models, development of Radio Frequency scene generators, integration of digital simulations into the BMDS M&S architecture, and Verification, Validation, and Accreditation of radar models.

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

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	366.590	392.893	462.030	-	462.030
Current President's Budget	340.391	270.901	233.588	-	233.588
Total Adjustments	-26.199	-121.992	-228.442	-	-228.442
• Congressional General Reductions	-	-0.183			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-121.809			
• Reprogrammings	-20.000	-			
• SBIR/STTR Transfer	-6.199	-			
• Other Adjustment	-	-	-228.442	-	-228.442

Change Summary Explanation

FY 2015 changes reflect Public Law 113-235, FY2015 Omnibus; Consolidated and Further Continuing Appropriations Act.

The FY 2016 decrease reflects the realignment of funds from the Long Range Discrimination Radar (MD96) Budget Project to the Long Range Discrimination Radar Program Element (0604873C) and the realignment of funds from the BMDS Radars Test (MT11) Budget Project to the BMD Sensor Test Program Element (0604879C). The decrease also reflects funds realigned to the Sea Based X-Band Radar Program Element (0603907C) for evolving requirements for maintaining readiness to support contingency operations.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD11: BMDS Radars	429.107	273.056	246.107	222.076	-	222.076	216.365	133.764	131.901	132.694	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

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.

FY 2016 decrease due to completion of Near-Term DIHD development and ramping down of development activities for the upgrade of Clear and Cape Cod Early Warning Radars.

A. Mission Description and Budget Item Justification

Activities in this project include:

- Development of future Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) and Upgraded Early Warning Radar (UEWR) capabilities
- Development of radar discrimination advanced algorithms for X-Band radars and selectable X-Band software for AN/TPY-2 radars to address evolving threats
- System engineering, software development, and testing support for X-Band, COBRA DANE, and UEWR sensors
- Modeling and Simulation (M&S) efforts to include: enhanced sensor models, development of Radio Frequency scene generators, integration of digital simulations into the Ballistic Missile Defense System (BMDS), M&S architecture, and Verification, Validation, and Accreditation of radar models
- Participation in Ballistic Missile Defense System (BMDS) element ground test campaigns

The Discrimination Improvements for Homeland Defense (DIHD) effort will develop and field integrated Element capabilities to improve BMD System ability to identify lethal and non-lethal objects. Sensors will update radar databases, mature advanced discrimination techniques, and conduct element and system level testing to support Near and Mid-term phases capability against the threat systems defined by MDA Engineering.

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

		FY 2014	FY 2015	FY 2016
Title: Basic Development Program		45.291	46.380	43.014
Articles:		-	-	-
Description: N/A				
FY 2014 Accomplishments:				
-Conducted Materiel Release closure plan for Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2), including a Forward Based Mode Materiel Release Reliability, Availability, and Maintainability Get Well Plan to promote reliability growth in the suite of AN/TPY-2 radars via incorporation of retrofit change notice				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015
<ul style="list-style-type: none"> -Conducted Phase II, Debris Mitigation Development activities required to provide enhanced Warfighter capability in complex tactical environments -Continued to conduct Information Assurance (IA) certification and accreditation of all Sensors systems -Supported Bi-Annual IA testing for vulnerabilities and Third Party IA assessment of the systems -Performed Upgrade Early Warning Radar (UEWR) development associated with the reinforcement of the surveillance fence that results in the increased probability of acquisition <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> -Complete ground test and flight test for Phase Adaptive Approach (PAA) Phase II and conduct Material Release Analysis for software delivery -Complete Material Release Closure Plan for Forward Base Mode (FBM) and continue to conduct Material Release Closure Plan for Terminal Mode (TM) for Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) including Reliability, Availability, and Maintainability Get Well Plan to promote reliability growth in the suite of AN/TPY-2 radars via incorporation of retrofit change notice -Conduct Phase Adaptive Approach (PAA) Phase III: Objective Debris Mitigation Development and THAAD Threat Development required to provide enhanced capability to the Warfighter in a tactical environment -Continue performing Upgrade Early Warning Radar (UEWR) development such as the reinforcement of the surveillance fence that results in the increased probability of acquisition and the reduction/correction of the radar angle bias that results in increased accuracy of threat tracking -Continue to conduct Information Assurance (IA) certification and accreditation of all Sensors systems -Continue to support Bi-Annual IA testing for vulnerabilities and Third Party IA assessment of the systems <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Complete ground test and flight test for Phase Adaptive Approach (PAA) Phase II and conduct Materiel Release Analysis for software delivery -Complete Material Release Closure Plan for Forward Base Mode (FBM) and continue to conduct Material Release Closure Plan for Terminal Mode (TM) for Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2.) Materiel Release Closure Plan includes Reliability, Availability, and Maintainability Program to promote reliability growth in the suite of AN/TPY-2 radars via product improvements and Electronic Equipment Unit (EEU) depot upgrade for computer processing improvements -Continue software development of a new discrimination architecture that supports the addition of new algorithms that will support EPAA Phase III and THAAD Threat Development required to provide enhanced capability to the Warfighter in a tactical environment -Optimize software to take advantage of new increased processing capability 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015
<ul style="list-style-type: none"> -Continue performing Upgrade Early Warning Radar (UEWR) development such as the reinforcement of the surveillance fence that results in the increased probability of acquisition and the reduction/correction of the radar angle bias that results in increased accuracy of threat tracking -Continue to conduct Information Assurance (IA) certification and accreditation of all Sensors systems -Continue to support Bi-Annual IA testing for vulnerabilities and Third Party IA assessment of the systems 			
Title: BMDS Radars Modeling & Simulation (M&S) Description: N/A FY 2014 Accomplishments: <ul style="list-style-type: none"> -Continued to support technical assessments and performance assessments, using OSM and other models/tools, as appropriate -Continued to develop, maintain, verify, validate, and certify digital and Hardware in the Loop (HWIL) representations of the tactical versions of Army Navy/Transportable Radar Surveillance and Control (AN/TPY2)(CX1.2), Sea Based X-Band Radar (SBX) 3.21, Upgraded Early Warning Radar (UEWR) 8.0.3, and Cobra Dane Upgrade(CDU) 2.6.97 and updated Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) -Began development of replacement RF scene generator for AN/TPY-2 and new RF scene generators for Sea Based X-Band Radar (SBX), and Upgraded Early Warning Radar (UEWR) -Began updates to the Objective Stimulation Framework (OSF)-E interfaces allowing for future events utilizing the OSF-E test architecture -Continued to support Warfighter training games and exercise events -Executed FY 2014 element-level ground test campaign to support anchoring M&S for verification and validation and/or for various Critical Engagement Conditions (CEC) and Empirical Measurement Events FY 2015 Plans: <ul style="list-style-type: none"> -Continue to maintain digital and Hardware in the Loop (HWIL) representations of the tactical versions of Army Navy/Transportable Radar Surveillance and Control (AN/TPY2)(CX1.2/2.0), Sea Based X-Band Radar (SBX) 2.3, Upgraded Early Warning Radar (UEWR) 11-1, and Cobra Dane Upgrade(CDU) 2.6.9 and Critical Engagement Condition (CEC) and Empirical Measurement Event (EME) -Continue updates to the Objective Stimulation Framework (OSF)-E interfaces allowing for future events utilizing the OSF-E test architecture -Continue to support Warfighter games and exercises -Execute FY 2015 element-level ground test campaign to support anchoring M&S for various Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) -Support technical assessments and performance assessments, using OSM and other models/tools, as appropriate 		28.807 -	31.765 -
		37.343 -	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015
<p>-Continue full development of replacement RF scene generator for AN/TPY-2, Sea Based X-Band Radar (SBX), Upgraded Early Warning Radar (UEWR), and Cobra Dane</p> <p>FY 2016 Plans:</p> <p>-Continue to maintain digital and Hardware in the Loop (HWIL) representations of the tactical versions of Army Navy/ Transportable Radar Surveillance and Control (AN/TPY2)(CX 2.x), Sea Based X-Band Radar (SBX) 3.x, Upgraded Early Warning Radar (UEWR) 11-1, and Cobra Dane Upgrade(CDU) 2.6.9</p> <p>-Continue updates to the Objective Simulation Framework (OSF)-E interfaces allowing for future events utilizing the OSF-E test architecture</p> <p>-Continue to support Warfighter games and exercises</p> <p>-Execute FY 2016 element-level ground test campaign to support anchoring M&S for various Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME)</p> <p>-Support technical assessments and performance assessments, using OSM and other models/tools, as appropriate</p> <p>-Continue full development of replacement RF scene generator for AN/TPY-2, Sea Based X-Band Radar (SBX), Upgraded Early Warning Radar (UEWR), and Cobra Dane</p> <p>-Increase due to FY 2016 need to maintain Hardware in the Loop (HWIL) RF scene generator while simultaneously developing a replacement product</p>			
<p>Title: Capability Development Program</p> <p align="right">Articles:</p> <p>Description: N/A</p> <p>FY 2014 Accomplishments:</p> <p>-Provided engineering support to enable compliance with Ballistic Missile Defense System (BMDS) Spec Threat Capabilities</p> <p>-Continued Debris Mitigation Updates to enhance AN/TPY-2 raid handling capability</p> <p>-Completed software upgrades required to facilitate future Raid and Debris Mitigation capability development</p> <p>-Completed Continued PAA Phase 2 capability to address advanced D2 threats</p> <p>-Developed AN/TPY-2 capability to support Space Situational Awareness</p> <p>-Developed AN/TPY-2 capability and interface upgrades to support THAAD Debris Mitigation Phase 2</p> <p>-Developed AN/TPY-2 update to support THAAD Packaged Threat Product</p> <p>-Continued to perform object classification performance updates to Cobra Dane and UEWR radars</p> <p>-Accelerated improvements to X-Band Radar simulations for discrimination performance testing</p> <p>-Initiated Long Range Discrimination Radar (LRDR) site planning, studies, evaluations, acquisition planning, and environmental analysis to help determine location and scope of discrimination to be performed</p>		64.791 -	69.103 -
		53.286 -	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015
<ul style="list-style-type: none"> -Matured planned discrimination technology candidates to support the Discrimination Improvements for Homeland Defense (DIHD) Mid-term phase through analysis and prototyping -Developed DIHD Near-term capability of sensor database and software improvements for the Sea-Based X-band Radar, AN/TPY-2 forward-based radar, and Cobra Dane. Began developing DIHD Mid-term capability of sensor database improvements for the UEWRs -Completed development of ground test campaign requirements for DIHD Near-term improvements <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> -Upgrade the entire AN/TPY-2 fleet (Forward-based and THAAD Modes) with a common secure hardware and software configuration -Continue providing engineering support to enable compliance with BMDS Spec Threat Capabilities -Initiate X86 Performance Optimization & Requirements to enhance and increase X86 processing speed. -Initiate PAA Phase 3 capability to address advanced D3 threats. -Test and conduct Material Release Analysis on PAA Phase 2 Capability to address D2 threats. -Conduct software development to support THAAD Launch on Remote, Debris Mitigation Updates, and Threat Updates. -Transition Debris Mitigation to Objective Debris Mitigation Phase II. -Continue to perform object classification performance updates to Cobra Dane and UEWR radars. -Continue development of new discrimination capabilities for X-Band Radar. -Complete DIHD Near-term capability development and Element level testing of sensor database improvements for the Sea-Based X-Band Radar, AN/TPY-2 forward based radar, and Cobra Dane. -Complete integration phase of DIHD Near-term ground testing via GTI-06. -Conduct data collection and analysis for final assessment of discrimination technology candidates planned for DIHD Mid-term improvements. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Decrease due to completion of Near-term DIHD development for Cobra Dane, Forward Based AN/TPY-2 and Sea Based X-Band Radars -Upgrade the entire AN/TPY-2 fleet (Forward-based and THAAD Modes) with a common secure hardware and software configuration -Continue providing engineering support to enable compliance with BMDS Spec Threat Capabilities -Continue X86 Performance Optimization & Requirements to enhance and increase X86 processing speed -Continue PAA Phase III capability development to address the advanced threats prevalent in 2016 and beyond -Continue testing and Materiel Release Analysis on PAA Phase 2 Capability to address the advanced threats prevalent in 2016 and beyond -Continue software development to support THAAD Launch on Remote, Debris Mitigation Updates, and Threat Updates 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors	Project (Number/Name) MD11 / BMDS Radars		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015	FY 2016
<div>-Complete transition of Debris Mitigation to Objective Debris Mitigation Phase II</div> <div>-Complete capability fielding of Sea Based X-Band Radar and AN/TPY-2 Forward Based discrimination for Homeland Defense Near-term DIHD</div> <div>-Continue development of new Mid-Term DIHD capabilities for X-Band radars</div> <div>-Continue to perform object classification performance updates to Cobra Dane and UEWR radars</div> <div>-Participate in Far-term DIHD threat models specification.</div> <div>-Develop model of Far-term technologies in support of the Far-term DIHD program.</div> <div>-Participate in planning and conduct technology trades and analysis to refine capabilities to mitigate the Far-term DIHD threats.</div>				
<div>Title: Sensors Directorate Operations</div> <div>Articles:</div> <div>Description: N/A</div> <div>FY 2014 Accomplishments:</div> <div>-This effort continued to provide operations support</div> <div>-Procured Information Technology (IT) equipment, software and services to implement Department of Defense (DoD) mandated IT projects</div> <div>FY 2015 Plans:</div> <div>-Continue to provide operations support</div> <div>FY 2016 Plans:</div> <div>-Increase due to procurement of Information Technology (IT) equipment, software and services to implement Department of Defense (DoD) mandated IT projects in FY 2016</div> <div>-Continue to provide operations support</div>		68.101 -	60.283 -	66.883 -
<div>Title: Upgrade Clear Early Warning Radar</div> <div>Articles:</div> <div>Description: N/A</div> <div>FY 2014 Accomplishments:</div> <div>-Continued upgrade Clear Early Warning Radar with option to upgrade Cape Cod Early Warning Radar to include but not limited to:</div> <div>-Continued purchasing and manufacturing of Upgraded Early Warning Radar (UEWR) Receiver/Exciter</div> <div>-Continued purchase of non-original manufacturer equipment</div> <div>-Continued adaptation of hardware and software to UEWR infrastructure</div>		41.433 -	38.576 -	21.550 -

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors	Project (Number/Name) MD11 / BMDS Radars		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015	FY 2016
<div>-Continued to support Ballistic Missile Defense Systems communications and architecture work</div> <div>-Continued facility design and work</div> <div>-Continued Upgraded Early Warning Radar (UEWR) Huntsville System Test Lab</div> <div>FY 2015 Plans:</div> <div>-Continue upgrade of Clear and Cape Cod Early Warning Radars to include but not limited to:</div> <div>-Purchasing and manufacturing of Upgraded Early Warning Radar (UEWR) Receiver/Exciter</div> <div>-Purchase of non-original manufacturer equipment</div> <div>-Continue adaptation of hardware and software to UEWR infrastructure</div> <div>-Continue to support Ballistic Missile Defense Systems communications and architecture work</div> <div>-Continue facility design and work</div> <div>-Continue Upgraded Early Warning Radar Huntsville System Test Lab</div> <div>FY 2016 Plans:</div> <div>-Decrease due to ramping down of development activities in preparation of deployments</div> <div>-Continue upgrade of Clear and Cape Cod Early Warning Radars to include but not limited to:</div> <div>-Continue manufacturing of Upgraded Early Warning Radar (UEWR) Receiver/Exciter</div> <div>-Continue purchase of non-original manufacturer equipment</div> <div>-Continue adaptation of hardware and software to UEWR infrastructure</div> <div>-Continue to support Ballistic Missile Defense Systems communications and architecture work</div> <div>-Continue facility design and work and installation/test at Cape Cod and Clear sites</div> <div>-Continue Upgraded Early Warning Radar Huntsville System Test Lab</div> <div>-Prepare for removal of legacy equipment at Clear site</div>				
<div>Title: AN/TPY-2 Radar Deployment / Site Activation</div> <div>Articles:</div> <div>Description: N/A</div> <div>FY 2014 Accomplishments:</div> <div>-Deployed an AN/TPY-2 Radar with personnel and ancillary equipment to U.S. Pacific Command (PACOM)</div> <div>-Completed site survey, prepared and established site for AN/TPY-2 Radar operations</div> <div>-Completed pre-deployment tasks needed to ship radar and communications equipment</div> <div>-Completed deployment and installation activities: radar installation, power installation, fuel tank installation</div> <div>-Completed Contractor Logistic Support (CLS) training of operators and maintainers</div> <div>FY 2015 Plans:</div>		24.633 -	- -	- -

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2014	FY 2015	FY 2016
-No planned deployments in FY 2015												
FY 2016 Plans:												
-No planned deployments in FY 2016												
Accomplishments/Planned Programs Subtotals										273.056	246.107	222.076
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
• 0603179C: Advanced C4ISR	35.421	13.284	9.876	-	9.876	3.723	-	-	-	-	62.304	
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	390.207	428.277	450.085	-	450.085	461.759	423.843	442.926	460.112	Continuing	Continuing	
• 0603898C: Ballistic Missile Defense Joint Warfighter Support	41.051	46.387	49.570	-	49.570	50.533	51.363	52.217	54.247	Continuing	Continuing	
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	50.271	58.503	49.211	-	49.211	58.074	53.655	55.194	57.162	Continuing	Continuing	
• 0603907C: Sea Based X-Band Radar (SBX)	70.336	64.409	72.866	-	72.866	71.267	75.760	72.319	87.058	Continuing	Continuing	
• 0603914C: Ballistic Missile Defense Test	342.695	366.302	274.323	-	274.323	298.390	345.333	330.404	350.747	Continuing	Continuing	
• 0604873C: Long Range Discrimination Radar (LRDR)	-	50.500	137.564	-	137.564	154.327	147.562	132.905	77.679	Continuing	Continuing	
• 0604879C: Ballistic Missile Defense Sensor Test	-	71.309	86.764	-	86.764	104.271	93.310	102.736	106.377	Continuing	Continuing	
• 13999903: Planning and Design, Defense Wide	10.891	38.704	-	-	-	8.233	8.397	8.525	8.822	Continuing	Continuing	
• D1400634: BMDS Upgrade Early Warning Radar (UEWR), Clear AFS, AK	17.204	-	-	-	-	-	-	-	-	-	17.204	
Remarks												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>
<p><u>D. Acquisition Strategy</u></p> <p>The Radar Sustainment Contract (RSC) was awarded in 2012 to sustain all the X-Band Radars including the Army Navy/Transportable Radar Surveillance (AN/TPY-2); the Sea Based X-Band (SBX) Radar; and the Ground Based Radar Prototype (GBR-P). The contract provides sustainment of previously developed X-Band radar products, such as: 1) Software -maintenance of existing software developed to support the X-Band Radars; 2) Models & Simulation; (a) development, maintenance, and verification of high fidelity models, (b) support for war games and exercises, (c) support for performance assessment events; 3) Engineering Services -engineering support for deployed radars to facilitate maintenance efforts which may include but are not limited to hardware obsolescence studies, hardware redesign, technology insertion, and refurbishment efforts; 4) BMDS Test Planning, Execution, and Analysis -planning, execution and analysis of BMDS test requirements for previously developed hardware and software in accordance with the MDA Integrated Master Test Plan (IMTP). The contract is an Indefinite Delivery/Indefinite Quantity (IDIQ) task order contract.</p> <p>The Missile Defense Agency (MDA) conducted a full and open competition for the Clear Early Warning Radar (EWR) Upgrade. MDA issued a Request for Proposal (RFP) on this effort in 2nd quarter FY 2012 with award in 4th quarter FY 2012. The Cape Cod EWR upgrade option under this contract was awarded in 1st quarter FY 2013.</p> <p>The Ballistic Missile Defense System (BMDS) Communications System Complex-Transportable (BCSC-T) Program Plan addresses the design, development, acquisition, testing, integration, activation, and fielding of the BCSC-T. The overall executing agent is the Program Manager - Communications and Transmission Systems (PMDCATS). Lockheed Martin Mission Systems (C2BMC prime contractor) via an Other Transaction Agreement provides on-site support.</p> <p><u>E. Performance Metrics</u></p> <p>N/A</p>		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Basic Development Program - Ground Based Radar Prototype (GBR-P) Caretaker	MIPR	SMDC : AL	0.000	3.700		2.068	Nov 2014	2.725	Nov 2015	-		2.725	Continuing	Continuing	Continuing
Basic Development Program - Information Assurance AN/TPY-2	SS/CPFF	Raytheon : MA	0.000	5.499		5.688	Nov 2014	5.332	Nov 2015	-		5.332	Continuing	Continuing	Continuing
Basic Development Program - Information Assurance SBX	SS/CPFF	Raytheon : MA	0.000	0.219		0.232	Nov 2014	0.215	Nov 2015	-		0.215	Continuing	Continuing	Continuing
Basic Development Program - Material Release Get Well Plan	SS/CPFF	Raytheon : MA	0.000	1.015		7.245	Nov 2014	6.892	Nov 2015	-		6.892	Continuing	Continuing	Continuing
Basic Development Program - Sys Integration & Tech Assessments	SS/CPFF	Raytheon : MA/AL	0.000	5.758		6.984	Nov 2014	5.163	Nov 2015	-		5.163	Continuing	Continuing	Continuing
Basic Development Program - X-Band Software Enhancements/ Development	SS/CPFF	Raytheon : AL	0.000	29.100		24.163	Nov 2014	22.687	Nov 2015	-		22.687	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - M&S Development	SS/CPFF	Raytheon, Northrup Grumman : MA, CO	48.273	19.701		25.117	Nov 2014	25.780	Nov 2015	-		25.780	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - VV&A of Models	MIPR	AMRDEC : AL	21.691	7.668		4.712	Nov 2014	9.640	Nov 2015	-		9.640	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - Warfighter Exercises	SS/CPFF	Raytheon : MA	3.056	1.438		1.936	Nov 2014	1.923	Nov 2015	-		1.923	Continuing	Continuing	Continuing
Capability Development Program - Advanced Technology Discrimination	SS/CPAF	Raytheon : MA	0.000	-		-		7.322	Nov 2015	-		7.322	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				Project (Number/Name) MD11 / <i>BMDS Radars</i>					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Capability Development Program - Enhanced Discrimination	C/CPAF	USAF, Raytheon : Hanscom AFB MA	0.000	39.984		21.927	Nov 2014	15.905	Nov 2015	-		15.905	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Discrimination Studies and Analysis Support	MIPR	SED/AMRDEC, MIT/LL/JHU/APL : AL/MA/VA	0.000	7.204		-		-		-		-	-	7.204	-
Capability Development Program - Program AN/TPY-2 Capability Development	SS/CPAF	Raytheon : MA	0.000	13.833		35.176	Nov 2014	30.059	Nov 2015	-		30.059	Continuing	Continuing	Continuing
Capability Development Program - UEWR Capability Development	TBD	USAF : Hanscom AFB MA	0.000	3.770		12.000	Nov 2014	-		-		-	Continuing	Continuing	Continuing
Sensors Directorate Operations - Army Hybrid Program Office	MIPR	SMDC : AL	0.000	1.725		1.030	Nov 2014	1.987	Nov 2015	-		1.987	Continuing	Continuing	Continuing
Sensors Directorate Operations - Govt Salaries, Travel, Training (MDA Sensors)	MIPR	MDA : AL, VA, MA	67.963	20.762		21.876	Nov 2014	22.203	Nov 2015	-		22.203	Continuing	Continuing	Continuing
Sensors Directorate Operations - MiDAESS, FFRDC/UARC	SS/CPAF	CSS, APL, LL, OGA : AL/MA/VA/MD	142.081	34.707		29.097	Nov 2014	34.522	Nov 2015	-		34.522	Continuing	Continuing	Continuing
Sensors Directorate Operations - Network and Infrastructure Services	SS/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	15.471	8.234		-		5.595	Oct 2015	-		5.595	Continuing	Continuing	Continuing
Sensors Directorate Operations - Other Govt Agencies	MIPR	SMDC/AL, Hanscom AFB : MA	22.225	2.673		8.280	Nov 2014	2.576	Nov 2015	-		2.576	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - BCN Upgrades	MIPR	MDA C2BMC / DISA : MA, AK	15.690	1.173		0.528	Nov 2014	0.489	Nov 2015	-		0.489	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD11 / BMDS Radars					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Upgrade Clear Early Warning Radar - Facilities Site Activation/Admin Comms	MIPR	MDA C2BMC : MA, AK	2.812	0.636		1.794	Nov 2014	1.775	Nov 2015	-		1.775	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - GMD Fire Control Integration	SS/CPAF	Boeing/AK/AL, Raytheon : MA	2.775	2.364		0.625	Sep 2015	0.588	Nov 2015	-		0.588	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - HSV UEWB Test Lab Upgrades & Clear Test Lab Representations	SS/CPAF	Raytheon : MA/AL	0.000	4.122		2.763	Sep 2015	2.602	Nov 2015	-		2.602	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - Program Office - OGA	MIPR	USAF : Hanscom AFB, MA	1.755	-		-		-		-		-	-	1.755	-
Upgrade Clear Early Warning Radar - Radar Upgrade -- Prime Contractor	C/CPAF	Raytheon : MA	33.456	33.138		32.866	Nov 2014	16.096	Nov 2015	-		16.096	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - SPA Upgrade & Processor Rehost	MIPR	USAF : Hanscom AFB, MA	1.848	-		-		-		-		-	-	1.848	-
AN/TPY-2 Radar Deployment / Site Activation - Deployment Primary Facilities	MIPR	MDA Deployment : OCONUS, AL	8.070	-		-		-		-		-	-	8.070	-
AN/TPY-2 Radar Deployment / Site Activation - Site Activation & Deployment	SS/CPAF	Raytheon, Global Deployment : OCONUS, AL	41.941	24.633		-		-		-		-	-	66.574	-
Subtotal			429.107	273.056		246.107		222.076		-		222.076	-	-	-
Remarks															
Note: Project Oak is described at a higher level of classification.															

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency													Date: February 2015		
Appropriation/Budget Activity 0400 / 4							R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				Project (Number/Name) MD11 / <i>BMDs Radars</i>				

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Note: Clear Early Warning Upgrade Program includes upgrade of the Cape Cod EWR.															

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
 Operations and sustainment of Upgraded Early Warning Radar (UEWR), COBRA DANE (CD), and Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) Radars Contract Logistics Support (CLS) are Operations and Maintenance (O&M) Defense-Wide appropriations and are described in the Missile Defense Agency (MDA) O-Documents.

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
 N/A

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
 N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency											Date: February 2015				
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors					Project (Number/Name) MD11 / BMDS Radars					
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			429.107	273.056		246.107		222.076		-		222.076	-	-	-

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.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity

0400 / 4

R-1 Program Element (Number/Name)

PE 0603884C / Ballistic Missile Defense
Sensors

Project (Number/Name)

MD11 / BMDS Radars

Significant Event Complete ▲
Significant Event Planned △

Milestone Decision Complete ★
Milestone Decision Planned ☆

Element Test Complete ◆
Element Test Planned ◇

System Level Test Complete ●
System Level Test Planned ○

Complete Activity ✦
Planned Activity ✧

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIMBLE TITAN Event 1 Wargame Event - 2014	▲																											
VIGILANT SHIELD 14 Exercise Planning - 2014	▲																											
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 14- 2014	▲																											
GLOBAL LIGHTNING 14 Exercise Event - 2014	▲																											
AIR and MISSILE DEFENSE Exercise USCENTCOM Event 1 - 2014	▲																											
RAMSTEIN ALLIANCE EXERCISE - 2014	▲																											
KEY RESOLVE Planning Exercise - 2014	▲																											
GLOBAL THUNDER 15 Exercise Planning - 2014	▲																											
MISSILE DEFENSE CONFERENCE Event - 2014	▲																											
BMDS WARGAME 2015 Event - 2014		▲																										
KEEN EDGE 14 Exercise Event - 2014		▲																										
FLEET SYNTHETIC TRAINING Exercise - 2014		▲																										
NIMBLE FIRE Exercise Event 2 - 2014		▲																										
NIMBLE FIRE Exercise Event 3 - 2014		▲																										
NIMBLE TITAN Event 2 Wargame Event - 2014			▲																									
JUNIPER COBRA 14 - 2014				▲																								
GLOBAL THUNDER 15 Exercise Event - 2015					△																							
VIGILANT SHIELD 15 Exercise Event - 2015					△																							
ULCHI FREEDOM GUARD 15 Event - 2015					△																							
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 15 - 2015					△																							
JOINT AIR and MISSILE DEFENSE USCENTCOM Exercise Event 1 - 2015					△																							
AIR and MISSILE DEFENSE 15 USCENTCOM Exercise 1 - 2015					△																							
MISSILE DEFENSE CONFERENCE Wargame Event - 2015					△																							
EPOCH PLANEX 15 Exercise - 2015					△																							
RAMSTEIN ALLIANCE EXERCISE - 2015					△																							
ARABIAN GULF SHIELD 15 Exercise Event 1 - 2015					△																							

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity



0400 / 4

R-1 Program Element (Number/Name)

PE 0603884C / Ballistic Missile Defense
Sensors

Project (Number/Name)



MD11 / BMDS Radars

Significant Event Complete 
Significant Event Planned 

Milestone Decision Complete 
Milestone Decision Planned 

Element Test Complete 
Element Test Planned 

System Level Test Complete 
System Level Test Planned 

Complete Activity 
Planned Activity 

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIMBLE FIRE 15 Wargame Event 1 - 2015																												
AUSTERE CHALLENGE 15 Exercise - 2015																												
BMDS WARGAME 2015 Event - 2015																												
KEEN EDGE 15 Exercise Event - 2015																												
EAGLE RESOLVE 15 Exercise Event - 2015																												
JOINT AIR and MISSILE DEFENSE USCENCOM Exercise Event 2 - 2015																												
AIR and MISSILE DEFENSE 15 USCENCOM Exercise 2 - 2015																												
KEEN SWORD 15 Exercise - 2015																												
ARABIAN GULF SHIELD 15 Exercise Event 2 - 2015																												
NIMBLE FIRE 15 Wargame Event 2 - 2015																												
GLOBAL LIGHTNING 15 Exercise Event - 2015																												
JOINT AIR and MISSILE DEFENSE USCENCOM Exercise Event 3 - 2015																												
JOINT AIR and MISSILE DEFENSE USCENCOM Exercise Event 4 - 2015																												
GLOBAL DEFENDER Exercise 06 Part 2																												
GDEX-06 Part 2 (Ground Test) (Warfighter Exercise)																												
KEY RESOLVE 15 Exercise - 2015																												
FLEET SYNTHETIC TRAINING Exercise - 2015																												
ARABIAN GULF SHIELD 15 Exercise Event 3 - 2015																												
NIMBLE FIRE 15 Wargame Event 3 - 2015																												
JOINT AIR and MISSILE DEFENSE CENTCOM Exercise Event 5 - 2015																												
VIGILANT SHIELD 16 Exercise Event - 2016																												
AIR and MISSILE DEFENSE Exercise Series - 2016																												
GLOBAL THUNDER 16 Exercise Event - 2016																												
EPOCH PLANEX Exercise - 17																												
ARABIAN GULF SHIELD 16 Exercise Event 1 - 2016																												
SNG-U-D-1																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity

0400 / 4

R-1 Program Element (Number/Name)

PE 0603884C / Ballistic Missile Defense
Sensors

Project (Number/Name)

MD11 / BMDS Radars

Significant Event Complete ▲
Significant Event Planned △

Milestone Decision Complete ★
Milestone Decision Planned ☆

Element Test Complete ◆
Element Test Planned ◇

System Level Test Complete ●
System Level Test Planned ○

Complete Activity ✦
Planned Activity ✧

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SNG-A-H-1									✦	✦	✦																	
SNG-U-H-1									✦	✦	✦																	
KEY RESOLVE 16 Exercise - 2016											△																	
FLEET SYNTHETIC TRAINING Exercise - 2016											△																	
ARABIAN GULF SHIELD 16 Exercise Event 2-2016											△																	
GLOBAL LIGHTNING 16 Exercise Event - 2016											✦	✦																
JUNIPER COBRA 16 Exercise - 2016											✦	✦																
TERMINAL FURY 16 Exercise - 2016											✦	✦																
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 16 - 2016												△																
HUNTSVILLE WARGAMES Event - 16												△																
RONALD REAGAN FORUM Exercise - 16												△																
ULCHI FREEDOM GUARD 16 Event - 2016												✦	✦															
SNG-C-D-1												✦	✦															
BMDS Wargame 2017 Event - 2017												✦	✦	✦	✦													
EAGLE RESOLVE 16 Exercise Event - 2016													△															
ARABIAN GULF SHIELD 16 Exercise Event 3 - 2016													△															
MISSILE DEFENSE CONFERENCE Wargame Event - 2016													✦	✦														
RAMSTEIN ALLIANCE Exercise - 2016													✦	✦														
SNG-S-H-1													✦	✦	✦													
NIMBLE TITAN 18 Wargame Year 1 - 18													✦	✦	✦	✦												
VIGILANT SHIELD 17 Exercise Event - 2017															△													
AIR and MISSILE DEFENSE Exercise Series - 2017															△													
EPOCH PLANEX Exercise - 18															△													
ARABIAN GULF SHIELD 17 Exercise Event 1 - 2017															△													
GLOBAL RESPONSE Exercise Event - 2016															△													
GLOBAL THUNDER 17 Exercise Event - 2017															△													
SNG-A-D-2														✦	✦													
SNG-C-H-1															✦	✦	✦											
KEY RESOLVE 17 Exercise - 2017																△												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity



0400 / 4

R-1 Program Element (Number/Name)

PE 0603884C / Ballistic Missile Defense
Sensors

Project (Number/Name)



MD11 / BMDS Radars

Significant Event Complete 
Significant Event Planned 

Milestone Decision Complete 
Milestone Decision Planned 

Element Test Complete 
Element Test Planned 

System Level Test Complete 
System Level Test Planned 

Complete Activity 
Planned Activity 

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FLEET SYNTHETIC TRAINING Exercise - 2017																												
ARABIAN GULF SHIELD 17 Exercise Event 2 - 2017																												
GLOBAL LIGHTNING 17 Exercise Event - 2017																												
TERMINAL FURY 17 Exercise - 2017																												
AUSTERE CHALLENGE 17 Exercise - 2017																												
SNG-S-D-2																												
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 17 - 2017																												
HUNTSVILLE WARGAMES Event - 17																												
RONALD REAGAN FORUM Exercise - 17																												
ULCHI FREEDOM GUARDIAN 17 Event - 2017																												
SNG-U-D-2																												
KEEN SWORD 17 Exercise - 2017																												
DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS Event - 17																												
ARABIAN GULF SHIELD 17 Exercise Event 3 - 2017																												
MISSILE DEFENSE CONFERENCE Wargame Event - 2017																												
RAMSTEIN ALLIANCE Exercise - 2017																												
KEEN EDGE 18 Exercise Event - 2018																												
NIMBLE TITAN 18 Wargame Event 2 - 2018																												
AIR and MISSILE DEFENSE Exercise Series - 2018																												
GLOBAL THUNDER 18 Exercise Event - 2018																												
VIGILANT SHIELD 18 Exercise Event - 2018																												
EPOCH PLANEX Exercise - 19																												
ARABIAN GULF SHIELD 18 Exercise Event 1 - 2018																												
SNG-U-H-2																												
SNG-C-D-2																												
EAGLE RESOLVE 18 Exercise Event - 2018																												
KEY RESOLVE 18 Exercise - 2018																												
FLEET SYNTHETIC TRAINING Exercise - 2018																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity



0400 / 4

R-1 Program Element (Number/Name)

PE 0603884C / Ballistic Missile Defense
Sensors

Project (Number/Name)



MD11 / BMDS Radars

Significant Event Complete 
Significant Event Planned 

Milestone Decision Complete 
Milestone Decision Planned 

Element Test Complete 
Element Test Planned 

System Level Test Complete 
System Level Test Planned 

Complete Activity 
Planned Activity 

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ARABIAN GULF SHIELD 18 Exercise Event 2 - 2018																												
GLOBAL RESPONSE (GREx) Exercise Event - 2018																												
GLOBAL LIGHTNING 18 Exercise Event - 2018																												
JUNIPER COBRA 18 Exercise - 2018																												
TERMINAL FURY 18 Exercise - 2018																												
SNG-A-H-2																												
SNG-C-H-2																												
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 18 - 2018																												
HUNTSVILLE WARGAMES Event - 18																												
RONALD REAGAN FORUM Exercise - 18																												
ULCHI FREEDOM GUARDIAN 18 Event - 2018																												
SNG-S-H-2																												
DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS Event - 18																												
ARABIAN GULF SHIELD 18 Exercise Event 3 - 2018																												
MISSILE DEFENSE CONFERENCE Wargame Event - 2018																												
RAMSTEIN ALLIANCE Exercise - 2018																												
BMDS WARGAME 2019 Event - 2019																												
NIMBLE TITAN 20 Wargame Event 1 - 2020																												
AIR and MISSILE DEFENSE Exercise Series- 2019																												
GLOBAL THUNDER 19 Exercise Event - 2019																												
VIGILANT SHIELD 19 Exercise Event - 2019																												
EPOCH PLANEX Exercise - 20																												
ARABIAN GULF SHIELD 19 Exercise Event 1 - 2019																												
EPOCH PLANEX Exercise - 21																												
KEY RESOLVE 19 Exercise - 2019																												
FLEET SYNTHETIC TRAINING Exercise - 2019																												
ARABIAN GULF SHIELD 19 Exercise Event 2 - 2019																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity



0400 / 4

R-1 Program Element (Number/Name)



PE 0603884C / Ballistic Missile Defense
Sensors



Project (Number/Name)



MD11 / BMDS Radars

Significant Event Complete 
Significant Event Planned 

Milestone Decision Complete 
Milestone Decision Planned 

Element Test Complete 
Element Test Planned 











System Level Test Complete 
System Level Test Planned 

Complete Activity 
Planned Activity 

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GLOBAL LIGHTNING 19 Exercise Event - 2019																												
TERMINAL FURY 19 Exercise - 2019																												
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 19 - 2019																												
HUNTSVILLE WARGAMES Event - 19																												
RONALD REAGAN FORUM Exercise - 19																												
ULCHI FREEDOM GUARD 19 Event - 2019																												
KEEN SWORD 19 Exercise - 2019																												
KEEN EDGE 20 Exercise Event - 2020																												
EAGLE RESOLVE 19 Exercise Event - 2019																												
ARABIAN GULF SHIELD 19 Exercise Event 3 - 2019																												
MISSILE DEFENSE CONFERENCE Wargame Event - 2019																												
RAMSTEIN ALLIANCE Exercise - 2019																												
NIMBLE TITAN 20 Wargame Event 2- 2020																												
AIR and MISSILE DEFENSE Exercise Series - 2020																												
GLOBAL THUNDER 20 Exercise Event - 2020																												
VIGILANT SHIELD 20 Exercise Event - 2020																												
ARABIAN GULF SHIELD 20 Exercise Event 1 - 2020																												
KEY RESOLVE 20 Exercise - 2020																												
FLEET SYNTHETIC TRAINING Exercise - 2020																												
ARABIAN GULF SHIELD 20 Exercise Event 2 - 2020																												
GLOBAL RESPONSE Exercise Event - 2020																												
GLOBAL LIGHTNING 20 Exercise Event - 2020																												
TERMINAL FURY 20 Exercise - 2020																												
EAGLE RESOLVE 21 Exercise Event - 2020																												
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 20- 2020																												
JUNIPER COBRA 20 Exercise - 2020																												
HUNTSVILLE WARGAMES Event - 20																												
RONALD REAGAN FORUM Exercise - 20																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	

Significant Event Complete 
 Milestone Decision Complete 
 Element Test Complete 
 System Level Test Complete 
 Complete Activity 
 Significant Event Planned 
 Milestone Decision Planned 
 Element Test Planned 
 System Level Test Planned 
 Planned Activity 

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
KEEN SWORD 21 Exercise - 2021																												
ULCHI FREEDOM GUARDIAN 20 Event - 2020																												
ARABIAN GULF SHIELD 20 Exercise Event 3 - 2020																												
MISSILE DEFENSE CONFERENCE Wargame Event - 2020																												
RAMSTEIN ALLIANCE Exercise - 2020																												
BMDS WARGAME 2021 Event - 2021																												
NIMBLE TITAN 21 Wargame Event 1 - 2021																												
NIMBLE TITAN 21 Wargame Event 2 - 2021																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD11 / <i>BMDS Radars</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NIMBLE TITAN Event 1Wargame Event - 2014	1	2014	1	2014
VIGILANT SHIELD 14 Exercise Planning - 2014	1	2014	1	2014
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 14- 2014	1	2014	1	2014
GLOBAL LIGHTNING 14 Exercise Event - 2014	1	2014	1	2014
AIR and MISSILE DEFENSE Exercise USCENTCOM Event 1 - 2014	1	2014	1	2014
RAMSTEIN ALLIANCE EXERCISE - 2014	1	2014	1	2014
KEY RESOLVE Planning Exercise - 2014	1	2014	1	2014
GLOBAL THUNDER 15 Exercise Planning - 2014	1	2014	1	2014
MISSILE DEFENSE CONFERENCE Event - 2014	1	2014	1	2014
BMDS WARGAME 2015 Event - 2014	2	2014	2	2014
KEEN EDGE 14 Exercise Event - 2014	2	2014	2	2014
FLEET SYNTHETIC TRAINING Exercise - 2014	2	2014	2	2014
NIMBLE FIRE Exercise Event 2 - 2014	2	2014	2	2014
NIMBLE FIRE Exercise Event 3- 2014	2	2014	2	2014
NIMBLE TITAN Event 2 Wargame Event - 2014	3	2014	3	2014
JUNIPER COBRA 14 - 2014	4	2014	4	2014
GLOBAL THUNDER 15 Exercise Event - 2015	1	2015	1	2015
VIGILANT SHIELD 15 Exercise Event - 2015	1	2015	1	2015
ULCHI FREEDOM GUARD 15 Event - 2015	1	2015	1	2015
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 15 - 2015	1	2015	1	2015
JOINT AIR and MISSILE DEFENSE USCENTCOM Exercise Event 1 - 2015	1	2015	1	2015
AIR and MISSILE DEFENSE 15 USCENTCOM Exercise 1 - 2015	1	2015	1	2015

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors		Project (Number/Name) MD11 / BMDS Radars	
	Start		End	
Events	Quarter	Year	Quarter	Year
MISSILE DEFENSE CONFERENCE Wargame Event - 2015	1	2015	1	2015
EPOCH PLANEX 15 Exercise - 2015	1	2015	1	2015
RAMSTEIN ALLIANCE EXERCISE - 2015	1	2015	1	2015
ARABIAN GULF SHIELD 15 Exercise Event 1 - 2015	1	2015	1	2015
NIMBLE FIRE 15 Wargame Event 1 - 2015	1	2015	1	2015
AUSTERE CHALLENGE 15 Exercise - 2015	1	2015	4	2015
BMDS WARGAME 2015 Event - 2015	2	2015	2	2015
KEEN EDGE 15 Exercise Event - 2015	2	2015	2	2015
EAGLE RESOLVE 15 Exercise Event - 2015	2	2015	2	2015
JOINT AIR and MISSILE DEFENSE USCENTCOM Exercise Event 2 - 2015	2	2015	2	2015
AIR and MISSILE DEFENSE 15 USCENTCOM Exercise 2 - 2015	2	2015	2	2015
KEEN SWORD 15 Exercise - 2015	2	2015	2	2015
ARABIAN GULF SHIELD 15 Exercise Event 2- 2015	2	2015	2	2015
NIMBLE FIRE 15 Wargame Event 2 - 2015	2	2015	2	2015
GLOBAL LIGHTNING 15 Exercise Event - 2015	3	2015	3	2015
JOINT AIR and MISSILE DEFENSE USCENTCOM Exercise Event 3 - 2015	3	2015	3	2015
JOINT AIR and MISSILE DEFENSE USCENTCOM Exercise Event 4 - 2015	3	2015	3	2015
GLOBAL DEFENDER Exercise 06 Part 2	3	2015	3	2015
GDEx-06 Part 2 (Ground Test) (Warfighter Exercise)	3	2015	3	2015
KEY RESOLVE 15 Exercise - 2015	3	2015	3	2015
FLEET SYNTHETIC TRAINING Exercise - 2015	3	2015	3	2015
ARABIAN GULF SHIELD 15 Exercise Event 3 - 2015	3	2015	3	2015
NIMBLE FIRE 15 Wargame Event 3 - 2015	3	2015	3	2015
JOINT AIR and MISSILE DEFENSE CENTCOM Exercise Event 5 - 2015	4	2015	4	2015
VIGILANT SHIELD 16 Exercise Event - 2016	1	2016	1	2016

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency				Date: February 2015	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>		Project (Number/Name) MD11 / <i>BMDS Radars</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
AIR and MISSILE DEFENSE Exercise Series - 2016	1	2016	1	2016	
GLOBAL THUNDER 16 Exercise Event - 2016	1	2016	1	2016	
EPOCH PLANEX Exercise - 17	1	2016	1	2016	
ARABIAN GULF SHIELD 16 Exercise Event 1 - 2016	1	2016	1	2016	
SNG-U-D-1	1	2016	2	2016	
SNG-A-H-1	1	2016	3	2016	
SNG-U-H-1	1	2016	3	2016	
KEY RESOLVE 16 Exercise - 2016	2	2016	2	2016	
FLEET SYNTHETIC TRAINING Exercise - 2016	2	2016	2	2016	
ARABIAN GULF SHIELD 16 Exercise Event 2- 2016	2	2016	2	2016	
GLOBAL LIGHTNING 16 Exercise Event - 2016	2	2016	3	2016	
JUNIPER COBRA 16 Exercise - 2016	2	2016	3	2016	
TERMINAL FURY 16 Exercise - 2016	2	2016	3	2016	
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 16 - 2016	3	2016	3	2016	
HUNTSVILLE WARGAMES Event - 16	3	2016	3	2016	
RONALD REAGAN FORUM Exercise - 16	3	2016	3	2016	
ULCHI FREEDOM GUARD 16 Event - 2016	3	2016	4	2016	
SNG-C-D-1	3	2016	4	2016	
BMDS Wargame 2017 Event - 2017	3	2016	2	2017	
EAGLE RESOLVE 16 Exercise Event - 2016	4	2016	4	2016	
ARABIAN GULF SHIELD 16 Exercise Event 3 - 2016	4	2016	4	2016	
MISSILE DEFENSE CONFERENCE Wargame Event - 2016	4	2016	1	2017	
RAMSTEIN ALLIANCE Exercise - 2016	4	2016	1	2017	
SNG-S-H-1	4	2016	2	2017	
NIMBLE TITAN 18 Wargame Year 1 - 18	4	2016	3	2017	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors		Project (Number/Name) MD11 / BMDS Radars	
	Start		End	
Events	Quarter	Year	Quarter	Year
VIGILANT SHIELD 17 Exercise Event - 2017	1	2017	1	2017
AIR and MISSILE DEFENSE Exercise Series - 2017	1	2017	1	2017
EPOCH PLANEX Exercise - 18	1	2017	1	2017
ARABIAN GULF SHIELD 17 Exercise Event 1 - 2017	1	2017	1	2017
GLOBAL RESPONSE Exercise Event - 2016	1	2017	1	2017
GLOBAL THUNDER 17 Exercise Event - 2017	1	2017	1	2017
SNG-A-D-2	1	2017	2	2017
SNG-C-H-1	1	2017	3	2017
KEY RESOLVE 17 Exercise - 2017	2	2017	2	2017
FLEET SYNTHETIC TRAINING Exercise - 2017	2	2017	2	2017
ARABIAN GULF SHIELD 17 Exercise Event 2 - 2017	2	2017	2	2017
GLOBAL LIGHTNING 17 Exercise Event - 2017	2	2017	3	2017
TERMINAL FURY 17 Exercise - 2017	2	2017	3	2017
AUSTERE CHALLENGE 17 Exercise - 2017	1	2017	4	2017
SNG-S-D-2	2	2017	3	2017
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 17 - 2017	3	2017	3	2017
HUNTSVILLE WARGAMES Event - 17	3	2017	3	2017
RONALD REAGAN FORUM Exercise - 17	3	2017	3	2017
ULCHI FREEDOM GUARDIAN 17 Event - 2017	3	2017	4	2017
SNG-U-D-2	3	2017	4	2017
KEEN SWORD 17 Exercise - 2017	3	2017	1	2018
DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS Event - 17	3	2017	1	2018
ARABIAN GULF SHIELD 17 Exercise Event 3 - 2017	4	2017	4	2017
MISSILE DEFENSE CONFERENCE Wargame Event - 2017	4	2017	1	2018
RAMSTEIN ALLIANCE Exercise - 2017	4	2017	1	2018

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors		Project (Number/Name) MD11 / BMDS Radars	
	Start		End	
Events	Quarter	Year	Quarter	Year
KEEN EDGE 18 Exercise Event - 2018	4	2017	2	2018
NIMBLE TITAN 18 Wargame Event 2 - 2018	4	2017	3	2018
AIR and MISSILE DEFENSE Exercise Series - 2018	1	2018	1	2018
GLOBAL THUNDER 18 Exercise Event - 2018	1	2018	1	2018
VIGILANT SHIELD 18 Exercise Event - 2018	1	2018	1	2018
EPOCH PLANEX Exercise - 19	1	2018	1	2018
ARABIAN GULF SHIELD 18 Exercise Event 1 - 2018	1	2018	1	2018
SNG-U-H-2	1	2018	2	2018
SNG-C-D-2	1	2018	2	2018
EAGLE RESOLVE 18 Exercise Event - 2018	2	2018	2	2018
KEY RESOLVE 18 Exercise - 2018	2	2018	2	2018
FLEET SYNTHETIC TRAINING Exercise - 2018	2	2018	2	2018
ARABIAN GULF SHIELD 18 Exercise Event 2 - 2018	2	2018	2	2018
GLOBAL RESPONSE (GREx) Exercise Event - 2018	2	2018	2	2018
GLOBAL LIGHTNING 18 Exercise Event - 2018	2	2018	3	2018
JUNIPER COBRA 18 Exercise - 2018	2	2018	3	2018
TERMINAL FURY 18 Exercise - 2018	2	2018	3	2018
SNG-A-H-2	2	2018	3	2018
SNG-C-H-2	2	2018	3	2018
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 18 - 2018	3	2018	3	2018
HUNTSVILLE WARGAMES Event - 18	3	2018	3	2018
RONALD REAGAN FORUM Exercise - 18	3	2018	3	2018
ULCHI FREEDOM GUARDIAN 18 Event - 2018	3	2018	4	2018
SNG-S-H-2	3	2018	4	2018
DEMONSTRATION, TABLE-TOP EXERCISES & EXPERIMENTS Event - 18	3	2018	1	2019

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors		Project (Number/Name) MD11 / BMDS Radars	
	Start		End	
Events	Quarter	Year	Quarter	Year
ARABIAN GULF SHIELD 18 Exercise Event 3 - 2018	4	2018	4	2018
MISSILE DEFENSE CONFERENCE Wargame Event - 2018	4	2018	1	2019
RAMSTEIN ALLIANCE Exercise - 2018	4	2018	1	2019
BMDS WARGAME 2019 Event - 2019	4	2018	2	2019
NIMBLE TITAN 20 Wargame Event 1 - 2020	4	2018	3	2019
AIR and MISSILE DEFENSE Exercise Series- 2019	1	2019	1	2019
GLOBAL THUNDER 19 Exercise Event - 2019	1	2019	1	2019
VIGILANT SHIELD 19 Exercise Event - 2019	1	2019	1	2019
EPOCH PLANEX Exercise - 20	1	2019	1	2019
ARABIAN GULF SHIELD 19 Exercise Event 1 - 2019	1	2019	1	2019
EPOCH PLANEX Exercise - 21	1	2019	1	2020
KEY RESOLVE 19 Exercise - 2019	2	2019	2	2019
FLEET SYNTHETIC TRAINING Exercise - 2019	2	2019	2	2019
ARABIAN GULF SHIELD 19 Exercise Event 2 - 2019	2	2019	2	2019
GLOBAL LIGHTNING 19 Exercise Event - 2019	2	2019	3	2019
TERMINAL FURY 19 Exercise - 2019	2	2019	3	2019
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 19 - 2019	3	2019	3	2019
HUNTSVILLE WARGAMES Event - 19	3	2019	3	2019
RONALD REAGAN FORUM Exercise - 19	3	2019	3	2019
ULCHI FREEDOM GUARD 19 Event - 2019	3	2019	4	2019
KEEN SWORD 19 Exercise - 2019	3	2019	1	2020
KEEN EDGE 20 Exercise Event - 2020	3	2019	2	2020
EAGLE RESOLVE 19 Exercise Event - 2019	4	2019	4	2019
ARABIAN GULF SHIELD 19 Exercise Event 3 - 2019	4	2019	4	2019
MISSILE DEFENSE CONFERENCE Wargame Event - 2019	4	2019	1	2020

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency				Date: February 2015	
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>		Project (Number/Name) MD11 / <i>BMDS Radars</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
RAMSTEIN ALLIANCE Exercise - 2019	4	2019	1	2020	
NIMBLE TITAN 20 Wargame Event 2- 2020	4	2019	3	2020	
AIR and MISSILE DEFENSE Exercise Series - 2020	1	2020	1	2020	
GLOBAL THUNDER 20 Exercise Event - 2020	1	2020	1	2020	
VIGILANT SHIELD 20 Exercise Event - 2020	1	2020	1	2020	
ARABIAN GULF SHIELD 20 Exercise Event 1 - 2020	1	2020	1	2020	
KEY RESOLVE 20 Exercise - 2020	2	2020	2	2020	
FLEET SYNTHETIC TRAINING Exercise - 2020	2	2020	2	2020	
ARABIAN GULF SHIELD 20 Exercise Event 2 - 2020	2	2020	2	2020	
GLOBAL RESPONSE Exercise Event - 2020	2	2020	2	2020	
GLOBAL LIGHTNING 20 Exercise Event - 2020	2	2020	3	2020	
TERMINAL FURY 20 Exercise - 2020	2	2020	3	2020	
EAGLE RESOLVE 21 Exercise Event - 2020	2	2020	2	2021	
EUROPEAN AIR and MISSILE DEFENSE Exercise Alliance 20- 2020	3	2020	3	2020	
JUNIPER COBRA 20 Exercise - 2020	3	2020	3	2020	
HUNTSVILLE WARGAMES Event - 20	3	2020	3	2020	
RONALD REAGAN FORUM Exercise - 20	3	2020	3	2020	
KEEN SWORD 21 Exercise - 2021	3	2020	2	2021	
ULCHI FREEDOM GUARDIAN 20 Event - 2020	4	2020	4	2020	
ARABIAN GULF SHIELD 20 Exercise Event 3 - 2020	4	2020	4	2020	
MISSILE DEFENSE CONFERENCE Wargame Event - 2020	4	2020	1	2021	
RAMSTEIN ALLIANCE Exercise - 2020	4	2020	1	2021	
BMDS WARGAME 2021 Event - 2021	4	2020	2	2021	
NIMBLE TITAN 21 Wargame Event 1 - 2021	4	2020	3	2021	
NIMBLE TITAN 21 Wargame Event 2 - 2021	4	2020	3	2021	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MC11 / Cyber Operations			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MC11: Cyber Operations	-	1.543	1.212	1.239	-	1.239	1.272	1.308	1.341	1.361	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project MC11 is a new Defensive Cyber Operations Project established in this Program Element (PE) for PB 2014. Funds were previously reported in Project MD11 of this PE.

A. Mission Description and Budget Item Justification

The funds in this project will be utilized to implement and sustain the new DoDI 8510.01 Risk Management Framework (RMF) for DoD Information Technology (IT) requirement for the Missile Defense Agency (MDA) Sensors Directorate and conduct Security Control Assessments (SCA) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance Manager (PM/IAM) Plans of Action and Milestones (POA&Ms) for MDA Sensors mission systems. It maintains the Certification and Accreditation (C&A) data repository, capturing the RFM documentation (artifacts, validation results, and Cybersecurity Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) and POA&M on all MDA information systems.

This project supports the monitoring and tracking of Cybersecurity mitigation detailed in Information Technology security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Assurance Officer (SIAO)/Certification Authority (CA) and DAA. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with the Federal Information Security Management Act (FISMA).

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

	FY 2014	FY 2015	FY 2016
Title: Network / System Certification and Accreditation (C&A)	1.543	1.212	1.239
Articles:	-	-	-
Description: N/A			
FY 2014 Accomplishments:			
-Funded Sensors Directorate Information System Security Manager (ISSM) civilian salary & support contractors			
-Conducted cybersecurity / information assurance engineering and architecture planning for Sensors information technology systems			
-Planned and tested the cybersecurity controls for the Ballistic Missile Defense System (BMDS) Sensors systems			
-Developed and maintained DoD Information Assurance Certification and Accreditation (DIACAP) packages for Sensors mission, test, and non-mission support systems			
-Maintained security posture through reporting, tracking, disseminating, and implementing positive control mechanisms to mitigate potentially critical software vulnerabilities in accordance with DoD IA Vulnerability Management (IAVM) requirements			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MC11 / <i>Cyber Operations</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015	FY 2016
<p>-Conducted Control Validation Tests (CVT)/Security Control Assessments (SCA) of Sensors mission and supporting systems and provided Plans of Action and Milestones (POA&M) to mitigate cybersecurity/ information assurance deficiencies</p> <p>-Initiated planning for an orderly transition from DIACAP to DoD Risk Management Framework (RMF) for future security authorizations; draft system categorizations for all Sensors mission, test, and non-mission support systems have been generated and security control selection begun</p> <p>-100% of Sensors mission, test, and non-mission supporting information systems are registered in the DoD Information Technology Portfolio Registry (DITPR) database, and 100% of Sensors systems now report and maintain cybersecurity authorization documentation and approvals through the DISA Enterprise Mission Assurance Support Service (eMASS)</p> <p>-Participated in BMDS-level cybersecurity penetration testing in accordance with requirements from the Office of the Director, Operational Test and Evaluation (DOT&E)</p> <p>-Conducted cybersecurity/ information assurance reviews on the Sensors enclaves to assess compliance in implementing and maintaining cybersecurity controls</p> <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Continue to fund Sensors Directorate Information Assurance Manager (IAM) civilian salaries - Continue cybersecurity / information assurance engineering and architecture planning for Sensors information technology systems - Continue to plan and test the IA controls for Ballistic Missile Defense System (BMDS) Sensors systems - Continue to develop Sensors DIACAP certification and accreditation packages - Continue to conduct Controls Validation Testing (CVT) of Sensors mission systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies - Continue to conduct annual information assurance reviews on the Sensors enclaves to assess compliance in implementing and maintaining IA controls <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue to fund Sensors Directorate Information System Security Manager (ISSM) civilian salaries - Continue cybersecurity / information assurance engineering and architecture planning for Sensors information technology systems - Continue to plan and test the cybersecurity / information assurance controls for Ballistic Missile Defense System (BMDS) Sensors systems - Continue to maintain Sensors DIACAP certification and accreditation packages and begin the transition to the new Risk Management Framework (RMF) accreditation paradigm for Sensors-managed information systems. - Continue to conduct Controls Validation Testing (CVT) / Security Controls Assessment (SCA) of Sensors mission and support systems and provide and maintain Plans of Action and Milestones to mitigate cybersecurity / information assurance deficiencies 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				Project (Number/Name) MC11 / <i>Cyber Operations</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2014	FY 2015	FY 2016
- Continue to conduct annual cybersecurity / information assurance reviews on the Sensors enclaves to assess compliance in implementing and maintaining IA controls												
Accomplishments/Planned Programs Subtotals										1.543	1.212	1.239
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
• 0603179C: <i>Advanced C4ISR</i>	35.421	13.284	9.876	-	9.876	3.723	-	-	-	-	62.304	
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	390.207	428.277	450.085	-	450.085	461.759	423.843	442.926	460.112	Continuing	Continuing	
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	41.051	46.387	49.570	-	49.570	50.533	51.363	52.217	54.247	Continuing	Continuing	
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	50.271	58.503	49.211	-	49.211	58.074	53.655	55.194	57.162	Continuing	Continuing	
• 0901598C: <i>Management HQ - MDA</i>	34.712	35.598	35.871	-	35.871	35.187	34.509	33.466	33.992	Continuing	Continuing	
• 13999903: <i>Planning and Design, Defense Wide</i>	10.891	38.704	-	-	-	8.233	8.397	8.525	8.822	Continuing	Continuing	
• D1300630: <i>Deveselu, Romania AA Missile Defense System Complex</i>	50.000	-	-	-	-	-	-	-	-	-	50.000	
• D1400634: <i>Upgrade Early Warning Radar (UEWR), Clear AFS, AK</i>	17.204	-	-	-	-	-	-	-	-	-	17.204	
• D1600640: <i>Poland, AA Missile Defense System</i>	-	-	170.597	-	170.597	-	-	-	-	-	170.597	
Remarks												
D. Acquisition Strategy												
N/A												

UNCLASSIFIED











Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MC11 / <i>Cyber Operations</i>
<u>E. Performance Metrics</u> N/A		










































































































UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>						Project (Number/Name) MC11 / <i>Cyber Operations</i>			
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services (Booz Allen)	C/CPFF	Booz Allen Hamilton : AL, CO, VA	0.000	0.727		0.560	Jul 2015	0.569	Jul 2016	-		0.569	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services (Torch Technologies)	C/CPFF	Torch Technologies : AL, CO, VA	0.000	0.645		0.492	Jul 2015	0.507	Jul 2016	-		0.507	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Civilian Salaries	Various	MDA : AL, CO, VA	0.000	0.171		0.160	Jul 2015	0.163	Jul 2016	-		0.163	Continuing	Continuing	Continuing
Subtotal			0.000	1.543		1.212		1.239		-		1.239	-	-	-
Remarks N/A															
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	1.543		1.212		1.239		-		1.239	-	-	-
Remarks N/A															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency			Date: February 2015		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>		Project (Number/Name) MC11 / <i>Cyber Operations</i>	

Significant Event Complete  Milestone Decision Complete  Element Test Complete  System Level Test Complete  Complete Activity 
 Significant Event Planned  Milestone Decision Planned  Element Test Planned  System Level Test Planned  Planned Activity 

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BMDS Cyber Security Policy Development																												
SN Transition to Cyber Security Risk Management Framework (CRMF)																												
SN Information Assurance Certification and Accreditation (C&A) Package Preparation / Submission																												
SN Cyber Security Program Policy / Risk Management																												
SN Cyber Security Mitigation Monitoring and Tracking																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MC11 / <i>Cyber Operations</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BMDS Cyber Security Policy Development	1	2014	4	2019
SN Transition to Cyber Security Risk Management Framework (CRMF)	1	2014	4	2019
SN Information Assurance Certification and Accreditation (C&A) Package Preparation / Submission	1	2014	4	2019
SN Cyber Security Program Policy / Risk Management	1	2014	4	2019
SN Cyber Security Mitigation Monitoring and Tracking	1	2014	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MT11 / BMDS Radars Test			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MT11: BMDS Radars Test	43.953	49.925	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The MT11 R-4/4A depicts only test events for which Sensors participation is planned. For a full listing of Ballistic Missile Defense System (BMDS) test events, see the R-4/4A in the BMDS Test and Evaluation Program Element (0603914C).
Beginning in FY 2015 the funding for the BMDS Radars Test (MT11) budget project will be realigned to the BMD Sensor Test Program Element (0604879C)

A. Mission Description and Budget Item Justification

The Sensors test program for European Phased Adaptive Approach (EPAA) Phase I Initial Integrated Defense supported the Integrated Master Test Plan (IMTP) for Operational Test and Evaluation of theater/regional defense systems that were fielded at the end of Calendar Year 2011 (CY 2011) and supported an Operational Assessment of the Ground-based Midcourse Defense (GMD) weapon system.

The Sensors test program for (FY 2013-2015) supports EPAA Phase II Robust Medium Range Ballistic Missile (MRBM) Defense, Discrimination Improvements for Homeland Defense and supports the IMTP for Operational Test and Evaluation of regional and strategic BMDS that will be fielded at the end of calendar year 2015. Refer to R-4 for specific test events.

The Sensors test program (FY16-18) supports EPAA Phase III Robust Intermediate Range Ballistic Missile (IRBM) Defense, Enhanced Homeland Defense and supports the IMTP for Operational Test and Evaluation of the regional and strategic BMDS architecture that will be fielded at the end of Calendar Year 2018 (CY 2018). Refer to R-4 for specific test events.

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

	FY 2014	FY 2015	FY 2016
Title: Ballistic Missile Defense System (BMDS) Level Testing	31.443	-	-
Articles:	-	-	-
Description: N/A			
FY 2014 Accomplishments: -Planned and executed Sensors participation in BMDS Ground Tests in accordance with the BMDS Integrated Master Test Plan (IMTP) -Planned and executed Sensors participation in BMDS Flight Tests in accordance with the BMDS IMTP			
FY 2015 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency								Date: February 2015			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MT11 / BMDS Radars Test			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2014	FY 2015	FY 2016	
-Plans for this scope are included in the Program Element 0604879C Ballistic Missile Defense Sensor Test, Budget Project MT11											
FY 2016 Plans: -Plans for this scope are included in the Program Element 0604879C Ballistic Missile Defense Sensor Test, Budget Project MT11											
Title: Element Test and Infrastructure								18.482	-	-	
Articles:								-	-	-	
Description: N/A											
FY 2014 Accomplishments: -Configured and maintained Sensors HWILs for use in BMDS Ground Tests and element-level ground tests: Fast Phoenix, GTD-04e Part 2, GTI-04e Part 2, Fast Exchange -Configured and maintained Sensors HWILs for use in BMDS Flight Tests System Pre-Mission Testing: FTG-06b -Supported evolving Single Stimulation Framework (SSF) (software upgrades) integration into the BMDS HWIL Ground Test Infrastructure											
FY 2015 Plans: -Plans for this scope are included in the Program Element 0604879C Ballistic Missile Defense Sensor Test, Budget Project MT11											
FY 2016 Plans: -Plans for this scope are included in the Program Element 0604879C Ballistic Missile Defense Sensor Test, Budget Project MT11											
Accomplishments/Planned Programs Subtotals								49.925	-	-	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603179C: Advanced C4ISR	35.421	13.284	9.876	-	9.876	3.723	-	-	-	-	62.304
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	390.207	428.277	450.085	-	450.085	461.759	423.843	442.926	460.112	Continuing	Continuing
• 0603898C: Ballistic Missile Defense Joint Warfighter Support	41.051	46.387	49.570	-	49.570	50.533	51.363	52.217	54.247	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015	
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				Project (Number/Name) MT11 / <i>BMDs Radars Test</i>			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	50.271	58.503	49.211	-	49.211	58.074	53.655	55.194	57.162	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	70.336	64.409	72.866	-	72.866	71.267	75.760	72.319	87.058	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	342.695	366.302	274.323	-	274.323	298.390	345.333	330.404	350.747	Continuing	Continuing
• 13999903: <i>Planning and Design, Defense Wide</i>	10.891	38.704	-	-	-	8.233	8.397	8.525	8.822	Continuing	Continuing
• D1400634: <i>Upgrade Early Warning Radar (UEWR), Clear AFS, AK</i>	17.204	-	-	-	-	-	-	-	-	-	17.204
Remarks											
D. Acquisition Strategy											
Test & Evaluation projects use multiple existing development contracts depending on the system(s) involved in the testing.											
E. Performance Metrics											
N/A											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 4						PE 0603884C / Ballistic Missile Defense Sensors				MT11 / BMDS Radars Test					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Remarks															
N/A															
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Remarks															
N/A															
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ballistic Missile Defense System (BMDS) Level Testing - AN/TPY-2 & SBX FT & GT	SS/CPFF	Raytheon : MA	27.643	28.299		-		-		-		-	-	55.942	-
Ballistic Missile Defense System (BMDS) Level Testing - UEWR/CD FT & GT	C/FPIF	decibel : MA/AL	1.577	3.144		-		-		-		-	-	4.721	-
Element Test and Infrastructure - TPY-2 & SBX SSF Integration & Infrastructure, Sys Test Lab	SS/CPFF	Raytheon : MA	11.210	13.492		-		-		-		-	-	24.702	-
Element Test and Infrastructure - UEWR	C/FPIF	Raytheon, decibel : AL/MA	3.523	4.990		-		-		-		-	-	8.513	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency													Date: February 2015		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				Project (Number/Name) MT11 / <i>BMDs Radars Test</i>					

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SSF Integration & Infrastructure, Sys Test Lab															
Subtotal			43.953	49.925		-		-		-		-	-	93.878	-

Remarks
N/A

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
N/A

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	43.953	49.925	-	-	-	-	-	93.878	-

Remarks
N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity
0400 / 4

R-1 Program Element (Number/Name)
PE 0603884C / Ballistic Missile Defense
Sensors

Project (Number/Name)
MT11 / BMDS Radars Test

Significant Event Complete
Significant Event Planned

Milestone Decision Complete
Milestone Decision Planned

Element Test Complete
Element Test Planned

System Level Test Complete
System Level Test Planned

Complete Activity
Planned Activity

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GTI-04e Part 1a (BMDS Ground Test)	+																											
GTI-04e Part 2 (BMDS Ground Test)	+	+	+																									
Fast Exchange HWIL (BMDS Ground Test)			+																									
FTG-06b (GM Intercept Flight Test)			▲																									
Fast Exchange Dist (BMDS Ground Test)				+																								

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MT11 / <i>BMDS Radars Test</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GTI-04e Part 1a (BMDS Ground Test)	1	2014	1	2014
GTI-04e Part 2 (BMDS Ground Test)	1	2014	3	2014
Fast Exchange HWIL (BMDS Ground Test)	3	2014	3	2014
FTG-06b (GM Intercept Flight Test)	3	2014	3	2014
Fast Exchange Dist (BMDS Ground Test)	4	2014	4	2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors				Project (Number/Name) MD40 / Program-Wide Support			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD40: Program-Wide Support	27.610	15.867	23.582	10.273	-	10.273	10.800	7.291	7.498	7.678	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
In FY 2015, Program Wide Support reflects a proportional change as a result of increases and in FY 2016, reflects a proportional change as a result of decrease to the Ballistic Missile Defense Sensors program element. 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.												
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 Services, and Federally Funded Research and Development Center (FFRDC) support. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; 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. Program Wide Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes:0305103C Cyber Security Initiative, 0603274C Special Program, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2014	FY 2015	FY 2016	
Title: Program Wide Support									15.867	23.582	10.273	
									Articles: -	-	-	
Description: N/A												
FY 2014 Accomplishments: See paragraph A: Mission Description and Budget Item Justification												
FY 2015 Plans: See paragraph A: Mission Description and Budget Item Justification												
FY 2016 Plans:												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015
See paragraph A: Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals		15.867	23.582
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>						Project (Number/Name) MD40 / <i>Program-Wide Support</i>			
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO, VA	2.966	1.302		3.174		-		-		-	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	MIPR	Various : Multi: AL, CO, NM, VA, VARIOUS	0.000	-		8.251		-		-		-	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPRs)	MIPR	Various : Multi:AL,VA	2.050	3.049		5.150	Nov 2014	0.550	Oct 2015	-		0.550	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (Reqn)	Reqn	Department of Labor : Washington, DC	0.000	-		0.156		-		-		-	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CO, CA, VA	20.864	11.169		2.447	Jan 2015	9.473	Jan 2016	-		9.473	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support civilian Salaries, Travel	Allot	MDA : Multi:AK, AL,CA, CO, VA	0.000	-		4.160		0.250	Nov 2015	-		0.250	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support, International, and Materiel and Readiness	C/CPAF	JRDC : JRDC	0.000	0.347		0.244		-		-		-	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	Allot	Various : Multi: AL, CO, CA, VA	1.730	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			27.610	15.867		23.582		10.273		-		10.273	-	-	-
Remarks N/A															

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency										Date: February 2015			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>					Project (Number/Name) MD40 / <i>Program-Wide Support</i>			
	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	27.610	15.867		23.582		10.273		-		10.273	-	-	-
Remarks N/A													

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / Ballistic Missile Defense Sensors	Project (Number/Name) MD40 / Program-Wide Support	

Significant Event Complete▲

Significant Event Planned△

Milestone Decision Complete★

Milestone Decision Planned☆

Element Test Complete◆

Element Test Planned◇

System Level Test Complete●

System Level Test Planned○

Complete Activity✦

Planned Activity✧

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MD40 Program-Wide Support									✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2016	4	2020