

UNCLASSIFIED

PE NUMBER: 0305164F

PE TITLE: NAVSTAR Global Positioning System User Equipment Space

Exhibit R-2, RDT&E Budget Item Justification	DATE May 2009
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305164F NAVSTAR Global Positioning System User Equipment Space
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Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	150.979	126.712	137.692	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
3028 Navstar GPS	150.979	126.712	137.692	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space-based radio positioning, navigation, and time 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 and testing, studies and engineering to assist UE aircraft integration, software upgrades, product improvement studies, commercial GPS UE test and evaluation, and mission support.

Due to increasing military dependence on GPS and emerging Electronic Warfare (EW) threat, the Navigation Warfare (Navwar) program was established to address EW solutions for GPS. Key elements of GPS Modernization 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). Military GPS User Equipment (MGUE) will continue the proof of concept work accomplished by the Modernized User Equipment (MUE) effort which laid the foundation for the next generation of air, ground and space based GPS UE that will receive Y-code, Military (M)-code, and Coarse Acquisition code (YMCA).

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

(U) B. Program Change Summary (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Previous President's Budget	154.581	127.513	156.797
(U) Current PBR/President's Budget	150.979	126.712	137.692
(U) Total Adjustments	-3.602	-0.801	
(U) Congressional Program Reductions		-0.344	
Congressional Rescissions		-0.457	
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-3.602		

(U) Significant Program Changes:

-\$0.801M in FY09 for Congressional General Reductions. -\$17.000M in FY10 for higher DoD priorities.

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 07 Operational System Development					PE NUMBER AND TITLE 0305164F NAVSTAR Global Positioning System User Equipment Space			PROJECT NUMBER AND TITLE 3028 Navstar GPS		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
3028 Navstar GPS	150.979	126.712	137.692	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

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

(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Continue Advanced UE Technology efforts	8.153	10.000	13.640
(U) Continue Selective Availability Anti-Spoofing Module (SAASM)/GPS Receiver Applications Module (GRAM-SAASM) development	3.634	2.275	0.900
(U) Continue System Engineering & Integration (SE&I)	7.301	4.705	7.746
(U) Continue Program Support	23.374	27.622	36.117
(U) Continue Modernized User Equipment (MUE/MGUE)	106.587	80.307	77.072
(U) Continue Integration, Test and Evaluation	1.930	1.803	2.217
(U) Total Cost	150.979	126.712	137.692

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

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to Complete</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>								
(U) AF RDT&E										
(U) Other APPN										

Exhibit R-2a, RDT&E Project Justification	DATE May 2009
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305164F NAVSTAR Global Positioning System User Equipment Space	PROJECT NUMBER AND TITLE 3028 Navstar GPS
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(U) C. Other Program Funding Summary (\$ in Millions)

(U) Operations and Maintenance (PE 0305164F, BA 1 - Operating Forces, SAG 11M, 13D)	2.798	6.010	5.236		Continuing	TBD
(U) Aircraft Procurement (PE 0305164F, BA 7, Aircraft Support Equipment, BP19)	12.508	15.789	19.530		Continuing	TBD
(U) Other Procurement (PE 0305164F, BP 83 - Electronics & Telecommunications Equipment, WSC 836730, P-62)	8.047	5.989	5.805		Continuing	TBD

(U) D. Acquisition Strategy

The GPS Wing acquisition strategy is to continue the development of GPS user equipment (UE) to support current warfighter activities and execute concept definition and technology risk reduction programs that will define and mature technologies needed for GPS Modernization. The GPS UE program will continue Selective Availability Anti-Spoofing Module (SAASM) receiver development /production and work with platforms/users to identify requirements and upgrade paths for GPS enhancements. Additionally, several anti-jam technology risk reduction efforts will be pursued to mature technologies and prepare for technology insertion to combat the potential threat that U.S. forces may be denied the use of GPS signals.

The Modernized User Equipment (MUE) program awarded three contracts to produce technical demonstration cards and forms the foundation (Increment 0) for the Military GPS User Equipment effort (MGUE). MUE is scheduled to deliver tech demo cards EOY FY09 with testing to follow in FY10 to demonstrate Technology Readiness Level (TRL) 6. The MGUE effort continues the Y-Code/M-code/Coarse Acquisition (YMCA) proof of concept development. MGUE will involve a separate RFP with awarded contract(s) to develop "product ready status" cards for initial lead platforms. MGUE will meet ASD/NII GPS User Equipment policy memo and JROC capability development document requirements.

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Exhibit R-3, RDT&E Project Cost Analysis

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(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u> Receiver Technology	Various	AFRL - WPAFB, OH & KAFB, NM, SPAWAR, CECOM	19.562	0.500	Jan-08	0.000	Nov-08	7.000	Nov-09	Continuing	TBD	
Advanced Antenna Technology	Various	Various	70.081	6.611	Jan-08	10.000	Nov-08	6.640	Nov-09	Continuing	TBD	
DOE Sandia (SAASM)	MIPR	Kirtland AFB, NM	47.981	3.034	Jan-08	1.425	Nov-08	0.600	Nov-09	Continuing	TBD	
Various (SAASM/GB-GRAM)	Various	Various	31.144	0.600	Jan-08	0.850	Nov-08	0.300	Nov-09	Continuing	TBD	
Various (Modernized UE)	Various	Various	242.090	106.587	Jan-08	80.307	Nov-08	77.072	Nov-09	Continuing	TBD	
Holloman AFB (Various Integration)	Project Order	46th TG, Holloman AFB, NM	6.884	0.300	Jan-08	0.000	Nov-08	0.700	Nov-09	Continuing	TBD	
Completed UE Product Development Efforts	Various	Various	197.840	0.000		0.000		0.000		0.000	197.840	
Subtotal Product Development			615.582	117.632		92.582		92.312		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u> Wing Support	Various	Various	24.100	24.416	Jan-08	27.622	Nov-08	36.117	Nov-09	Continuing	TBD	
SE/Program Spt/Joint Navwar Center (JNWC)	Various	Various	104.455	7.301	Jan-08	4.705	Nov-08	7.746	Nov-09	Continuing	TBD	
Completed Support Efforts	Various	Various	62.490	0.000		0.000		0.000		0.000	62.490	
Subtotal Support			191.045	31.717		32.327		43.863		Continuing	TBD	0.000
Remarks:												
(U) <u>Test & Evaluation</u> 46th TG/UE development & production Testing	Project Order / Various	Holloman AFB, NM / Various	55.910	1.630	Jan-08	1.803	Nov-08	1.517	Nov-09	Continuing	TBD	
Subtotal Test & Evaluation			55.910	1.630		1.803		1.517		Continuing	TBD	0.000
Remarks:												
(U) <u>Management</u> Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Subtotal			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												

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Project 3028

Exhibit R-3 (PE 0305164F)

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305164F NAVSTAR Global
Positioning System User Equipment
Space

PROJECT NUMBER AND TITLE

3028 Navstar GPS

(U) Total Cost

862.537

150.979

126.712

137.692

Continuing

TBD

0.000

Exhibit R-4, RDT&E Schedule Profile

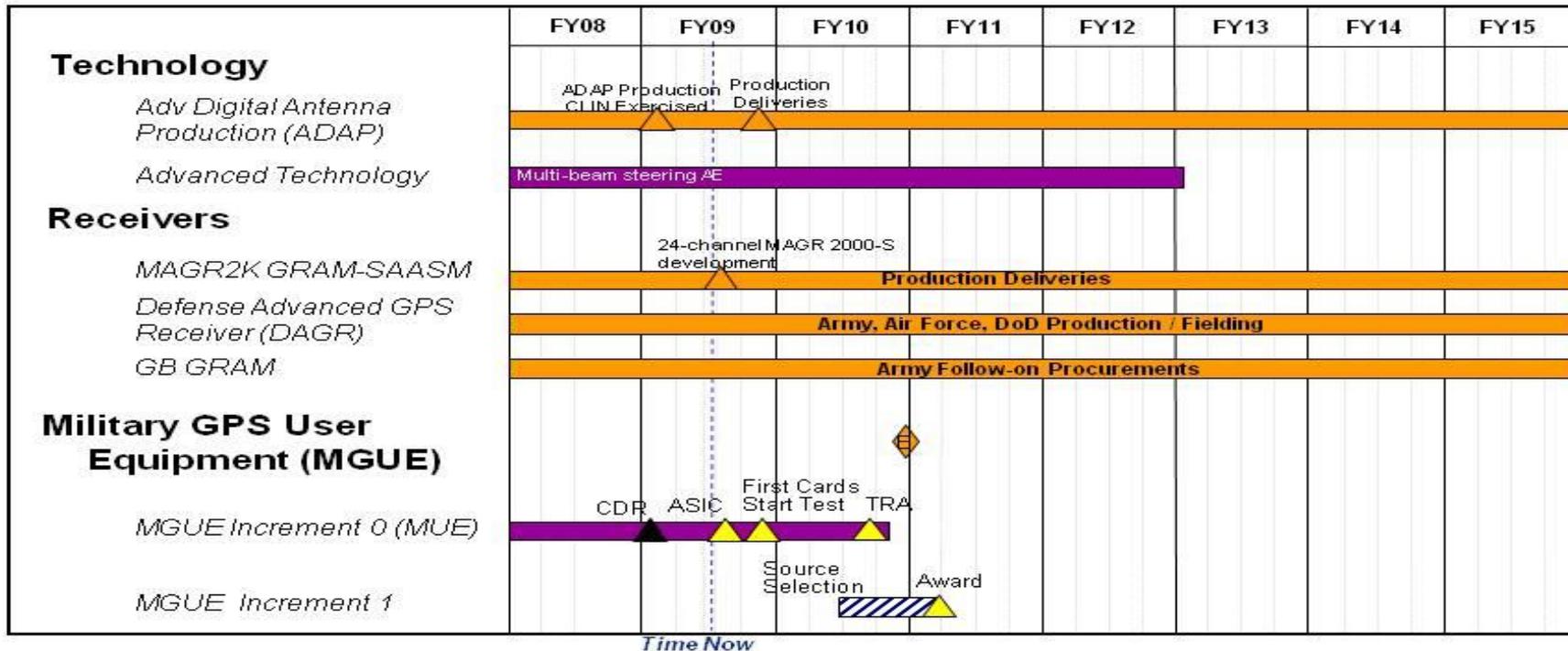
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GRAM: GPS Receiver Applications Module PDR: Preliminary Design Review TRA: Technical Readiness Assessment (TRL6)
 CDR: Critical Design Review LRU I&T: Line Replaceable Unit Integration & Technology
 SAASM: Selective Availability Anti-Spoofing Module AE: Antenna Electronics
 LRIP: Low Rate Initial Production MEMS IMU: Micro-Electro Mechanical Inertial Measurement Unit

Exhibit R-4a, RDT&E Schedule Detail

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May 2009

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(U) <u>Schedule Profile</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) MGUE In Process Review	4Q		
(U) Advance Digital Antenna Production (ADAP) contract award		1Q	
(U) Military User Equipment (MUE) Critical Design Review (CDR)		1Q	
(U) ADAP deliveries begin		4Q	
(U) Military GPS User Equipment (MGUE) Increment 1 Request for Proposal (RFP) release			3Q
(U) MGUE KDP-B			4Q

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