Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force											Date: May 2017	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	354.744	143.118	278.147	253.939	0.000	253.939	195.528	143.666	130.109	74.803	261.702	1,835.756
643833: *MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP*	354.744	143.118	278.147	253.939	0.000	253.939	195.528	143.666	130.109	74.803	261.702	1,835.756
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 447												

Note

In FY2018, PE 0305164F, NAVSTAR Global Positioning System (User Equipment) efforts were transferred to PE 1203164F, NAVSTAR Global Positioning System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203164F.

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space-based radio Positioning, Navigation, and Timing (PNT) distribution system. GPS User Equipment (UE) consists of standardized receivers, antennas, antenna electronics, and other related equipment, grouped together in sets to derive navigation and time information transmitted from GPS satellites. These receiver sets are used by DoD. RDT&E funds UE development, integration, test, and analysis for new PNT receiver capabilities in Navigation Warfare (NAVWAR) across all military platforms using GPS services.

The Military Global Positioning System User Equipment (MGUE) Increment 1 program is responsible for the development of standard modernized receiver form factors for the Service-nominated lead platforms. The MGUE Capability Development Document (CDD) was approved by the Joint Requirements Oversight Council (JROC) on 24 Jul 2014. MGUE Increment 1 is initiating a new family of modernized GPS receivers that will deliver significantly improved capability to counter current and emerging PNT threats and enable military operations in a NAVWAR environment where current legacy receiver performance would be compromised. MGUE Increment 1 received a Milestone A decision in April 2012 and is in the Technology Maturation and Risk Reduction phase. The program received direction in February 2014 from the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to execute a new acquisition strategy, accelerating the program to provide test units faster to facilitate military end users. The MGUE program received a Milestone B decision in January 2017.

The MGUE Increment 2 effort is planned to begin in FY2017 and will continue to employ Military Code (M-Code) receiver technology into additional applications (space receiver, precision guided munitions, and handheld receiver) to meet Service requirements. This effort leverages the MGUE Increment 1 technology to the maximum extent while addressing producibility of M-Code integrated circuits far into the future.

Joint Service System Management Office (JSSMO)

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*

Global Positioning System (GPS) receivers enable precision navigation solutions for warfighters across the spectrum of land, sea and air domains. In 2006, Assistant Secretary of Defense for Networks and Information Integration (ASD (NII)) directed the Air Force to develop production ready M-Code components to meet Service needs. Public Law 111-383 913, effective 7 Jan 2011, prohibits procurement of GPS equipment unless it is M-Code capable after FY2017. The completion of card level compatibility and security certification will enable integration of M-Code capability into military GPS Receivers.

Additionally, in 2010, the Federal Aviation Administration (FAA) published new Automatic Dependent Surveillance Broadcast (ADS-B) rules effective January 1, 2020.

The ADS-B rule requires platform operators to have ADS-B avionics installed and operating in order to fly Mode S Identification Friend or Foe (IFF) Transponder equipped aircraft into FAA and/or International Civil Aviation Organization (ICAO) Mode S enabled Air-to-Air and Air-to-Ground, Surveillance airspace. DoD aircraft are not exempt from the FAA mandate.

FY2017 funding includes Embedded GPS/Inertial Navigation System (INS) (EGI), Miniaturized Airborne GPS Receiver (MAGR), Defense Advanced GPS Receiver (DAGR), and Government Reference Architecture development. This acquisition will enable the United States Air Force (USAF) to satisfy the DoD and civil mandates described above. Activities also include, but are not limited to, both current program planning and execution and future program planning. In FY 2018, JSSMO efforts transfer to PE 0604201F.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	141.861	278.147	235.790	0.000	235.790
Current President's Budget	143.118	278.147	253.939	0.000	253.939
Total Adjustments	1.257	0.000	18.149	0.000	18.149
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	9.999	0.000			
• SBIR/STTR Transfer	-8.742	0.000			
• Other Adjustments	0.000	0.000	18.149	0.000	18.149

Change Summary Explanation

FY2016 - $1.2M Increase needed to fund MGUE integration into B-2 Bomber test platform
FY2018 - $33.349M Funded program to FY2017 Service Cost Position (SCP)

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*

FY2018 - ($15.2M) Transfer JSSMO requirement to different PE

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: MGUE Increment 1	64.748	113.812	114.861
Description: The MGUE Increment 1 program will develop standard modernized receiver form factors for the Service-nominated lead platforms in accordance with the MGUE Inc 1 Capability Development Document (CDD). ***FY 2016 Accomplishments:*** Began developmental test of hardware and software. Continued security certification efforts. Assisted each lead platform office to integrate and tested M-Code receivers in their respective platforms. Evaluated Application Specific Integrated Circuit (ASIC) producibility and initiated long term M-Code ASIC producibility efforts. ***FY 2017 Plans:*** Complete Milestone B. Continue developmental test. Continue environmental and electromagnetic interference testing. Continue security certification efforts. Continue to assist each lead platform office to integrate and test M-Code receivers in their respective platforms. Stand up the new M-Code Cryptographic Initialization Capability. Conduct M-Code ASIC producibility analysis, risk reduction, and early engineering. Evaluate ASIC functional and performance capabilities. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, etc. ***FY 2018 Plans:*** Continue developmental test. Complete environmental and electromagnetic interface testing. Continue security certification efforts. Assist each lead platform office to integrate and test M-Code receivers in their respective platforms. Continue M-Code ASIC producibility analysis, risk reduction, and early engineering. Continue to evaluate functional and performance capabilities. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
Title: MGUE Increment 2	0.000	4.250	1.500
Description: The MGUE Increment 2 effort is planned to begin in FY2017 and will continue to develop M-Code receiver technology for additional applications (space receiver, precision guided munitions, and handheld receiver) to meet Service requirements. This effort leverages the MGUE Increment 1 technology to the maximum extent while ensuring producibility of M-Code integrated circuits far into the future to support DoD PNT requirements. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***			

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Continue Increment 2 acquisition strategy preparation. Evaluate M-Code ASIC producibility analysis, risk reduction, and early engineering. Evaluate ASIC functional and performance capabilities. Assess receiver architectures for Increment 2 implementation. Conduct requirement trades and perform verification planning. Begin planning and preparations for next generation ASIC fabrication and manufacturing. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, requirements analysis, contract documentation development, risk reduction activities, etc. ***FY 2018 Plans:*** Complete Increment 2 acquisition strategy. Complete Increment 2 ASIC and receiver requirement analysis and perform verification planning. Evaluate next generation ASIC and receiver design, engineering, and architecture with vendors, to include ASIC modeling and prototyping at new foundry. Conduct security certification planning activities. Begin preparations for ASIC fabrication and manufacturing. Start targeted risk reduction efforts by contractor(s) for M-code Handheld. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, requirements analysis, contract documentation development, risk reduction activities, etc.			
Title: Advanced Technology	2.858	7.940	8.150
Description: Advanced Technology includes efforts to mature technology for future GPS receivers called out in the MGUE CDD. These efforts aim to find innovative solutions to increase resiliency in GPS performance and improve on size, weight, power, and cost of military receivers. ***FY 2016 Accomplishments:*** Researched new technologies to augment military GPS and explored alternate sources of position, navigation, and timing for the warfighter. Invested in key technologies for advanced receivers to include modernized GPS simulators and clocks, advanced antennas, programmable receivers and software-based receivers as part of targeted risk reduction efforts. ***FY 2017 Plans:*** Prepare for an improved key handling and tracking system for future M-Code GPS equipment. Develop advanced cryptography to enable a PNT Software Define Radio receiver. Research new technologies to augment military GPS and also explore alternate sources of position, navigation, and timing for the warfighter. Preform research for navigation warfare capabilities. ***FY 2018 Plans:*** Develop new technologies to augment US military GPS receiver development. Continue initiative to standardize the GPS Modernized UE advanced cryptography. Develop new receiver capability and cryptography to take advantage of all available satellite navigation systems and signals. Investigate integrity of other Global Navigation Satellite Systems (GNSS) signals for			

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
delivering assured PNT. Continue development of key technologies for advanced modernization GPS simulators and clocks, advanced antennas and antenna electronics as part of targeted risk reduction efforts, and navigation warfare capabilities.			
Title: System/Platform Integration and Performance Certification ***Description:*** Integration of MGUE Increment 1 receiver form factors into the Service-nominated lead platforms in support of developmental and operational test events. Conduct technical and operational modernization impact analysis for MGUE Service lead platform integration. ***FY 2016 Accomplishments:*** Continued lead platform integration efforts. Completed B-2 lab testing in preparation for B-2 Operational Testing. Began GPS-based Positioning, Navigation, and Timing Service (GPNTS) integration and test activities supporting M-Code migration into the Arleigh Burke Destroyer. Began Army Defense Advanced Global Positioning System Receiver (DAGR) Distributed Device integration and test activities supporting M-code migration into the Stryker. Began Marine Joint Light Tactical Vehicle host equipment integration and test. Continued developmental and characterization testing. Continued updating GPS Enterprise Interface Control Documents for new M-Code receivers. ***FY 2017 Plans:*** Continue lead platform integration efforts in support of developmental and operational test events. Assist DoD integration of M-Code GPS receivers for joint Service non-lead platforms. ***FY 2018 Plans:*** Continue lead platform integration efforts in support of developmental and operational test events. Continue to assist DoD integration of M-Code GPS receivers for joint Service non-lead platforms. Assist DoD Integration of M-Code GPS receivers for joint Service non-lead platforms.	61.313	100.199	114.162
Title: Information Assurance, Security/Compatibility Certification, and Test/Evaluation ***Description:*** Develop, implement and maintain GPS security certification programs. Development of DoD Policy, Strategy & Resource Requirements for MGUE security certification and compatibility certification. Security certification, compatibility certification, and security approval ensures future military GPS receivers protect critical program information and continue working in all environments and concepts of operations called for by US Strategic Command. ***FY 2016 Accomplishments:*** Continued Modernized Security Evaluations/Tests for Selective Availability Anti-Spoofing Module (SAASM) and other legacy GPS receiver equipment. Reviewed, approved, and tracked SAASM/legacy receiver certified platforms and integrated applications for all of OSD. Continued MGUE security planning activities to include security approval for other than lead platforms, such as munitions and handhelds. Continued to enforce policy and other requirements related to receiver compatibility accreditation with	14.199	14.666	15.266

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
the GPS signal in space. Continued verification and validation required for security certification for all contractor's MGUE design. Continued security certification efforts for MGUE receivers. ***FY 2017 Plans:*** Complete the first security certification and compatibility on a MGUE ground form factor. Support lead platform integration and test activities. Continue Modernized Security Evaluations/Tests for SAASM and other legacy GPS receiver equipment. Review, approve, and track SAASM, M-Code receivers, and legacy receiver certified platforms and integrated applications for all of DoD. Continue MGUE security planning activities to include security approval for non-lead platforms. Continue to enforce policy and other requirements related to receiver compatibility accreditation with the GPS signal in space. Continue verification and validation required for security certification for all contractor's MGUE design. Continue security certification efforts for MGUE receivers. ***FY 2018 Plans:*** Support lead platform integration and test activities. Continue Modernized Security Evaluations/Tests for SAASM and other legacy GPS receiver equipment. Review, approve, and track SAASM, M-Code receivers, and legacy receiver certified platforms and integrated applications for all of DoD. Continue MGUE security planning activities to include security approval for non-lead platforms. Continue to enforce policy and other requirements related to receiver compatibility accreditation with the GPS signal in space. Continue verification and validation required for security certification for all contractor's MGUE design. Continue security certification efforts for MGUE receivers.			
Title: JSSMO Embedded GPS/INS - Modernized (EGI-M) ***Description:*** Incorporates M-Code and ADS-B capability into EGI receivers while addressing parts obsolescence. ***FY 2017 Plans:*** Develop a common core EGI-M design, begin missionization for initial platform and initiate box level testing.	-	21.304	-
Title: JSSMO MAGR 2K-M ***Description:*** Incorporates M-Code capability into MAGR 2K receivers while addressing parts obsolescence and providing a pathway to ADS-B Out implementation. ***FY 2017 Plans:*** Complete MAGR 2K-M design and begin box level testing.	-	8.574	-
Title: JSSMO DAGR-M ***Description:*** Integrates M-Code capability into DAGR receivers, providing M-Code capability for ground personnel and vehicles. ***FY 2017 Plans:***	-	3.728	-

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Initiate design activities to incorporate the M-Code capability into the DAGR receiver.			
Title: JSSMO Government Reference Architecture (GRA) ***Description:*** Establish a GRA embodying open systems architecture concepts enabling robust, resilient GPS receiver designs which support future modifications at an accelerated pace and at lower cost than the current contractor proprietary architecture. ***FY 2017 Plans:*** Continue selection and/or development of hardware standards and software navigation communication protocols, such as Universal Navigational Interface (UNI). Begin development of ground demonstrator for the GRA architecture.	-	2.928	-
Title: JSSMO Strategic Planning ***Description:*** Conduct strategic planning for GPS receiver modernization. ***FY 2017 Plans:*** Conduct strategic planning for GPS receiver, antenna and architecture development in support of M-Code incorporation and to accommodate mitigation of emerging navigation warfare threats; also travel and other support.	-	0.746	-
Accomplishments/Planned Programs Subtotals	143.118	278.147	253.939

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF: BA 01: GPSSPC: *Navstar GPS Space*	1.623	2.169	2.198	0.000	2.198	2.199	2.238	2.278	2.325	0.000	15.030

Remarks

SPAF funding in this PE supports legacy SAASM efforts.

E. Acquisition Strategy

The MGUE program has developed a comprehensive acquisition strategy to provide modernized GPS capabilities to US and Allied forces by developing a competitive market driven approach. This strategy establishes the signal compatibility and security criteria along with a process for evaluating components to enable rapid movement from development to fielding. The pillars of this effort are: (a) establishing time certain and low risk development; (b) bounding requirements to leverage mature technology to the maximum extent possible; (c) focusing on the development of form factors based on well-defined standards to support lead platform integration; and (d) implementing a proactive, collaborative MGUE platform integration activity to mitigate risk and reduce cost for DoD force structure modernization.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*

The MGUE program awarded three sole source contracts for the Increment 1 Technology Development Phase effort in September 2012, as follow-on efforts to the competitively awarded Modernized User Equipment (MUE) contracts awarded in June 2006. The effort spans the Technology Maturation and Risk Reduction Phase through design and includes integration and test of M-Code receivers into Service-nominated lead platforms. This effort also includes the security and compatibility certification of GPS receiver cards as a part of the Integration effort. The Service lead platforms will select from the available vendors to integrate and perform operational testing with funding from the MGUE program. This supports compliance with Public Law 111-383, section 913.

MGUE Increment 2 is in the Materiel Solutions Analysis phase. The MGUE program is developing an acquisition strategy to expand upon the competitive, market driven approach utilized in Increment 1 while leveraging the core M-Code technology developed in Increment 1. MGUE Increment 2 addresses long-term producibility of M-Code integrated circuits far into the future. MGUE Increment 2 develops M-Code receiver solutions suitable for integration into additional platforms, including a space receiver, precision guided munitions receiver, and a handheld device.

----------JSSMO----------

Modifications to existing receivers designs will occur via Engineering Change Proposals (ECPs)/Task Orders on existing USAF contracts. There is associated procurement funding by aircraft platforms tied to this development activity.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*	**Project (Number/Name)** 643833 / *MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 Technology Development (Rockwell)	C/CPIF	Rockwell Collins : Cedar Rapids, IA	72.593	16.403	Jan 2016	29.200	Jan 2017	35.500		0.000		35.500	48.169	201.865	-
MGUE Increment 1 Technology Development (Raytheon)	C/CPIF	Raytheon : El Segundo, CA	71.457	22.134	Jan 2016	30.035	Jan 2017	18.600		0.000		18.600	26.405	168.631	-
MGUE Increment 1 Technology Development (L3)	C/CPIF	L3 : Anaheim, CA	46.847	10.505	Jan 2016	20.391	Jan 2017	27.400		0.000		27.400	17.962	123.105	-
MGUE Increment 1 Pre-Tech Development	C/CPAF	Various : Various	16.482	2.858	Jan 2016	7.940	Jan 2017	8.150	Jan 2018	0.000		8.150	24.170	59.600	-
MGUE Increment 1 MGUE Demonstrations	C/CPFF	TBD : TBD	24.000	0.000		0.000		0.000		0.000		0.000	0.000	24.000	-
MGUE Increment 1 Platform Integration	C/CPAF	Various : Various	16.513	55.313	Jan 2016	83.089	Jan 2017	96.622	Jan 2018	0.000		96.622	141.740	393.277	-
MGUE Increment 1 Compatibility Certification	C/CPAF	Various : Various	6.548	6.000	Jan 2016	0.000	Jan 2017	0.000	Jan 2018	0.000		0.000	0.000	12.548	-
MGUE Increment 1 Information Assurance	C/CPAF	Various : Various	10.080	2.875	Jan 2016	4.270	Jan 2017	4.370	Jan 2018	0.000		4.370	11.000	32.595	-
MGUE Increment 1 Security Certification	C/CPAF	Various : Various	16.591	10.095	Jan 2016	2.946	Jan 2017	3.026	Jan 2018	0.000		3.026	7.220	39.878	-
MGUE Increment 2	C/TBD	Various : Various	0.000	0.000		4.250	Jul 2017	1.500	Jan 2018	0.000		1.500	376.106	381.856	-
MGUE Technical Mission Analysis	MIPR	Various : El Segundo, CA	2.733	9.384	Oct 2015	12.890	Oct 2016	13.000	Oct 2017	0.000		13.000	42.770	80.777	-
MGUE Increment 1 Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	14.382	0.000		17.110	Nov 2016	17.540	Nov 2018	0.000		17.540	55.240	104.272	-
JSSMO EGI-M 1	SS/CPFF	Honeywell : Clearwater, FL	0.000	0.000		7.586	Dec 2016	0.000		0.000		0.000	0.000	7.586	-
JSSMO EGI-M 2	SS/CPFF	Northrop Grumman : Woodland Hills, CA	0.000	0.000		13.718	Dec 2016	0.000		0.000		0.000	0.000	13.718	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*	**Project (Number/Name)** 643833 / *MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSSMO MAGR 2K-M	SS/CPFF	Raytheon : El Segundo, CA	0.000	0.000		8.574	Dec 2016	0.000		0.000		0.000	0.000	8.574	-
JSSMO DAGR	SS/CPFF	Rockwell Collins : Des Moines, IA	0.000	0.000		3.728	Dec 2016	0.000		0.000		0.000	0.000	3.728	-
JSSMO GRA	TBD	Not specified. : TBD	0.000	0.000		2.928	Dec 2016	0.000		0.000		0.000	0.000	2.928	-
JSSMO Strat Planning	TBD	Not specified. : TBD	0.000	0.000		0.746	Apr 2017	0.000		0.000		0.000	0.000	0.746	-
		Subtotal	298.226	135.567		249.401		225.708		0.000		225.708	750.782	1,659.684	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 Test and Evaluation (1)	C/CPAF	SPAWAR : San Diego, CA	8.904	1.229	Jan 2016	7.450	Jan 2017	7.870	Jan 2018	0.000		7.870	6.330	31.783	-
		Subtotal	8.904	1.229		7.450		7.870		0.000		7.870	6.330	31.783	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 and 2 FFRDC	Various	Aerospace : El Segundo, CA	23.243	4.340	Dec 2015	6.420	Oct 2016	5.867	Dec 2017	0.000		5.867	17.333	57.203	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*	**Project (Number/Name)** 643833 / *MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 and 2 FFRDC 2	Various	MITRE : El Segundo, CA	7.072	0.383	Dec 2015	1.460	Dec 2016	1.360	Dec 2017	0.000		1.360	4.280	14.555	-
MGUE Increment 1 and 2 A&AS	Various	Various : Various	17.020	1.219	Dec 2015	13.076	Dec 2016	12.815	Dec 2017	0.000		12.815	26.103	70.233	-
MGUE Increment 1 and 2 Other Support	Various	Various : Various	0.279	0.380	Dec 2015	0.340	Dec 2016	0.319	Dec 2017	0.000		0.319	0.980	2.298	-
		Subtotal	47.614	6.322		21.296		20.361		0.000		20.361	48.696	144.289	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	354.744	143.118		278.147		253.939		0.000		253.939	805.808	1,835.756	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*	**Project (Number/Name)** 643833 / *MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP*

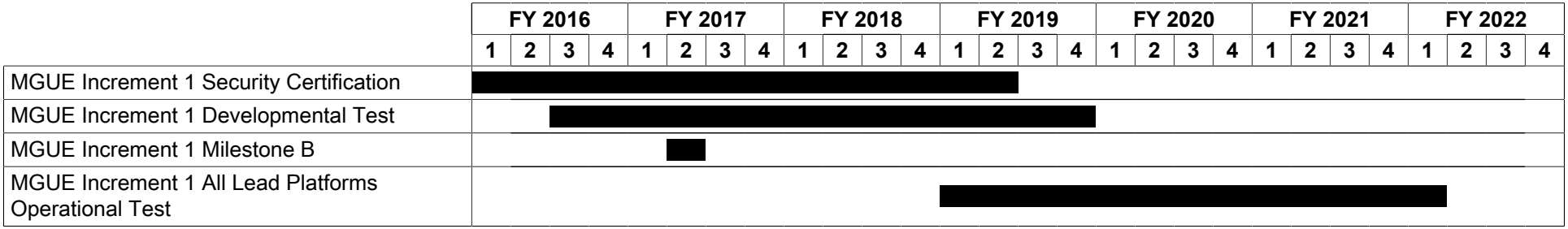

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 1203164F / *NAVSTAR Global Positioning System (User Equipment) (SPACE)*	**Project (Number/Name)** 643833 / *MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MGUE Increment 1 Security Certification	1	2016	2	2019
MGUE Increment 1 Developmental Test	3	2016	4	2019
MGUE Increment 1 Milestone B	2	2017	2	2017
MGUE Increment 1 All Lead Platforms Operational Test	1	2019	1	2022

Note

JSSMO efforts transfer to PE 0604201F beginning in FY18.