

UNCLASSIFIED

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

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	269.316	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
MD22: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	260.242	50.127	45.303	51.773	-	51.773	50.663	52.076	54.468	55.255	Continuing	Continuing
MC22: <i>Cyber Operations</i>	0.514	0.592	0.472	0.456	-	0.456	0.612	0.617	0.640	0.653	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	8.560	3.253	2.164	2.521	-	2.521	2.619	2.831	2.992	3.121	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

In FY 2017, the Missile Defense Integration and Operations Center increase is for critical end-of-life infrastructure components.

The MDIOC Program provides the necessary infrastructure and support services to operate and sustain a mission execution platform for MDA elements/components and designated Combatant Commanders' Ballistic Missile Defense System (BMDS) activities executing missions at the MDIOC. Perturbations in the MDIOC Program outyears' funding cycle are a result of prioritizing Agency baseline and critical mission requirements higher than Facilities Sustainment, Repair, and Modernization (FSRM).

A. Mission Description and Budget Item Justification

The Missile Defense Integration and Operations Center (MDIOC) is the Missile Defense Agency's (MDA) field operating activity in Colorado Springs, Colorado. It provides the necessary infrastructure and support services through a mission execution platform for MDA elements/components and designated Combatant Commanders' Ballistic Missile Defense System (BMDS) operations executing missions at the MDIOC. The Integration Center is the organization responsible for providing a single, integrated set of skilled personnel matrixed from across MDA to manage this mission. The MDIOC mission facilities consist of a highly secure research and development complex and a mission support module (area) located at Schriever Air Force Base, adjacent to North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM). The MDA Integration Center provides mission critical system technical capabilities and subject matter expertise in a dedicated and adaptable environment that enables developers, testers, and operators to evolve, assess and deliver the capabilities for layered missile defense execution for homeland defense and theater/regional support. The MDIOC interfaces with the Information Technology/Information Assurance Enterprise to provide high availability access to worldwide secure communications, network health and status monitoring, mission critical restoral capability, and technical expertise for all MDA directed activities and events. The MDIOC functions as the mission control for BMDS distributed ground tests and system wide flight tests enabling the mission and test directors to control both main and associated test operations using secure voice, test, and mission network hubs from the MDIOC. The MDIOC also functions as the only system-level integration and interoperability mission execution platform for BMDS fire control; and it provides the physical interface between the developers and the Combatant Command warfighters.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
<p>MD22 and MC22 MDIOC mission facilities contribute to the BMDS by directly supporting the concept of Concurrent Test, Training, and Operations (CTTO) for the BMDS by providing engineering integration, resource scheduling, configuration management, and implementation development support for MDA and BMDS-level test, training, and operational mission execution. The Integration Center provides engineering and operational integration by:</p> <ul style="list-style-type: none"> -Implementing technical event architectures for models and simulations supporting missile defense planning seminars, wargames, exercises, and analyses -Supporting BMDS Critical Engagement Conditions (CEC) testing and analysis by operating the Test Execution Control (TEC) for distributed BMDS ground tests, and ensuring technical system architecture integrity -Providing network operations and information assurance for all on-site integration activities -Integrating and sustaining the enabling infrastructure, services, and processes supporting the operation of designated BMDS elements and resident Combatant Command operations and/or support centers -Providing technical support for the BMDS Watch Officers, BMDS Safety Officers, and Information Assurance Officers in their efforts to monitor and assess the health and status of the networks and elements that impact BMDS test and operations -Operating the Joint Early Warning Laboratory for anomaly resolution -Supporting the Intelligence Support Center for critical situational awareness intelligence on worldwide ballistic missile developments that could affect the development and/or operation of the BMDS <p>MDIOC Major Program Goals:</p> <ul style="list-style-type: none"> -Provide the capabilities and services necessary to support engineering integration, resource scheduling for ground and flight tests, configuration management, and implementation development support of on-site activities -Ensure around the clock support and restoral of designated BMDS operational activities -Improve interface with designated Combatant Command missile defense activities; host/support the headquarters and operations center for United States Strategic Command Joint Functional Component Command - Integrated Missile Defense -Continue to achieve cost effectiveness and efficiencies by leveraging existing Missile Defense Integration and Operations Center infrastructure, services, processes, and expertise to support assigned missions -Maintain and improve the reliability, availability, and maintainability of MDIOC mission critical systems <p>MD40 Program-Wide Support (PWS) consists of essential non-headquarters management efforts providing integrated and efficient support to MDA functions and activities across the entire BMDS.</p>		

UNCLASSIFIED

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

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	58.503	49.211	58.074	-	58.074
Current President's Budget	53.972	47.939	54.750	-	54.750
Total Adjustments	-4.531	-1.272	-3.324	-	-3.324
• Congressional General Reductions	0.000	-0.041			
• Congressional Directed Reductions	0.000	-1.231			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-3.555	0.000			
• SBIR/STTR Transfer	-0.976	0.000			
• Other Adjustment	0.000	0.000	-3.324	-	-3.324

Change Summary Explanation

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency										Date: February 2016		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)				Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MD22: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	260.242	50.127	45.303	51.773	-	51.773	50.663	52.076	54.468	55.255	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, the Missile Defense Integration and Operations Center increase is a result of planning for projects deferred in FY 2016 and critical end-of-life infrastructure components.

A. Mission Description and Budget Item Justification

The Missile Defense Integration and Operations Center (MDIOC) sustains and operates a 24 hours a day, 7 days a week, 365 days a year mission complex for critical research, development, testing, training, and operations for BMDS activities. The MDIOC supports the Ground-based Midcourse Missile Defense Mission Control Center Facility, as well as the Command, Control, Battle Management, and Communications (C2BMC) Integration and Test Centers and the C2BMC Experimentation Laboratories. It provides infrastructure support for the Satellite Tracking and Surveillance System's (STSS) Missile Defense Space Center (MDSC); and the Targets and Countermeasures' (TC) Joint Target Operations Center (JTOC). The MDIOC also provides developmental support to the Enterprise Sensors Laboratory (ESL) composed of a common satellite ground station and sensor netting test bed for designated Ballistic Missile Defense System (BMDS) elements. The MDIOC supports BMDS test events based on the Integrated Master Test Plan (IMTP.) It supports BMDS Critical Engagement Conditions testing and analysis through the operation of the Test Execution Control node for distributed BMDS ground tests. During system flight tests, the MDIOC provides infrastructure (power, Heating, Ventilation and Air Conditioning, and communications) support to the Flight Test Director and crew, and ensures the protection of facility and test assets throughout the test window. Further, the MDIOC provides the facilities that support operations of the Missile Defense Element, manned by the U.S. Army 100th Missile Defense Brigade, the United States Northern Command (USNORTHCOM) C2BMC Command and Control Center (CCC), the United States Strategic Command's (USSTRATCOM's) Joint Functional Component Command-Integrated Missile Defense (JFCC-IMD) and the Missile Defense Agency (MDA) Warfighter Support Center. In addition, the MDIOC supports the MDA Operations Support Center, which provides situational awareness of the health and status of the end-to-end BMDS, and provides network subject matter expertise and technical reach back for the program elements and Combatant Commanders. The MDIOC hosts BMDS wargames and exercises in support of the warfighter, and delivers requisite infrastructure to integrate the modeling and simulation assets that form system-level constructive simulations for full-envelope BMDS performance assessment, with surrogate capability for BMDS ground tests. The MDIOC maintains a technical repository of BMDS Implementation Architectures for real-time operations and configuration control; provides state change management and asset management technical support for the BMDS; and provides the technical environment for BMDS Watch Officers, Safety Officers, and Information Assurance Officers to perform their assigned duties. The MDIOC also supports the operations of the Joint Early Warning Laboratory (JEWL), which provides USSTRATCOM with quick response analyses of real-world launches, and rapid anomaly identification and resolution.

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

	FY 2015	FY 2016	FY 2017
Title: Infrastructure Systems and Support	20.221	19.191	20.880

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p align="right"><i>Articles:</i></p> <p><i>Description:</i> N/A</p> <p>FY 2015 Accomplishments: MDIOC Communications and Special Purpose Processing Node:</p> <ul style="list-style-type: none"> - Maintained a mission execution platform to provide an enabling infrastructure (to include hardware, software maintenance, licenses, and upgrades) that supports MDA Research, Development, Test and Evaluation (RDT&E) efforts at the Missile Defense Integration and Operations Center (MDIOC) for the MDA elements/components, and Combatant Command and Warfighter operational elements - Provided computer hosting of specified threat models and supported the integration of threat tools - Planned/Initiated the installation of additional data feeds required to support the Operations Support Center (OSC) - Maintained the technical infrastructure and equipment including routers and switches, Core Cryptographic Devices, Edge Encryption Devices, Global Engagement Manager (GEM), base and long-haul communications Information Assurance Systems - Provided network management services by monitoring and controlling the network infrastructure, available bandwidth, hardware, and distributed software resources - Acquired and distributed mission critical unclassified and secure communications capability to ten resident MDA elements/components and BMDS and Warfighter operational elements - Installed communications and networking hardware/software to support evolving mission requirements of resident MDA development, testing, training, and operational activities - Provided information assurance services to MDA elements/components, BMDS elements, and Combatant Command and Warfighter operational elements resident at the Missile Defense Integration and Operations Center (MDIOC) - Maintained DoD Information Assurance Certification and Accreditation Process (DIACAP) accreditation packages; managed the Information Assurance Vulnerability Assessment Program and provided technical assistance to Controls Validation Tests - Managed and maintained the MDA Enterprise directory services supporting user access to MDA Enterprise network resources; performed preventive maintenance and ensured data recovery capability through proper data backup scheduling and execution - Implemented Classified and Unclassified Voice Over Internet Protocol (VOIP) expansion to include the completion of the MDIOC VOIP implementation - Provided telephony services to include: Telephone/Fax Service, local and long distance and Defense Switch Network and Defense Red Switch telephone systems. Operated, maintained, and upgraded telephone switches, nodes, 	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>and Private Branch Exchanges to include 911 support</p> <ul style="list-style-type: none"> - Designed/Implemented upgrades to audio/visual support to the MDIOC supporting the distribution of Signals Over Internet Protocol - Developed and coordinated Cross-Domain Solution architectures for high priority Ballistic Missile Defense System (BMDS); testing and contingency deployments - Planned/Designed enhancements to the MDIOC Special Purpose Processing Node (SPPN) including floor space allocations, equipment staging areas, and streamlined logistics support function - Maintained software licensing and maintenance agreements to meet critical customer and legal requirements; enabled continued software support necessary to maintain the directed computer network defense posture and ensured continued system operational availability - Planned/Designed/Implemented technical lifecycle, refresh, and standardization of MDIOC print services - Implemented a consolidated Project Server for RDT&E and delivered as an intranet service <p>End User Support:</p> <ul style="list-style-type: none"> - Sustained End User core service support 18 hours a day, 6 days a week for administrative and business information systems for unclassified and classified users - Monitored networks for user compliance with DoD policies and reported incidents - Maintained Printing and Copy Services - Sustained email services (Exchange servers, BlackBerry Enterprise Services servers and archiving storage area networks) - Sustained file services (file servers and storage area networks) - Maintained Directory Services (Active Directory and domain controller servers) - Maintained Authentication services (Public Key Infrastructure/Common Access Card) - Maintained current hardware and software licenses for IT operational systems - Maintained an Integrated Service Desk - Maintained IT life-cycle asset management of end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys) <p>Infrastructure Implementation Engineering:</p> <ul style="list-style-type: none"> - Implemented intelligence hardware/software updates for the Operations Support Center - Provided MDIOC centric test event network related detailed designs in support of Test Events and real world operational events; provided implementation plans, updated interface control documents and performed Change 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016
<p>Control and Configuration Management services</p> <ul style="list-style-type: none"> - Planned, designed, tested and operated the IT and communications technical architecture including Internet Protocol addressing schema, routing tables, switching policies, data paths, information assurance controls, fire wall configurations, application configurations, band width allocations for sub-networks and eventual post event return to base line - Provided technical health and status monitoring, troubleshooting, and break/fix, IT/Communications support for each of the event architectures including critical asset identification, monitoring, Quality Assurance/Quality Control (QA/QC) seals with configuration management and job control - Implemented final Defense Information Systems Agency - Global Information Grid (DISA GIG) Mission Assurance node configuration <p>Hardware and Software Asset Management:</p> <ul style="list-style-type: none"> - Managed government property in accordance with the Federal Acquisition Regulations (FAR)/DoD FAR Supplements (DFARs) to include accountability, reporting, warehouse management, asset transportation and excess asset management - Maintained an inventory of IT hardware and software assets connected or used in the ULAN, CLAN, SIPRNET and TS/SCI networks <p>Cable Plant Cubicle Workstation</p> <ul style="list-style-type: none"> - Installed facility connectivity cabling; provided trouble-shooting and repair on a critical basis - Installed and reconfigured furniture and workstations on a critical basis <p>FY 2016 Plans:</p> <p>MDIOC Communications and Special Purpose Processing Node:</p> <ul style="list-style-type: none"> - Continue to maintain a mission execution platform to provide an enabling infrastructure (to include hardware, software maintenance, licenses, and upgrades) that supports MDA Research, Development, Test and Evaluation (RDT&E) efforts at the Missile Defense Integration and Operations Center (MDIOC) for the MDA elements/components, and Combatant Command and Warfighter operational elements - Provide computer hosting of specified threat models and support the integration of other threat tools as required - Plan/Initiate, when directed, the installation of any additional data feeds required to support the Operations 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>Support Center (OSC)</p> <ul style="list-style-type: none"> - Maintain the technical infrastructure and equipment including routers and switches, Core Cryptographic Devices; Edge Encryption Devices, Global Engagement Manager (GEM) and base and long-haul communications Information Assurance Systems - Provide management of network capabilities by monitoring and controlling the network infrastructure, available bandwidth, hardware, and distributed software resources - Acquire and distribute mission critical unclassified and secure communications capability to ten resident MDA elements/components and BMDS and Warfighter operational elements - Install communications and networking hardware/software) in support of evolving mission requirements of resident MDA development, testing, training, and operational activities - Provide information assurance services to MDA elements/components, BMDS elements, and Combatant Command and Warfighter operational elements resident at the Missile Defense Integration and Operations Center (MDIOC) - Maintain DoD Information Assurance Certification and Accreditation Process (DIACAP) accreditation packages; manage the Information Assurance Vulnerability Assessment Program and provide technical assistance to Controls Validation Tests - Manage and maintain the MDA Enterprise directory services supporting user access to MDA Enterprise network resources; perform preventive maintenance and ensure data recovery capability through proper data backup scheduling and execution - Implement Classified and Unclassified Voice Over Internet Protocol (VOIP) expansion to include the completion of the MDIOC VOIP implementation - Provide telephony services including local, long distance, Defense Switch Network and Defense Red Switch telephone/fax services. - Operate, maintain, and upgrade telephone switches, nodes, and Private Branch Exchanges including 911 support - Design/Implement upgrades to audio/visual support to the MDIOC supporting the distribution of Signals Over Internet Protocol - Develop and coordinate Cross-Domain Solution architectures for high priority Ballistic Missile Defense System (BMDS); testing and contingency deployments - Plan/Design enhancements to the MDIOC SPPN including floor space allocations, equipment staging areas, and streamlined logistics support function - Maintain software licensing and maintenance agreements to meet critical customer and legal requirements, enable continued software support necessary to maintain the directed computer network defense posture and ensure continued system operational availability - Plan/Design/Implement technical lifecycle, refresh, and standardization of MDIOC print services 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>- Implement a consolidated Project Server for RDT&E and delivered as an intranet service</p> <p>End User Support:</p> <ul style="list-style-type: none"> - Sustain End User core service support 18 hours a day, 6 days a week for administrative and business information systems for unclassified and classified users - Monitor networks for user compliance with DoD policies and report incidents - Maintain Printing and Copy Services - Sustain email services (Exchange servers, BlackBerry Enterprise Services servers and archiving storage area networks) - Sustain file services (file servers and storage area networks) - Maintain Directory Services (Active Directory and domain controller servers) - Maintain Authentication services (Public Key Infrastructure/Common Access Card) - Maintain current hardware and software licenses for IT operational systems - Maintain an Integrated Service Desk - Maintain IT life-cycle asset management of end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys) <p>Hardware and Software Asset Management:</p> <ul style="list-style-type: none"> - Manage government property and IT hardware and software in accordance with the Federal Acquisition Regulations (FAR)/DoD FAR Supplements (DFARs) to include accountability, reporting, warehouse management, asset transportation and excess asset management - Maintain an inventory of IT hardware and software assets connected or used in the ULAN, CLAN, SIPRNET and TS/SCI networks <p>Cable Plant Cubicle Workstation:</p> <ul style="list-style-type: none"> - Install facility connectivity cabling; provide trouble-shooting and repair - Install and reconfigure furniture and workstations <p>Infrastructure Implementation Engineering:</p> <ul style="list-style-type: none"> - Implement intelligence hardware/software updates as required to support the Operations Support Center 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Provide MDIOC centric test event network related detailed designs in support of Test Events and real world operational events, provide implementation plans, update interface control documents and perform Change Control and Configuration Management services - Plan, design, test and operate the IT and communications technical architecture including Internet Protocol addressing schema, routing tables, switching policies, data paths, information assurance controls, fire wall configurations, application configurations, band width allocations for sub networks and eventual post event return to base line - Provide technical health and status monitoring, troubleshooting, and break/fix, IT/Communications support for each of the event architectures including critical asset identification, monitoring, Quality Assurance/Quality Control (QA/QC) seals with configuration management and job control - Implement final Defense Information Systems Agency - Global Information Grid (DISA GIG) Mission Assurance node configuration <p>The decrease in FY2016 is due to the realignment of funds to other Department of Defense priorities</p> <p>FY 2017 Plans: The increase from FY16 to FY17 is to replace end-of-life equipment that the MDIOC Program was compelled to forego in FY16</p> <p>MDIOC Communications and Special Purpose Processing Node:</p> <ul style="list-style-type: none"> - Continue to provide enabling infrastructure (to include hardware, software maintenance, licenses, and upgrades) supporting MDA Research, Development, Test and Evaluation (RDT&E) efforts at the MDIOC for MDA elements/components, and Combatant Command and Warfighter operational elements - Provide computer hosting of specified threat models and support the integration of other threat tools as required - Plan/Initiate, when directed, the installation of any additional data feeds required to support the Operations Support Center (OSC) - Maintain technical infrastructure and equipment including routers and switches, Core Cryptographic Devices; Edge Encryption Devices, Global Engagement Manager (GEM) and base and long-haul communications - Manage network capabilities by monitoring and controlling the network infrastructure, available bandwidth, hardware, and distributed software resources - Acquire and distribute mission critical unclassified and secure communications capability to ten resident MDA elements/components and BMDS and Warfighter operational elements - Install communications and networking infrastructure (hardware/software) in support of evolving mission 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>requirements of resident MDA development, testing, training, and operational activities</p> <ul style="list-style-type: none"> - Provide information assurance services to MDA elements/components, BMDS elements, and Combatant Command and Warfighter operational elements resident at the MDIOC - Maintain DoD Information Assurance Certification and Accreditation Process (DIACAP) accreditation packages; manage the Information Assurance Vulnerability Assessment Program and provide technical assistance to Controls Validation Tests - Manage and maintain MDA Enterprise directory services supporting user access to MDA Enterprise network resources; perform preventive maintenance and ensure data recovery capability through proper data backup scheduling and execution - Implement Classified and Unclassified Voice Over Internet Protocol (VOIP) expansion - Provide telephony services including local and long distance and Defense Switch Network and Defense Red Switch telephone/fax service. <p>Telephone Switch Operations: Operate, maintain, and upgrade telephone switches, nodes, and Private Branch Exchanges including 911 support</p> <ul style="list-style-type: none"> - Design/Implement upgrades to audio/visual support supporting the signal distribution over Internet Protocol - Develop and coordinate Cross-Domain Solution architectures for high priority Ballistic Missile Defense System (BMDS) and testing and contingency deployments - Plan/Design enhancements to the MDIOC SPPN including floor space allocations, equipment staging areas, and streamlined logistics support function - Maintain software licensing and maintenance agreements to meet critical customer and legal requirements; enable continued software support necessary to maintain the directed computer network defense posture and ensure continued system operational availability - Plan/Design/Implement technical lifecycle, refresh, and standardization of MDIOC print services - Implement a consolidated Project Server for RDT&E and delivered as an intranet service <p>End User Support:</p> <ul style="list-style-type: none"> - Sustain unclassified and classified End User core service support 18 hours a day, 6 days a week for administrative and business information systems - Monitor networks for user compliance and report incidents - Maintain Printing and Copy Services - Sustain email services (Exchange servers, BlackBerry Enterprise Services servers and archiving storage area networks) 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Sustain file services (file servers and storage area networks) - Maintain Directory Services (Active Directory and domain controller servers) - Maintain Authentication services (Public Key Infrastructure/Common Access Card) - Maintain current hardware and software licenses for IT operational systems - Maintain an Integrated Service Desk - Maintain IT life-cycle asset management of end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys) <p>Hardware and Software Asset Management:</p> <ul style="list-style-type: none"> - Manage government property and IT hardware and software in accordance with the Federal Acquisition Regulations (FAR)/DoD FAR Supplements (DFARs) to include accountability, reporting, warehouse management, asset transportation and excess asset management - Maintain an inventory of IT hardware and software assets connected or used in the ULAN, CLAN, SIPRNET and TS/SCI networks <p>Cable Plant Cubicle Workstation:</p> <ul style="list-style-type: none"> - Install facility connectivity cabling; provide trouble-shooting and repair - Install and reconfigure furniture and workstations <p>Infrastructure Implementation Engineering:</p> <ul style="list-style-type: none"> - Implement intelligence hardware/software updates as required to support the Operations Support Center - Provide MDIOC centric test event network related detailed designs in support of Test Events and real world operational events, provide implementation plans, update interface control documents and perform Change Control and Configuration Management services - Plan, design, test and operate the IT and communications technical architecture including Internet Protocol addressing schema, routing tables, switching policies, data paths, information assurance controls, fire wall configurations, application configurations, band width allocations for sub-networks and eventual post event return to base line - Provide technical health and status monitoring, troubleshooting, and break/fix, IT/Communications support for each of the event architectures including critical asset identification, monitoring, Quality Assurance/Quality 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
Control (QA/QC) seals with configuration management and job control				
Title: Facilities and Maintenance		13.166	12.359	14.935
Description: N/A		Articles:	-	-
FY 2015 Accomplishments: Host Tenant Support(Electrical, Gas, Sewer, Water, Steam, Chilled Water, Waste Water, Landscaping, Refuse Removal, and Communications Support):				
<ul style="list-style-type: none"> - Procured utility services through 50th Air Force Space Wing (Host Base) - Sustained utility infrastructure and delivery systems 				
Environmental, Safety and Occupational Health (ESOH):				
<ul style="list-style-type: none"> - Maintained and updated the program accident prevention plan - Provided required industrial safety training to facility services personnel - Procured and distributed personal protection equipment for contracted activities - Ensured compliance with Hazardous Waste, Hazardous Material Recycling, and National Environmental Policy Act (NEPA) programs - Conducted recurring safety and environmental audits 				
Facilities Operations and Sustainment:				
<ul style="list-style-type: none"> - Provided 24 hours a day, 7 days a week, 365 days a year, facility maintenance break/fix response for all facility systems (electrical; Heating, Ventilation, and Air Conditioning; plumbing; locksmith) with a response time of 15 minutes after normal duty hours - Conducted preventative maintenance inspections (PMIs) for all building systems 				
Facilities Engineering:				
<ul style="list-style-type: none"> - Conducted Management Process Facility Installation Standard Audits - Provided risk management analysis and mitigation plans - Maintained infrastructure drawings configuration management databases on a limited basis 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Developed and documented facility long range planning programming - Provided consulting services, preliminary designs and engineering rough order of magnitude estimates for required infrastructure buildout changes <p>Missile Defense Integration and Operations Center (MDIOC) Operating Expenses:</p> <ul style="list-style-type: none"> - Lease General Services Administration (GSA) vehicles and a commercial warehouse - Funded calibration of measuring and monitoring equipment - Funded repair of classified network switches <p>Facility Services:</p> <ul style="list-style-type: none"> - Provided custodial services for over 675,000 square feet of floor space in Buildings 720 and 730 - Provided limited Copy Center and Shuttle Services for over 2,000 personnel - Provided in/out processing and personnel moves <p>FY 2016 Plans: Host Tenant Support(Electrical, Gas, Sewer, Water, Steam, Chilled Water, Waste Water, Landscaping, Refuse Removal, and Communications Support):</p> <ul style="list-style-type: none"> - Procure utility services through 50th Air Force Space Wing (Host Base) - Sustain utility infrastructure and delivery systems <p>Environmental, Safety and Occupational Health (ESOH):</p> <ul style="list-style-type: none"> - Continue maintenance and updating of the program accident prevention plan - Provide required industrial safety training to facility services personnel - Procure and distribute personal protection equipment for contracted activities - Ensure compliance with Hazardous Waste, Hazardous Material Recycling, and National Environmental Policy Act (NEPA) programs - Conduct recurring safety and environmental audits <p>Facilities Operations and Sustainment:</p>				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Provide 24 hours a day, 7 days a week, 365 days a year, facility maintenance break/fix response for all facility systems (electrical; Heating, Ventilation, and Air Conditioning; plumbing; locksmith) with a response time of 15 minutes after normal duty hours - Conduct preventative maintenance inspections (PMIs) for all building systems <p>Facilities Engineering:</p> <ul style="list-style-type: none"> - Conduct Management Process Facility Installation Standard Audits - Provide risk management analysis and mitigation plans - Maintain infrastructure drawings configuration management databases on a limited minimum basis - Develop and document facility long range planning programming - Provide consulting services, preliminary designs and engineering rough order of magnitude estimates for required infrastructure buildout changes <p>Missile Defense Integration and Operations Center (MDIOC) Operating Expenses:</p> <ul style="list-style-type: none"> - Lease GSA vehicles and a commercial warehouse - Funded calibration of measuring and monitoring equipment - Funded repair of classified network switches <p>Facility Services:</p> <ul style="list-style-type: none"> - Provide custodial services for over 675,000 square feet of floor space in Buildings 720 and 730 - Provide limited Copy Center and Shuttle Services for over 2,000 personnel - Provide in/out processing and personnel moves <p>FY 2017 Plans: The increase from FY 2016 to FY 2017 is a result of increased cost for host tenant support and increased rigor of configuration management documentation</p> <p>Host Tenant Support (Electrical, Gas, Water, Steam, Chilled Water, Waste Water, Grounds Maintenance, Refuse Removal, and Communications Support):</p> <ul style="list-style-type: none"> - Procure utility services through 50th Air Force Space Wing (Host Base) 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<p>- Sustain utility infrastructure and delivery systems</p> <p>Environmental, Safety and Occupational Health (ESOH):</p> <ul style="list-style-type: none"> - Continue maintenance and updating of the program accident prevention plan - Provide required industrial safety training to facility services personnel - Procure and distribute personal protection equipment for contracted activities - Ensure compliance with Hazardous Waste, Hazardous Material Recycling, and National Environmental Policy Act (NEPA) programs - Conduct recurring safety and environmental audits <p>Facilities Operations and Sustainment:</p> <ul style="list-style-type: none"> - Provide 24 hours a day, 7 days a week, 365 days a year, facility maintenance break/fix response for all facility systems (electrical; Heating, Ventilation, and Air Conditioning; plumbing; locksmith) with a response time of 15 minutes after normal duty hours - Conduct preventative maintenance inspections (PMIs) for all facility infrastructure systems <p>Facilities Engineering:</p> <ul style="list-style-type: none"> - Conduct Management Process Facility Installation Standard Audits - Provide risk management analysis and mitigation plans - Maintain infrastructure drawings configuration management databases - Develop and document facility long range planning programming - Provide consulting services, preliminary designs and engineering rough order of magnitude estimates for required infrastructure buildout changes <p>MDIOC Operating Expenses:</p> <ul style="list-style-type: none"> - Lease GSA Vehicles and a commercial warehouse - Fund calibration of measuring and monitoring equipment - Fund repair of classified network switches <p>Facility Services:</p>				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Provide custodial services for over 675,000 square feet of floor space in Buildings 720 and 730 - Provide limited Copy Center and Shuttle Services for over 2,000 personnel - Provide in/out processing and personnel moves 				
<p>Title: Engineering and Event Services</p> <p>Description: N/A</p> <p>FY 2015 Accomplishments: Mission Assurance and Event Execution Support</p> <ul style="list-style-type: none"> - Implemented baseline technical control for all Missile Defense Integration and Operations Center (MDIOC) mission critical subsystems and services - Executed MDIOC engineering management, quality assurance, configuration management and integration of all mission critical systems including: <ul style="list-style-type: none"> - Technical power distribution, Uninterruptable Power Supply Systems, major transformer substations, and circuit protection - Heating, Ventilation and Air Conditioning (HVAC), chilled water, and steam systems - Secure and non-secure voice communications for Ballistic Missile Defense Systems (BMDS); Operations, major tests, and general constituencies - Local and wide area secure data networking environments and network health and status tools 24 hours a day, 7 days a week, 365 days a year - Ensured high availability of integrated MDIOC systems and BMDS Operations support 24 hours a day, 7 days a week, 365 days a year - Implemented 'last mile' integration for BMDS Operations, BMDS test, wargaming, exercise, training and general admin services - Executed comprehensive configuration baseline integrity periods of non-disruption and work screening for all major tests and real world contingencies - Coordinated process improvement investments across all mission areas - Executed aggressive, proactive and tailored risk management to ensure integrity and persistent connectivity for all MDIOC missions including: <ul style="list-style-type: none"> - Command, Control, Battle Management and Communications (C2MBC) incremental development and integration across the Integration Laboratory, Experimentation Laboratory (X-Lab), and the International 		<p>Articles:</p> <p>6.772</p> <p>-</p>	<p>8.311</p> <p>-</p>	<p>7.202</p> <p>-</p>

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>Point of Presence</p> <ul style="list-style-type: none"> - BMDS focused, system and distributed ground testing and Hardware-in-the-Loop (HWIL) execution - Modeling and Simulation validation, verification and accreditation - BMDS flight tests including Flight Test Ground-Based Midcourse Defense (FTG) execution; Flight Test - Aegis (FTM) and Flight Test - THAAD (FTT) planning, coordination and situational awareness. For system flight tests directed from the MDIOC, this included protection of power, Heating, Ventilation and Air Conditioning, and communications critical to test execution and control. - Joint Target Operations Center (JTOC) Target of Opportunity (TOO) and target tracking, coordination and visualization - BMDS Operational Support Center and technical integration and implementation services 24 hours a day, 7 days a week, 365 days a year - MDA Intelligence Support Cell and Threat Modeling Center services - BMDS Wargame, exercise and Distributed Multi-Echelon Training System (DMETS) training execution; Warfighter Support Center program integration - Missile Defense Space Development Center (MDSDC) Satellite Operations, Ground System and experiment support operations, and Space Tracking and Surveillance System (STSS) testing - Enterprise Sensor Laboratory experimental, networking and facility support and coordination - Ground-Based Midcourse Defense (GMD) Fire Control component-level operations, integration, testing, and training - Joint Early Warning Laboratory mission services and connectivity - Combatant Command operations work centers including the United States Northern Command (USNORTHCOM) Command, Control, Battle Management and Communications (C2BMC) Control Center (CCC), Army 100th Missile Defense Brigade, and United States Strategic Command`s Joint Functional Component Command-Integrated Missile Defense - MDA General Services Network and Operational Support Center and Network Communications Center - MDA Computer Emergency Response Team <p>Technical Watch Support</p> <ul style="list-style-type: none"> - Provided on-site technical environment for Ballistic Missile Defense System (BMDS) ;Watch Officers, Safety Officers, and Information Assurance Officers to execute their duties 24 hours a day, 7 days a week, 365 days a year - Implemented recall procedures to augment subject matter expertise availability during contingencies and major events - Executed tabletop exercises to asses readiness for Combatant Command Operational contingencies and major BMDS tests 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Provided state change management and asset management technical support for the BMDS - Coordinated, reported and escalated critical information and BMDS test and operational event information to all Missile Defense Integration and Operations Center (MDIOC) technical and management staff to ensure rapid break/fix actions were executed <p>Program Quality Management, Risk Management, and Earned Value Management</p> <ul style="list-style-type: none"> - Provided overarching contract and financial management support for all Joint National Integration Center Research and Development Contract (JRDC) integrated programs projects - Provided engineering coordination, resource management, and event integration across all MDIOC mission areas - Conducted continuous process improvement and implementation across all JRDC execution and MDIOC missions - Delivered integrated skill mix planning, coordination and workforce deployment across the dynamic spectrum of MDIOC events - Executed integrated resource forecasting and de-confliction - Performed project management for discrete enterprise enhancements <p>Event Architecture & Engineering Design:</p> <ul style="list-style-type: none"> - Coordinated design and implementation of technical architectures for all major MDIOC hosted BMDS tests, training and operations - Delivered technical documentation packages for all major BMDS flight tests, ground tests, training and Combatant Command exercise support - Led requirements coordination and technical architecture enhancements for Ballistic Missile Defense System (BMDS); wargame, exercise and training networks - Updated BMDS end-to-end Combatant Command deployed architecture as-built documentation reflecting new incremental content and deployments - Maintained a technical repository of BMDS Implementation Architectures for real-time operations and configuration management <p>FY 2016 Plans:</p> <p>Mission Assurance and Event Execution Support</p> <ul style="list-style-type: none"> - Implement baseline technical control for all Missile Defense Integration and Operations Center (MDIOC) mission critical subsystems and services 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Execute MDIOC engineering management, quality assurance, configuration management and integration of all mission critical systems including: - Technical power distribution, Uninterruptable Power Supply Systems, major transformer substations, and circuit protection - Heating, Ventilation and Air Conditioning, chilled water and steam systems - Secure and non-secure voice communications for Ballistic Missile Defense Systems (BMDS); Operations, major tests, and general constituencies - Local and wide area secure data networking environments and network health and status tools 24 hours a day, 7 days a week, 365 days a year - Ensure high availability of integrated MDIOC systems and BMDS Operations support 24 hours a day, 7 days a week, 365 days a year - Implement 'last mile' integration for BMDS Operations, BMDS tests, wargames, exercises, training, and general admin services - Execute comprehensive configuration baseline integrity periods of non-disruption, periods of interest and work screening for all major tests and real world contingencies - Coordinate MDIOC process improvement investments across all mission areas - Execute aggressive, proactive and tailored risk management to ensure integrity and persistent connectivity for all MDIOC missions including: - Command, Control, Battle Management and Communications (C2MBC) incremental development and integration across the Integration Laboratory, Experimentation Laboratory (X-Lab), and the International Point of Presence - BMDS focused, system and distributed ground testing and Hardware-in-the-Loop (HWIL) execution - Modeling and Simulation validation, verification and accreditation - BMDS flight tests including Flight Test Ground-Based Midcourse Defense (FTG) execution; Flight Test - Aegis (FTM) and Flight Test - THAAD (FTT) planning, coordination and situational awareness. For system flight tests directed from the MDIOC, this includes ensuring the protection of power, Heating, Ventilation and Air Conditioning, and communications critical to test execution and control. - Joint Target Operations Center (JTOC) Target of Opportunity (TOO) and target tracking, coordination and visualization - BMDS Operational Support Center and technical integration and implementation services 24 hours a day, 7 days a week, 365 days a year - MDA Intelligence Support Cell and Threat Modeling Center services - BMDS Wargame, exercise and DMETS training execution; Warfighter Support Center program integration - Missile Defense Space Development Center (MDSDC) Satellite Operations, Ground System and experiment 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>support operations, and Space Tracking and Surveillance System (STSS) testing</p> <ul style="list-style-type: none"> - Enterprise Sensor Laboratory experimental, networking and facility support and coordination - Ground-Based Midcourse Defense (GMD) Fire Control component-level operations, integration, testing, and training - Joint Early Warning Laboratory mission services and connectivity - Combatant Command operations work centers including the United States Northern Command (USNORTHCOM) Command, Control, Battle Management and Communications (C2BMC) Control Center (CCC), Army 100th Missile Defense Brigade, and United States Strategic Command`s Joint Functional Component Command-Integrated Missile Defense - MDA General Services Network and Operational Support Center and Network Communications Center - MDA Computer Emergency Response Team <p>Technical Watch Support</p> <ul style="list-style-type: none"> - Provide on-site technical environment for Ballistic Missile Defense System (BMDS) ;Watch Officers, Safety Officers, and Information Assurance Officers to execute their duties 24 hours a day, 7 days a week, 365 days a year - Implement recall procedures to augment subject matter expertise availability during contingencies and major events - Execute tabletop exercises to asses readiness for Combatant Command Operational contingencies and major BMDS tests - Provide state change management and asset management technical support for the BMDS - Coordinate, report and escalate critical information and BMDS test and operational event information to all Missile Defense Integration and Operations Center (MDIOC) technical and management staff to ensure rapid break/fix actions are executed <p>Program Quality Management, Risk Management, and Earned Value Management</p> <ul style="list-style-type: none"> - Provide overarching contract and financial management support for all JNIC Research and Development Contract (JRDC)integrated programs projects - Provide engineering coordination, resource management, and event integration across all MDIOC mission areas - Conduct continuous process improvement and implementation across all JRDC execution and MDIOC missions - Deliver integrated skill mix planning, coordination and workforce deployment across the dynamic spectrum of MDIOC events - Execute integrated resource forecasting and de-confliction - Perform project management for discrete enterprise enhancements 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>Event Architecture and Engineering Design:</p> <ul style="list-style-type: none"> - Coordinate design and implementation of technical architectures for all major MDIOC hosted Ballistic Missile Defense System (BMDS) tests, training and operations - Deliver technical documentation packages for all major BMDS flight tests, ground tests, training and Combatant Command exercise support - Lead requirements coordination and technical architecture enhancements for BMDS; wargame, exercise and training networks - Update BMDS end-to-end Combatant Command deployed architecture as-built documentation reflecting new incremental content and deployments - Maintain a technical repository of BMDS Implementation Architectures for real-time operations and configuration management <p>FY 2017 Plans: The decrease in funding from FY16 to FY17 is a result of efficiencies gained through consolidation of some mission assurance and technical watch support functions</p> <p>Mission Assurance and Event Execution Support</p> <ul style="list-style-type: none"> - Implement baseline technical control for all MDIOC mission critical systems and services - Execute MDIOC Program engineering management, quality assurance, configuration management and integration of all mission critical systems including: <ul style="list-style-type: none"> - Technical power distribution, Uninterruptable Power Supply systems, major transformer substations and power distribution units, and circuit protection - Heating, ventilation and air conditioning (HVAC), chilled water, and steam systems - Secure and non-secure BMDS voice communications for; BMDS Operations, major tests, training, exercises, and general constituencies - Local and wide area secure data networking environments and network health and status tools 24 hours a day, 7 days a week, 365 days a year - Ensure availability of MDIOC Program provisioned systems and services supporting BMDS operations 24 hours a day, 7 days a week, 365 days a year - Implement 'last mile' integration for BMDS operations, test, wargames, Combatant Commander exercises, training and general administrative services 			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Execute comprehensive configuration management of technical architecture baseline capabilities during all major tests and real world contingencies - Coordinate process improvement investments across all mission areas - Execute proactive and tailored risk management to ensure integrity and persistent connectivity for all MDIOC missions including: <ul style="list-style-type: none"> - C2MBC incremental development, test, and integration across the Integration Laboratory, Experimentation Laboratory (X-Lab), BMDS Overhead Persistent Architecture (BOA), and the International Point of Presence - BMDS focused, system and distributed ground testing and Hardware-in-the-Loop (HWIL) execution - Modeling and Simulation Open Systems Architecture Sensor Model (OSM) development and validation, verification and accreditation - BMDS flight tests, including operational and developmental testing at the system and element level: Flight Test Operational (FTO), Flight Test Ground-based Midcourse Defense (FTG) execution; Flight Test - Aegis (FTM) and Flight Test - THAAD (FTT) planning, coordination and situational awareness. For system flight tests directed from the MDIOC, this includes ensuring the protection of power, environmental controls and communications critical to test execution - BMDS Network Operation Security Center (BNOSC) and technical integration and implementation services 24 hours a day, 7 days a week, 365 days a year - MDA Intelligence Support Cell and Threat Modeling Center services - BMDS wargames, Combatant Commander exercise and training execution and Warfighter Exercise Support Center program integration - Missile Defense Space Center (MDSC) Satellite Operations, Ground System and experiment support operations, and Space Tracking and Surveillance System (STSS) testing - Enterprise Sensor Laboratory experimental, networking and facility support and coordination - Ground-based Midcourse Defense Fire Control component-level operations, integration, testing, and training - Joint Early Warning Laboratory mission services and connectivity - Combatant Command operations work centers including the USNORTHCOM Command, C2BMC Control Center (CCC), Army 100th Missile Defense Brigade, and United States Strategic Command's Joint Functional Component Command-Integrated Missile Defense - MDA General Services Network and Operational Support Center (OSC) supporting the BMDS Watch Officer (BWO) and the Information Technology-Network Security Center (IT-NSC) - MDA Computer Emergency Response Team Technical Watch Support <ul style="list-style-type: none"> - Provide on-site technical environment for BMDS Watch Officers, Safety Officers, and Information Assurance Officers to 				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<p>execute their duties 24 hours a day, 7 days a week, 365 days a year</p> <ul style="list-style-type: none"> - Provide MDIOC Duty Officers to maintain situational awareness of BMDS Concurrent Test, Training, and Operations (CTTO) activities supported by MDIOC Program provisioned systems and services - Implement recall procedures to augment subject matter expertise availability during contingencies and major events - Provide state change management and asset management technical support for the BMDS - Coordinated, report and escalate critical facility information and BMDS test and operational event information to all MDIOC technical and management staff to ensure rapid break/fix actions are executed and reported to leadership <p>Program Management, Quality Management, Risk Management, and Earned Value Management</p> <ul style="list-style-type: none"> - Provide overarching contract and financial management support for all JNIC Research and Development Contract(JRDC) integrated programs projects - Provide engineering coordination, resource management, and event integration across all MDIOC mission areas - Conduct continuous process improvement and implementation across all JRDC execution and MDIOC missions - Deliver integrated skill mix planning, coordination and workforce deployment across the dynamic spectrum of MDIOC events - Execute integrated resource forecasting and de-confliction - Perform project management for discrete enterprise enhancements <p>Event Architecture and Engineering Design:</p> <ul style="list-style-type: none"> - Coordinate design and implementation of technical architectures for all major MDIOC hosted BMDS CTTO activities - Deliver technical documentation packages for all major BMDS flight tests, ground tests, training and Combatant Command exercise support - Lead requirements coordination and technical architecture enhancements for BMDS wargames, exercises, and training networks - Update BMDS end-to-end Combatant Command deployed architecture as-built documentation reflecting new incremental content and deployments - Maintain a technical repository of BMDS Implementation Architectures for real-time operations and configuration management 				
Title: Operations and Sustainment		5.355	5.442	5.899
Description: N/A		Articles: -	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i></p> <ul style="list-style-type: none"> - Funded Civilian and CSS positions supporting operations and sustainment of all Missile Defense Integration and Operations Center (MDIOC) activities contributing to the mission execution platform - Provided quality event planning, coordination, logistics, security access and host support for all MDIOC events and visitors - Delivered integrated service coordination for all MDIOC event and protocol support including: <ul style="list-style-type: none"> - Event Registration Web site - Offsite event registration - Security processing, including clearance verification and badging - Coordination of group lodging - Arrangement/Coordination/Scheduling of bus transportation - Reservation, setup, and coordination of access for all primary shared MDIOC conference rooms - Operation of Audio Visual equipment during events - Preparation for and conduct of official ceremonies; coordination and hosting of Distinguished Visitor itineraries; and information disclosure approval coordination - Funded Training and Travel <p><i>FY 2016 Plans:</i></p> <ul style="list-style-type: none"> - Fund Civilian and CSS positions supporting operations and sustainment of all Missile Defense Integration and Operations Center (MDIOC) activities contributing to the mission execution platform - Provide quality event planning, coordination, logistics, security access and host support for all MDIOC events and visitors - Deliver integrated service coordination for all MDIOC event and protocol support including management of the: <ul style="list-style-type: none"> - Event Registration Web site - Offsite event registration - Security processing, including clearance verification and badging - Arrangement/Coordination/Scheduling of bus transportation - Reservation, setup, and coordination of access for all primary shared MDIOC conference rooms - Operation of Audio Visual equipment during events - Preparation for and conduct of official ceremonies; coordination and hosting of Distinguished Visitor itineraries; and information disclosure approval coordination - Fund Training and Travel <p><i>FY 2017 Plans:</i></p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Fund Civilian and CSS positions supporting operations and sustainment of all Missile Defense Integration and Operations Center (MDIOC) activities contributing to the mission execution platform - Provide quality event planning, coordination, logistics, security access and host support for all MDIOC events and visitors - Deliver integrated service coordination for all MDIOC event and protocol support including management of the: <ul style="list-style-type: none"> - Event Registration Web site - Offsite event registration - Security processing, including clearance verification and badging - Arrangement/Coordination/Scheduling of bus transportation - Reservation, setup, and coordination of access for all primary shared MDIOC conference rooms - Operation of Audio Visual equipment during events - Preparation for and conduct of official ceremonies; coordination and hosting of Distinguished Visitor itineraries; and information disclosure approval coordination - Fund Training and Travel 				
<p>Title: Infrastructure Systems Repair, Sustainment, and Critical Upgrades</p> <p>Description: N/A</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Completed electrical power distribution projects in four mission quadrants to replace end-of-life systems, increased reliability; and improved power distribution efficiency, and redundancy for mission critical areas (multi-year project) - Completed electrical power distribution of the non-technical power switchgear scheduled maintenance (second and third phases) - Completed Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance for critical mission areas within the facility (second phase) - Completed the first phase of the compliance project to modify fire suppression system to meet building code requirements <p>FY 2016 Plans: The decrease in FY2016 is due to the realignment of funds to other Department of Defense priorities</p> <p>FY 2017 Plans: The Missile Defense Integration and Operations Center Program funding increase in FY17 is needed to accomplish scheduled Facility Sustainment, Restoration, and Modernization</p>		<p>Articles:</p> <p>4.613</p> <p>-</p>	<p>0.000</p> <p>-</p>	<p>2.857</p> <p>-</p>

UNCLASSIFIED

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

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Replace and upgrade capacity of Heating, Ventilation, and Air Conditioning end-of-life components to improve mission assurance for critical mission areas within the Research and Development Building (one quadrant) - Complete Fire Suppression System Compliance Project (two quadrants) - Execute Electrical Distribution TUS2 Switch Gear Refurbish Project - Replace/repair drainage/sewer system (Phase I -Building 720) - Replace Heating, Ventilation, and Air Conditioning Chilled Water Pumps (North System) - Reconfigure space to accommodate IT and Infrastructure support personnel (Phase II) 			
Accomplishments/Planned Programs Subtotals	50.127	45.303	51.773

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
--	--	---

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management & Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0603913C: <i>Israeli Cooperative Programs</i>	268.842	267.595	103.835	-	103.835	105.612	108.271	110.009	112.168	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Joint National Integration Center Research and Development Contract is the major performing integrated contract and is scheduled to be recompeted in FY 2016. The acquisition strategy for Missile Defense Integration and Operation Center (MDIOC) mission execution is to employ a contract to perform designated integration and sustainment tasks to conduct Ballistic Missile Defense System (BMDS) Research, Development, Test and Evaluation (RDT&E). The MDIOC is operated by missile defense subject matter experts (SME) composed of Government, military, civilian personnel, Federally Funded Research and Development Center (FFRDC), MDIOC Contract Support Services, and major defense contractors.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
0400 / 4				PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)					MD22 / Missile Defense Integration and Operations Center (MDIOC)						
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Infrastructure Systems and Support - MDIOC NG	C/CPAF	MDIOC/Northrup Grumman Mission Systems : Colorado Springs, CO	97.741	20.221		19.191	Nov 2015	20.880	Nov 2016	-		20.880	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC Custodial	C/FFP	MDIOC/Ability One : Colorado Springs, CO	0.000	1.161		0.000		1.158	Oct 2016	-		1.158	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC GSA / Leases / Calibration	MIPR	Various (GSA, 50th Space Wing, Warehouses) : Colorado Springs, CO	5.654	0.481		0.667		0.617	Nov 2016	-		0.617	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC NG	C/CPAF	MDIOC/Northrup Grumman Mission Systems : Colorado Springs, CO	67.076	8.421		9.127	Nov 2015	10.052	Nov 2016	-		10.052	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC Utilities	MIPR	50th Space Wing : Schriever AFB, CO	11.439	3.103		2.565		3.108	Oct 2016	-		3.108	Continuing	Continuing	Continuing
Engineering and Event Services - MDIOC NG	C/CPAF	MDIOC/Northrup Grumman Mission Systems : Colorado Springs, CO	44.959	6.772		8.311	Oct 2015	7.202	Oct 2016	-		7.202	Continuing	Continuing	Continuing
Operations and Sustainment - FFRDC	FFRDC	MDIOC : Colorado Springs, CO	2.167	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operations and Sustainment - Operations & Sustainment	Allot	MDIOC : Colorado Springs, CO	15.298	2.703		2.740	Oct 2015	3.091	Oct 2016	-		3.091	Continuing	Continuing	Continuing
Operations and Sustainment - Support Services	C/FFP	SRS/ManTech/ MiDAESS Multi : Colorado Springs, CO	11.869	2.564		2.640	Nov 2015	2.719	Nov 2016	-		2.719	Continuing	Continuing	Continuing
Operations and Sustainment - Travel and Training	Allot	MDIOC : Colorado Springs, CO	0.538	0.088		0.062	Oct 2015	0.089	Oct 2016	-		0.089	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	Project (Number/Name) MD22 / Missile Defense Integration and Operations Center (MDIOC)
--	---	--

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Infrastructure Systems Repair, Sustainment, and Critical Upgrades - MDIOC NG	C/CPAF	MDIOC/Northrop Grumman Mission Systems : Colorado Springs, CO	3.501	4.613		0.000		2.857	Dec 2016	-		2.857	Continuing	Continuing	Continuing
Subtotal			260.242	50.127		45.303		51.773		-		51.773	-	-	-

Remarks
Funds for utilities and base communications are specified in the Inter-service Support Agreement with the 50th Space Wing. In addition, the Missile Defense Integration and Operations Center (MDIOC) provides Technical Contract Support Services employees, for MDIOC operations and oversight of the Joint Research and Development Contractor (JRDC), as well as funding for JRDC work as required by the government.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
N/A

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
--	--	---

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
N/A

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	260.242	50.127	45.303	51.773	-	51.773	-	-	-

Remarks
N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
--	--	---

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity Planned Activity ✦
 Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Completed electrical power distribution in four mission quadrants to replace End-of-life systems, increase reliability, improve power distribution efficiency and redundancy to mission critical areas	✦	✦	✦	✦																								
Completed Fire Suppression Compliance Project in two mission quadrants	✦	✦	✦	✦																								
Replaced outside one Air Handling Unit			✦																									
Installed Computer Room Air Conditioning to support reliability of Uninterruptible Power Supply			✦	✦																								
Completed Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance in one of the mission quadrants			✦	✦																								
Installed Electrical Remote Power Panels (RPP) to support future migration of dispersed IT into a Special Purpose Processing Node			✦	✦																								
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY17)									✦	✦	✦	✦																
Replace/repair drainage/sewer system (Phase I - Building 720)									✦	✦	✦	✦																
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase II)									✦	✦	✦	✦																
Fire Suppression System Compliance Project (two quadrants)(FY17)									✦	✦	✦	✦																
Replace Heating, Ventilation, and Air Conditioning (HVAC) Chilled Water Pumps (North System)									✦	✦	✦	✦																
Electrical Distribution TUS2 Switch Gear Refurbish Project									✦	✦																		

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</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 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY18)													✦	✦	✦	✦												
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase III)													✦	✦	✦	✦												
Replace/repair drainage/sewer system (Phase II -Building 720)													✦	✦	✦	✦												
Electrical power distribution in two mission quadrants to replace- End-of-Life systems, increase reliability, improve power distribution efficiency, and redundancy to mission critical areas													✦	✦														
Fire Suppression System Compliance Project (two quadrants)(FY18)													✦	✦	✦													
Replace end-of-life Emergency Lighting Module (Building 730)													✦	✦														
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY19)																	✦	✦	✦	✦								
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase IV)																	✦	✦	✦	✦								
Replace/repair drainage/sewer system (Phase III -Building 720)																	✦	✦	✦	✦								
Fire Suppression System Compliance Project (two quadrants)(FY19)																	✦	✦	✦									
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY20)																					✦	✦	✦	✦				
Install Ambient Air Economizer (greening initiative)																					✦	✦	✦	✦				

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Completed electrical power distribution in four mission quadrants to replace End-of-life systems, increase reliability, improve power distribution efficiency and redundancy to mission critical areas	1	2015	4	2015
Completed Fire Suppression Compliance Project in two mission quadrants	1	2015	4	2015
Replaced outside one Air Handling Unit	3	2015	3	2015
Installed Computer Room Air Conditioning to support reliability of Uninterruptible Power Supply	3	2015	4	2015
Completed Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance in one of the mission quadrants	3	2015	4	2015
Installed Electrical Remote Power Panels (RPP) to support future migration of dispersed IT into a Special Purpose Processing Node	3	2015	4	2015
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY17)	1	2017	4	2017
Replace/repair drainage/sewer system (Phase I -Building 720)	1	2017	4	2017
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase II)	1	2017	4	2017
Fire Suppression System Compliance Project (two quadrants)(FY17)	2	2017	4	2017
Replace Heating, Ventilation, and Air Conditioning (HVAC) Chilled Water Pumps (North System)	2	2017	4	2017
Electrical Distribution TUS2 Switch Gear Refurbish Project	3	2017	4	2017
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY18)	1	2018	4	2018

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
--	--	---

Events	Start		End	
	Quarter	Year	Quarter	Year
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase III)	1	2018	4	2018
Replace/repair drainage/sewer system (Phase II -Building 720)	1	2018	4	2018
Electrical power distribution in two mission quadrants to replace- End-of-Life systems, increase reliability, improve power distribution efficiency, and redundancy to mission critical areas	2	2018	3	2018
Fire Suppression System Compliance Project (two quadrants)(FY18)	2	2018	4	2018
Replace end-of-life Emergency Lighting Module (Building 730)	3	2018	4	2018
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY19)	1	2019	4	2019
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase IV)	1	2019	4	2019
Replace/repair drainage/sewer system (Phase III -Building 720)	1	2019	4	2019
Fire Suppression System Compliance Project (two quadrants)(FY19)	2	2019	4	2019
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY20)	1	2020	4	2020
Install Ambient Air Economizer (greening initiative)	1	2020	4	2020
Re-purpose cafeteria as a multi-purpose facility (cafeteria, conference, and training center – Phase I)	1	2020	4	2020
Fire Suppression System Compliance Project (two quadrants)(FY20)	2	2020	4	2020
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY21)	1	2021	4	2021
Re-purpose cafeteria as a multi-purpose facility (cafeteria, conference, and training center – Phase II)	1	2021	4	2021
Fire Suppression System Compliance Project (two quadrants)(FY21)	2	2021	4	2021

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency			Date: February 2016	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		

Events	Start		End	
	Quarter	Year	Quarter	Year
Availability/Arc Flash/Short Circuit Coordination Study	3	2021	3	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MC22 / <i>Cyber Operations</i>
--	--	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MC22: <i>Cyber Operations</i>	0.514	0.592	0.472	0.456	-	0.456	0.612	0.617	0.640	0.653	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

The Missile Defense Integration and Operations Center (MDIOC) conducts Cyber Defensive Operations through Key Management Infrastructure and Information Assurance Training which interfaces with the Information Technology/Information Assurance Enterprise to provide secure communications, network health and status monitoring, mission critical restoral capability, and technical expertise.

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

	FY 2015	FY 2016	FY 2017
Title: Cyber Defensive Operations	0.592	0.472	0.456
Articles:	-	-	-
Description: The Missile Defense Integration and Operations Center (MDIOC) conducts Defensive Cyber Operations in the following categories:			
FY 2015 Accomplishments:			
Key Management Infrastructure			
- The MDIOC interfaced with the Information Technology/Information Assurance Enterprise to provide for the generation, production, control and distribution, and training for utilizing the keying material used with the Agency's cryptographic devices.			
Information Assurance Training			
- The MDIOC maintained an Information Assurance (IA) certified workforce through continuous IA training as required by DoD Directive 8570			
FY 2016 Plans:			
Key Management Infrastructure			
- Interface with the Information Technology/Information Assurance Enterprise to provide for the generation, production,			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MC22 / <i>Cyber Operations</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
control and distribution, and training for utilizing the keying material used with the Agency's cryptographic devices.				
Information Assurance Training				
- Maintain an Information Assurance (IA) certified workforce through continuous IA training as required by DoD Directive 8570				
FY 2017 Plans:				
Key Management Infrastructure				
- Interface with the Information Technology/Information Assurance Enterprise to provide for the generation, production, control and distribution, and training for utilizing the keying material used with the Agency's cryptographic devices.				
Information Assurance Training				
- Maintain an Information Assurance (IA) certified workforce through continuous IA training as required by DoD Directive 8570				
Accomplishments/Planned Programs Subtotals		0.592	0.472	0.456
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 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MC22 / <i>Cyber Operations</i>
--	--	--

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Cyber Defensive Operations - Cyber Defensive Operations	C/CPAF	MDIOC/Northrop : Grumman Mission Systems Colorado Springs, CO	0.514	0.592		0.472	Nov 2015	0.456	Dec 2016	-		0.456	Continuing	Continuing	Continuing
Subtotal			0.514	0.592		0.472		0.456		-		0.456	-	-	-

Remarks
N/A

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.514	0.592	0.472	0.456	-	0.456	-	-	-

Remarks
N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MC22 / <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 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
MC22 Cyber Operations					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦				

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MC22 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC22 Cyber Operations	1	2016	4	2020

UNCLASSIFIED

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

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>
--	--	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MD40: <i>Program-Wide Support</i>	8.560	3.253	2.164	2.521	-	2.521	2.619	2.831	2.992	3.121	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 In FY 2016, Program Wide Support (PWS) reflects a proportional change as a result of decreases in the Missile Defense Integration and Operations Center and in FY 2017, PWS reflects a proportional change as a result of increases in the Missile Defense Integration and Operations Center.
 Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests on the R-3.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians, and Contract Support Services. 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, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS 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 Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
Title: Program Wide Support	3.253	2.164	2.521
Articles:	-	-	-
Description: N/A			
FY 2015 Accomplishments: See paragraph A: Mission Description and Budget Item Justification			
FY 2016 Plans: See paragraph A: Mission Description and Budget Item Justification			
FY 2017 Plans: - See paragraph A: Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals	3.253	2.164	2.521

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>
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 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>
--	--	--

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Wide Support - Agency Facilities, Operations, and Maintenance	MIPR	Various : Multi: AK, AL, CA, CO, VA	5.301	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	0.241	0.073		0.000		0.178	Jul 2017	-		0.178	0.241	0.733	0
Program Wide Support - Agency Operations and Support Services	Reqn	Various : Multi: AK, AL, CA, CO, VA	3.018	3.180		2.164	Dec 2015	2.145	Nov 2016	-		2.145	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services.	C/CPFF	Various : Alatec INC, AL, CO, VA	0.000	0.000		0.000		0.198	Aug 2017	-		0.198	Continuing	Continuing	Continuing
Subtotal			8.560	3.253		2.164		2.521		-		2.521	-	-	-

Remarks
N/A

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.560	3.253	2.164	2.521	-	2.521	-	-	-

Remarks
N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</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 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</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

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED