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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305164F: <i>NAVSTAR Global Positioning System User Equipment Space</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	131.564	165.936	133.601	-	133.601	133.527	128.118	125.262	156.109	Continuing	Continuing
673028: <i>Navstar GPS</i>	131.564	165.936	133.601	-	133.601	133.527	128.118	125.262	156.109	Continuing	Continuing

Note
 The program funding includes reductions for overhead reduction efficiencies that are not intended to impact program content. The efficiencies reductions total \$3.902M in FY12.

A. Mission Description and Budget Item Justification
 Totals include funding for PRCP Program Number 166, Navstar GPS.

The Global Positioning System (GPS) is a space-based radio Positioning, Navigation, and Time (PNT) distribution system. GPS User Equipment (UE) consists of standardized receivers, antennas, antenna electronics, etc., 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, test, and analysis for new PNT receiver capabilities in Navigation Warfare (Navwar) across all military platforms using GPS services. Additionally, it funds the integration with service nominated Military GPS User Equipment (MGUE) lead platforms, development of software upgrades, product improvement studies, GPS UE test and evaluation and mission support.

Due to increasing military dependence on GPS and emerging Electronic Warfare (EW) threat, the Navwar program was established to address EW solutions for GPS. Key elements of Navwar include protecting U.S. military and allies' use of GPS, preventing hostile exploitation of GPS, and preserving civil use of GPS outside the area of operations (AO). MGUE will leverage upon the proof of concept work accomplished by the Modernized User Equipment (MUE) effort. MUE laid the foundation for the next generation of air, maritime and ground GPS UE that will receive Y-code, Military (M)-code, and Coarse Acquisition code (YMCA) by developing air, maritime, and ground domain receiver card form factors and the Common GPS Module (CGM).

This program element is in Budget Activity 7 - Operational System Development, because UE supports operational systems.

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B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	137.163	165.936	137.950	-	137.950
Current President's Budget	131.564	165.936	133.601	-	133.601
Total Adjustments	-5.599	-	-4.349	-	-4.349
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-0.574	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-5.025	-			
• Other Adjustments	-	-	-4.349	-	-4.349

Change Summary Explanation

FY2012: -\$4.349 for higher DoD priorities.

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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
673028: <i>Navstar GPS</i>	131.564	165.936	133.601	-	133.601	133.527	128.118	125.262	156.109	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Totals include funding for PRCP Program Number 166, Navstar GPS.

The Global Positioning System (GPS) is a space-based radio Positioning, Navigation, and Time (PNT) distribution system. GPS User Equipment (UE) consists of standardized receivers, antennas, antenna electronics, etc., 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, test, and analysis for new PNT receiver capabilities in Navigation Warfare (Navwar) across all military platforms using GPS services. Additionally, it funds the integration with service nominated Military GPS User Equipment (MGUE) lead platforms, development of software upgrades, product improvement studies, GPS UE test and evaluation and mission support.

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This program element is in Budget Activity 7 - Operational System Development, because UE supports operational systems.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: GPS User Equipment	131.564	165.936	133.601	-	133.601
Description: Development of next generation Military GPS User Equipment (MGUE). Testing, studies and engineering to assist User Equipment integration, software upgrades, product improvement studies, commercial GPS UE test and evaluation and mission support.					
FY 2010 Accomplishments: Modernized User Equipment (MUE) proof of concept efforts to provide technical foundation for next generation military GPS UE that will receive Y-code, Military (M)-code, and Coarse Acquisition code (YMCA). Delivery					

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
of MUE technology demonstration receiver cards and independent government testing to support Technology Readiness Assessment (TRA).					
<i>FY 2011 Plans:</i> Modernized User Equipment (MUE) proof of concept efforts to provide technical foundation for next generation GPS User Equipment that will receive Y-code, Military (M) code, and Coarse Acquisition code (YMCA). Completion of independent government testing to support TRA. Source selection for next generation Military GPS User Equipment (MGUE).					
<i>FY 2012 Base Plans:</i> Completion of Military GPS User Equipment (MGUE) source selection activities and contract award for the development of embeded GPS receiver form factors for ground, air and maritime domains as well as a contractor defined Common GPS Module (CGM) for broad application across DoD.					
<i>FY 2012 OCO Plans:</i>					
Accomplishments/Planned Programs Subtotals	131.564	165.936	133.601	-	133.601

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	<u>Cost To Complete</u>	<u>Total Cost</u>
• Related Activities:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OPAF PE 0305164F: <i>GPS User Equipment</i>	8.486	8.198	10.201	0.000	10.201	9.530	9.895	10.284	10.468	Continuing	Continuing
• OPAF PE 0305164F: <i>GPS User Equipment</i>	5.705	5.180	2.008	0.000	2.008	2.031	2.061	2.093	2.131	Continuing	Continuing

D. Acquisition Strategy
The Modernized User Equipment (MUE) program awarded three competitive MUE technology demonstration contracts to develop and produce Ground-Based GPS Receiver Application Module (GB-GRAM-M) (ground) and GRAM-S/M (aviation) receiver form factors to mature the five critical technology elements (CTEs), test and demonstrate these CTEs in a relevant environment to achieve Technology Readiness Level (TRL) 6, and subject the prototypes to the Government's pilot security certification and performance evaluation processes.

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APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	PE 0305164F: <i>NAVSTAR Global Positioning System User Equipment Space</i>	673028: <i>Navstar GPS</i>

The Military GPS User Equipment (MGUE) program was established to satisfy the following objectives: (a) develop a new set of GPS receivers capable of operating in a Navigation Warfare (NAVWAR) environment and countering current and emerging Positioning, Navigation, and Timing (PNT) threats, (b) upgrade GPS receivers to exploit new technologies, (c) shift SMC/GP development responsibility to a core GPS capability, and (d) prevent PNT service disruptions due to non-compliance.

To satisfy these objectives, SMC/GP has formulated an incremental acquisition strategy to deliver Military-Code (M-Code) capable GPS receiver form factors (receiver cards) to support the service nominated lead platforms identified in the draft MGUE Capabilities Development Document (CDD). SMC/GP will host a full and open competition for Increment 1 Technology Development (TD) with contract options for Engineering, Manufacturing, and Development (EMD), and Low Rate Initial Production (LRIP). Full Rate Production will be the subject of a subsequent acquisition strategy. Increment 1 will leverage existing mature technologies developed under the preceding MUE program to develop and produce a set of embedded GPS receiver form factors for the ground, air and maritime domains as well as a contractor-defined Common GPS Module (CGM) for broad application across DoD. In addition, the program will institute a GPS Enterprise wide security certification and performance evaluation process to support GPS receiver development efforts throughout DoD.

E. 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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force **DATE:** February 2011

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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Receiver Technology	Various	Various:Various,	27.062	7.644	Nov 2010	-		-		-	0.000	34.706	0.000
Advanced Antenna Technology	C/CPAF	Various:Various,	93.332	5.609	Nov 2010	-		-		-	0.000	98.941	0.000
SAASM	MIPR	Sandia National Labs:Kirtland AFB, NM	53.040	4.102	Nov 2010	-		-		-	0.000	57.142	0.000
SAASM/GB-GRAM	Various	Various:Various,	32.894	1.775	Nov 2010	-		-		-	0.000	34.669	0.000
Modernized User Equipment (MUE)	C/CPAF	Rockwell Collins:Cedar Rapids, IA	169.487	31.438	Nov 2010	-		-		-	0.000	200.925	0.000
MUE (Raytheon)	C/CPAF	Raytheon:Garland, TX	169.485	31.437	Nov 2010	-		-		-	0.000	200.922	0.000
MUE (L-3)	C/CPAF	L-3:Anaheim, CA	169.485	31.437	Nov 2010	-		-		-	0.000	200.922	0.000
Military GPS User Equipment (MGUE)	TBD	TBD:TBD,	-	-		91.865	Nov 2011	-		91.865	Continuing	Continuing	0.000
Integration	PO	46th Test Group:Holloman AFB, NM	7.884	4.767	Nov 2010	-		-		-	Continuing	Continuing	0.000
Completed UE Product Development Efforts	Various	Various:Various,	197.840	-		-		-		-	0.000	197.840	0.000
Subtotal			920.509	118.209		91.865		-		91.865			0.000

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Wing Support	Various	Various:Various,	86.913	20.095	Nov 2010	12.489	Nov 2011	-		12.489	Continuing	Continuing	0.000
FFRDC	Various	Aerospace:El Segundo, CA	11.900	14.450	Nov 2010	15.180	Nov 2011	-		15.180	0.000	41.530	0.000
SE/Program Spt/Joint Navwar Center (JNWC)	Various	Various:Various,	124.207	9.161	Nov 2010	14.067	Nov 2011	-		14.067	Continuing	Continuing	0.000
Completed Support Efforts	Various	Various:Various,	62.490	-		-		-		-	0.000	62.490	0.000
Subtotal			285.510	43.706		41.736		-		41.736			0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force		DATE: February 2011
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Begin Modernized User Equipment (MUE) Technical Development Cards Delivery	4	2010	2	2011
MGUE Milestone A	2	2011	2	2011
MGUE Increment 1 Source Selection	4	2011	3	2012
Complete Independent government testing of MUE technology demonstration receiver card	1	2012	1	2012
MGUE Contract Award	4	2012	4	2012