

UNCLASSIFIED

PE NUMBER: 0305164F

PE TITLE: NAVSTAR Global Positioning System User Equipment Space

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2008
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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 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	130.254	154.581	127.513	156.797	186.304	89.658	88.796	Continuing	TBD
3028 Navstar GPS	130.254	154.581	127.513	156.797	186.304	89.658	88.796	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 GPS dependence 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 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	133.574	93.267	67.001
(U) Current PBR/President's Budget	130.254	154.581	127.513
(U) Total Adjustments	-3.320		
(U) Congressional Program Reductions		-1.886	
Congressional Rescissions			
Congressional Increases		63.200	
Reprogrammings			
SBIR/STTR Transfer	-3.320		

(U) Significant Program Changes:

FY08: \$63.2M increase for Modernized User Equipment (MUE); FY09: \$60.5M increase for MUE

Exhibit R-2a, RDT&E Project Justification

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Cost (\$ in Millions)		FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
3028	Navstar GPS	130.254	154.581	127.513	156.797	186.304	89.658	88.796	Continuing	TBD
	Quantity of RDT&E Articles	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 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Continue Advanced UE Technology efforts	9.454	9.600	9.500
(U) Continue Selective Availability Anti-Spoofing Module (SAASM)/GPS Receiver Applications Module (GRAM-SAASM) development	2.500	4.100	0.700
(U) Continue Integration, Test and Evaluation	2.300	2.050	2.500
(U) Continue System Engineering	1.100	7.300	13.000
(U) Continue Program Support	24.100	31.511	20.077
(U) Continue Modernized User Equipment (MUE/MGUE)	90.800	100.020	81.736
(U) Total Cost	130.254	154.581	127.513

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

	<u>FY 2007</u>	<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>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) AF RDT&E									
(U) Other APPN									

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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)	2.711	5.100	6.102	6.829	4.266	4.366	4.471	Continuing	TBD	
(U) Aircraft Procurement (PE 0305164F, BA 7, Aircraft Support Equipment, BP19)	9.831	12.508	15.837	19.530	20.027	22.176	21.537	Continuing	TBD	
(U) Other Procurement (PE 0305164F, BP 83 - Electronics & Telecommunications Equipment, WSC 836730, P-62)	5.704	8.047	6.007	5.805	5.300	2.096	2.091	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 forms the foundation (Spiral 0) for the Military GPS User Equipment effort. The MGUE effort continues the Y-Code/M-code/Coarse Acquisition (YMCA) proof of concept development. MGUE meets 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</u> <u>Prior to FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>FY 2008</u> <u>Cost</u>	<u>FY 2008</u> <u>Award</u> <u>Date</u>	<u>FY 2009</u> <u>Cost</u>	<u>FY 2009</u> <u>Award</u> <u>Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u> Rockwell (MAGR)	C/FPIF/FFP / CPAF		19.293	0.000		0.000		0.000		0.000	19.293	
DOE Sandia (SAASM)	MIPR	Kirtland AFB, NM	46.081	1.900	Jan-07	1.900	Jan-08	0.600	Jan-09	Continuing	TBD	
NAWC (SAASM)	MIPR		0.599	0.000		0.000		0.000		0.000	0.599	
Various (SAASM/GB-GRAM)	Various	Various	30.544	0.600	Jan-07	2.200	Jan-08	0.100	Jan-09	Continuing	TBD	
Various (Modernized UE)	Various	Various	151.290	90.800	Jan-07	100.020	Jan-08	81.736	Jan-09	Continuing	TBD	
Alliant Techsys Inc (SAASM) & Multiple NAVWAR PRDAs Holloman AFB (Various Integration)	C/CPFF & C/CPAF Project Order	46th TG, Holloman AFB, NM	18.222	0.000		0.000		0.000		0.000	18.222	
			6.704	0.180	Jan-07	0.300	Jan-08	0.700	Jan-09	Continuing	TBD	
SPAWAR (Various Integration)			0.286	0.000		0.000		0.000		0.000	0.286	
General Dynamics (Various)	Time and Materials		1.810	0.000		0.000		0.000		0.000	1.810	
Completed technology development efforts Allan Osborne, Alliant Tech, Rockwell Collins, and Raytheon (DAGR)	Various PRDA	Various	85.634	0.000		0.000		0.000		0.000	85.634	
			28.108	0.000		0.000		0.000		0.000	28.108	
Raytheon (MAGR2K) (GRAM-SAASM)	PRDA		31.395	0.000		0.000		0.000		0.000	31.395	
Advanced UE Tech Invest Receiver Technology	Various		4.646	0.000		0.000		0.000		0.000	4.646	
		AFRL - WPAFB, OH & KAFB, NM, SPAWAR, CECOM	17.758	1.804	Dec-06	0.800	Dec-07	2.200	Dec-08	Continuing	TBD	
Anti-jam Filter Technology	Various	Various	7.847	0.000		0.000		0.000		0.000	7.847	
Advanced Antenna Technology	Various	Various	62.431	7.650	Dec-06	8.800	Dec-07	7.300	Dec-07	Continuing	TBD	
Subtotal Product Development			512.648	102.934		114.020		92.636		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u> Overlook Sys (OASD/C3I)	C/CPFF	OASD, Arlington, VA	27.897	0.000		0.000		0.000		0.000	27.897	
Various	Various	Various	0.000	24.100	Jan-07	31.511	Jan-08	20.077	Jan-09		75.688	
Aerospace Corp (Technical Supt)	CPFF	Aerospace, Los Angeles, CA	25.996	0.000		0.000		0.000		Continuing	TBD	
PRC (Technical Supt)	Time and		0.714	0.000		0.000		0.000		0.000	0.714	

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Exhibit R-3, RDT&E Project Cost Analysis

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07 Operational System Development				0305164F NAVSTAR Global Positioning System User Equipment Space				3028 Navstar GPS			
Miscellaneous (SE/Program Spt/Joint Navar Center (JNWC))	Materials Various	Various	103.355	1.100	Jan-07	7.300	Jan-08	13.000	Jan-09	Continuing	TBD
Various (Other Navwar Studies)	Various	Various	7.883	0.000		0.000		0.000		0.000	7.883
Subtotal Support			165.845	25.200		38.811		33.077		Continuing	TBD
Remarks:											0.000
(U) <u>Test & Evaluation</u>											
46th TG (SAASM/Test)	Project Order		31.987	0.000		0.000		0.000		0.000	31.987
46th TG/UE development & production Testing	Project Order / Various	Holloman AFB, NM / Various	21.803	2.120	Jan-07	1.750	Jan-08	1.800	Jan-09	Continuing	TBD
Subtotal Test & Evaluation			53.790	2.120		1.750		1.800		Continuing	TBD
Remarks:											0.000
(U) <u>Management</u>											0.000
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000
Remarks:											0.000
(U)											0.000
Subtotal			0.000	0.000		0.000		0.000		0.000	0.000
Remarks:											0.000
(U) Total Cost			732.283	130.254		154.581		127.513		Continuing	TBD
											0.000

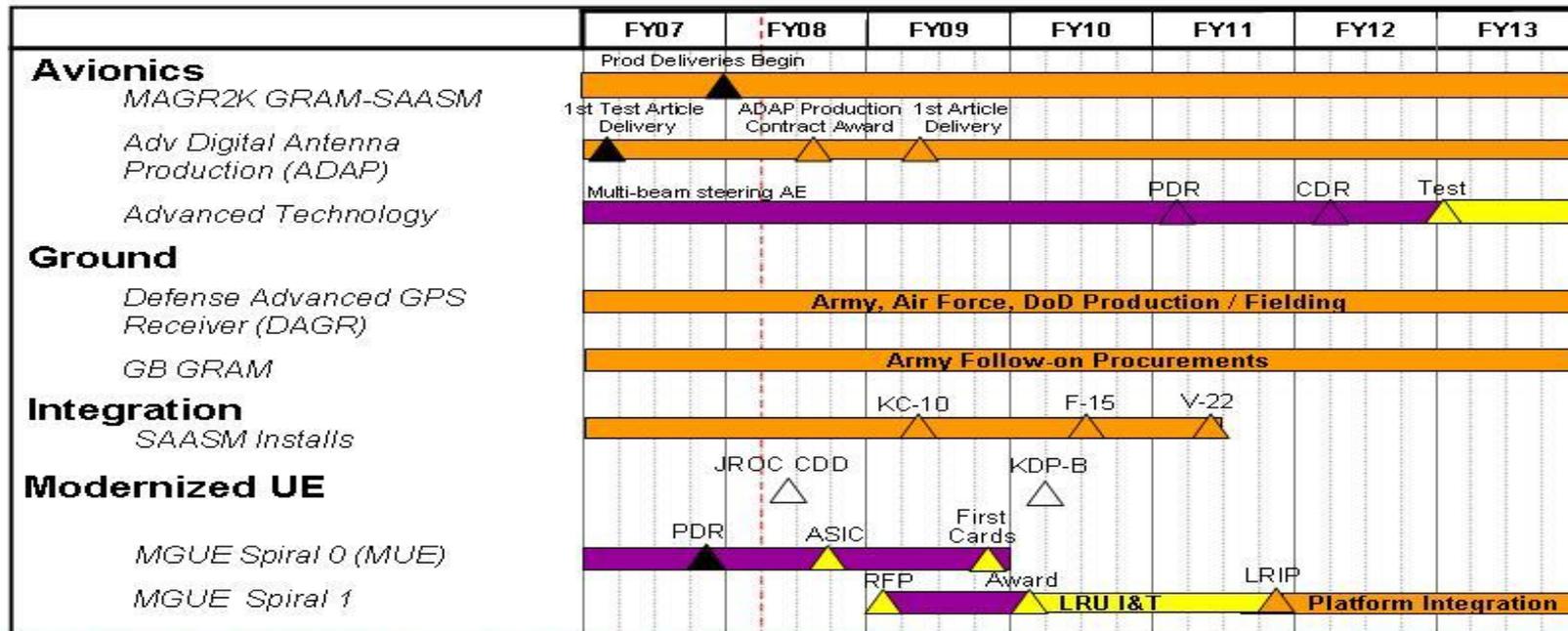
Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY
07 Operational System Development

PE NUMBER AND TITLE
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Space

PROJECT NUMBER AND TITLE
3028 Navstar GPS



GRAM: GPS Receiver Applications Module
 CDR: Critical Design Review
 RFP: Request for Proposal
 YMCA – Y-Code, M-code, Coarse Acquisition
 MAGR2K: Miniaturized Airborne GPS Receiver 2000
 LRU I&T: Line Replaceable Unit Integration & Technology
 SAASM: Selective Availability Anti-Spoofing Module
 LRIP: Low Rate Initial Production
 PDR: Preliminary Design Review
 PRDA: Program R&D Announcement
 AE: Antenna Electronics

- Concept activities
- Production / fielding
- Design / development
- Operations / sustainment
- Integration / test
- Key events

Exhibit R-4a, RDT&E Schedule Detail

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PE NUMBER AND TITLE

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Positioning System User Equipment
Space

PROJECT NUMBER AND TITLE

3028 Navstar GPS

(U) Schedule Profile

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) MUE System Requirements Review (SRR)	1Q		
(U) MUE System Design Review (SDR)	2Q		
(U) MUE Preliminary Design Review (PDR)	4Q		
(U) ADAP First Production Order		3Q	
(U) MUE ASIC Complete		3Q	
(U) MUE Critical Design Review (CDR)		4Q	
(U) Military GPS User Equipment (MGUE) Spiral 1 RFP release			1Q
(U) ADAP First Article Delivery			2Q