

## UNCLASSIFIED

PE NUMBER: 0305165F  
PE TITLE: NAVSTAR GPS (Space)

Exhibit R-2, RDT&E Budget Item Justification									DATE <b>February 2005</b>																																														
BUDGET ACTIVITY <b>07 Operational System Development</b>					PE NUMBER AND TITLE <b>0305165F NAVSTAR GPS (Space)</b>																																																		
Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total																																													
Total Program Element (PE) Cost	142.198	147.037	188.301	131.624	106.993	78.502	58.638	38.044	Continuing	TBD																																													
3030 NAVSTAR GPS (Space & Control)	142.198	147.037	188.301	131.624	106.993	78.502	58.638	38.044	Continuing	TBD																																													
<p>(U) <b><u>A. Mission Description and Budget Item Justification</u></b></p> <p>This Program Element (PE) funds Research and Development (R&amp;D) for the Navstar Global Positioning System (GPS) Space and Control segments of the overall GPS program. This includes, but is not limited to: satellite development, training simulators, development of an Integrated Mission Operation Support Center (IMOSC), Integrated Logistics Support (ILS) products, and ground control segment development, procurement, and operation; sustaining engineering; space and ground segments upgrades; and R&amp;D efforts to support the entire GPS system deployment. This PE funds the R&amp;D for modernization and future GPS systems including efforts to provide anti-jam capability through increased M-Code signal power, as soon as practical.</p> <p>GPS Block IIF satellites and IIR satellites will be modified to include a second civil signal and new military signal. Block IIF satellites will also include a third civil signal (L5). A new GPS Block III program (PE 0603421F) was initiated after new start approval in August 2000.</p> <p>GPS Modernization Stewardship funds efforts which are of a national scale, joint civil-military in nature, and benefit two or more agencies.</p> <p>This program is in Budget Activity 7 - Operational Systems Development because it supports operational systems.</p> <p>(U) <b><u>B. Program Change Summary (\$ in Millions)</u></b></p> <table style="width: 100%; margin-left: 400px;"> <thead> <tr> <th></th> <th style="text-align: right;"><u>FY 2004</u></th> <th style="text-align: right;"><u>FY 2005</u></th> <th style="text-align: right;"><u>FY 2006</u></th> <th style="text-align: right;"><u>FY 2007</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget</td> <td style="text-align: right;">144.790</td> <td style="text-align: right;">148.344</td> <td style="text-align: right;">117.813</td> <td style="text-align: right;">94.558</td> </tr> <tr> <td>(U) Current PBR/President's Budget</td> <td style="text-align: right;">142.198</td> <td style="text-align: right;">147.037</td> <td style="text-align: right;">188.301</td> <td style="text-align: right;">131.624</td> </tr> <tr> <td>(U) Total Adjustments</td> <td style="text-align: right;">-2.592</td> <td style="text-align: right;">-1.307</td> <td></td> <td></td> </tr> <tr> <td>(U) Congressional Program Reductions</td> <td></td> <td style="text-align: right;">-1.307</td> <td></td> <td></td> </tr> <tr> <td>Congressional Rescissions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Congressional Increases</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Reprogrammings</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SBIR/STTR Transfer</td> <td style="text-align: right;">-2.592</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) <b><u>Significant Program Changes:</u></b></p> <p>Increased funding in FY06: \$27.000M for IIF parts obsolescence, \$28.586M in FY06 and \$30.442M in FY07 for Operational Control Segment (OCS); \$4.600M in FY06 and FY07 for Stewardship.</p>												<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	(U) Previous President's Budget	144.790	148.344	117.813	94.558	(U) Current PBR/President's Budget	142.198	147.037	188.301	131.624	(U) Total Adjustments	-2.592	-1.307			(U) Congressional Program Reductions		-1.307			Congressional Rescissions					Congressional Increases					Reprogrammings					SBIR/STTR Transfer	-2.592			
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## Exhibit R-2a, RDT&amp;E Project Justification

DATE

February 2005

## BUDGET ACTIVITY

07 Operational System Development

## PE NUMBER AND TITLE

0305165F NAVSTAR GPS (Space)

## PROJECT NUMBER AND TITLE

3030 NAVSTAR GPS (Space &amp; Control)

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
3030 NAVSTAR GPS (Space & Control)	142.198	147.037	188.301	131.624	106.993	78.502	58.638	38.044	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

This Program Element (PE) funds Research and Development (R&D) for the Navstar Global Positioning System (GPS) Space and Control segments of the overall GPS program. This includes, but is not limited to: satellite development, training simulators, development of an Integrated Mission Operation Support Center (IMOSC), Integrated Logistics Support (ILS) products, and ground control segment development, procurement, and operation; sustaining engineering; space and ground segments upgrades; and R&D efforts to support the entire GPS system deployment. This PE funds the R&D for modernization and future GPS systems including efforts to provide anti-jam capability through increased M-Code signal power, as soon as practical.

GPS Block IIF satellites and IIR satellites will be modified to include a second civil signal and new military signal. Block IIF satellites will also include a third civil signal (L5). A new GPS Block III program (PE 0603421F) was initiated after new start approval in August 2000.

GPS Modernization Stewardship funds efforts which are of a national scale, joint civil-military in nature, and benefit two or more agencies.

This program is in Budget Activity 7 - Operational Systems Development because it supports operational systems.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue system engineering, spectrum/frequency management and program operations	19.466	6.776	2.400	1.400
(U) Continue IIF satellite development/parts obsolescence	1.500	37.100	27.000	0.000
(U) Continue GPS Modernization for Space and enhanced anti-jam capabilities	12.771	5.353	1.000	0.500
(U) Continue Operational Control Segment (OCS) development/modernization	103.861	93.108	153.301	125.124
(U) Continue GPS Stewardship	4.600	4.700	4.600	4.600
(U) Total Cost	142.198	147.037	188.301	131.624

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</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>Estimate</u>	<u>Complete</u>	
(U) AF RDT&E										
Related RDT&E (PE										
0603421F, BA-4/R-41,	0.000	39.913	87.364	236.635	485.892	772.513	903.394	831.076	Continuing	TBD
(U) Project 644993 - GPS Block										
III)										
(U) Other APPN										

## Exhibit R-2a, RDT&amp;E Project Justification

DATE

February 2005

## BUDGET ACTIVITY

07 Operational System Development

## PE NUMBER AND TITLE

0305165F NAVSTAR GPS (Space)

## PROJECT NUMBER AND TITLE

3030 NAVSTAR GPS (Space &amp; Control)

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

Operations and Maintenance											
(U)	(PE 0305165F, BA 1 - Operating Forces, SAG 13D) Missile Procurement (PE	50.161	62.340	70.129	81.821	85.643	86.607	91.435	101.338	Continuing	TBD
(U)	0305165F, BA 5 - Space and Other Support, P-22, 23) Other Procurement (PE	252.318	327.583	318.086	301.489	264.989	147.317	167.080	531.467	Continuing	TBD
(U)	0305165F, BP 83 - Electronics and Telecommunications Equipment, WSC 836790, P-67, and WSC 836730; BP 86 - Spares & Repair Parts, WSC 86190A, P-62)	12.495	7.774	13.637	12.275	5.650	6.232	11.005	69.017	Continuing	TBD

(U) **D. Acquisition Strategy**

GPS OCS upgrade was competitively awarded to a single contractor (Lockheed Martin) in July 1995. Block IIF satellite and IIF ground systems development contract was competitively awarded to a single contractor (Boeing) in April 1996. The Single Prime Initiative (SPI) consolidated these efforts and was added to the Boeing IIF contract (with Lockheed Martin as a subcontractor) on 1 Oct 99. GPS Modernization efforts for the Block IIR were awarded sole source to Lockheed Martin under a new contract in August 2000. Modernization efforts for Block IIF were added to the existing contract with Boeing as Engineering Change Proposals (ECPs).

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Exhibit R-3, RDT&E Project Cost Analysis												DATE February 2005		
BUDGET ACTIVITY 07 Operational System Development						PE NUMBER AND TITLE 0305165F NAVSTAR GPS (Space)					PROJECT NUMBER AND TITLE 3030 NAVSTAR GPS (Space & Control)			
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2004 Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development														
Applied Research Labs	MIPR	Various	3.649	0.000		0.000		0.000		0.000		0.000	3.649	
OCS Development & IIF Modernization (F0470196C0025)	FPAF/CP AF/CPFF	Boeing, Seal Beach, CA	820.325	114.511	Nov-03	97.764	Oct-04	153.320	Oct-05	125.451	Oct-06	Continuing	TBD	1,944.179
IIF Parts Obsolescence (F047019C0025)	FPAF/CP AF/CPFF	Boeing, Seal Beach, CA	0.000	0.500	Jun-04	37.000	Dec-04	27.000	Oct-05	0.000		0.000	64.500	
IIR Modernization Development (F0470100C0006)	CPIF	Lockheed Martin, King of Prussia, PA	74.786	0.000		0.000		0.000		0.000		0.000	74.786	74.786
GPS III Modernization (F0470101C0008)	FFP	Lockheed Martin, King of Prussia, PA	15.767	0.000		0.000		0.000		0.000		0.000	15.767	TBD
GPS III Modernization (F0470101C0010)	FFP	Boeing, Seal Beach, CA	16.000	0.000		0.000		0.000		0.000		0.000	16.000	
Control Segment Support	MIPR/PO	Various Gov't agencies	2.776	2.121		1.329	Dec-04	0.881	Dec-05	0.073	Dec-06	Continuing	TBD	TBD
EELV Mission Unique Svcs & Clock Development	MIPR/Other SPO Contracts	NRL & Contractors	19.617	4.785		2.075	Dec-04	0.000		0.000		Continuing	TBD	TBD
Stewardship	MIPR	Various	7.274	4.600		4.700	Dec-04	4.600	Dec-05	4.600	Dec-06	Continuing	TBD	TBD
Accuracy Improvement Initiative (AII)	FPA/CPAF/CPFF	Boeing, Seal Beach, CA	10.000	0.000		0.000		0.000		0.000		0.000	10.000	
Subtotal Product Development			970.194	126.517		142.868		185.801		130.124		Continuing	TBD	TBD
Remarks:														
(U) Support														
System Engineering/Support	Various	FFRDC (Aerospace/Mitre), SETA	33.776	5.500	Oct-03	2.000	Oct-04	0.400	Oct-05	0.400	Oct-06	Continuing	TBD	TBD
GPS Modernization Tech Spt			43.249	0.000		0.000		0.000		0.000		0.000	43.249	
Miscellaneous	Various	Various	3.231	0.000		0.000		0.000		0.000		0.000	3.231	
Subtotal Support			80.256	5.500		2.000		0.400		0.400		Continuing	TBD	TBD
Remarks:														
(U) Test & Evaluation														
Flex Power Testing (F0470100C0006)	FPAF/CP AF/CPFF	Lockheed Martin, King of Prussia, PA & various gov't	1.588	2.000	Feb-04	2.000	Feb-05	2.000	Feb-06	1.000	Feb-07	Continuing	TBD	TBD
Project 3030			R-1 Shopping List - Item No. 191-5 of 191-8						Exhibit R-3 (PE 0305165F)					

R-1 Shopping List - Item No. 191-5 of 191-8

Exhibit R-3 (PE 0305165F)

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Exhibit R-3, RDT&E Project Cost Analysis								DATE			
								February 2005			
BUDGET ACTIVITY				PE NUMBER AND TITLE			PROJECT NUMBER AND TITLE				
07 Operational System Development				0305165F NAVSTAR GPS (Space)			3030 NAVSTAR GPS (Space & Control)				
activities											
Subtotal Test & Evaluation				1.588	2.000	2.000	2.000	1.000	Continuing	TBD	TBD
Remarks:											
(U)	<u>Management</u>										
Technical Support		Various	FFRDC								
		SETA &	(Aerospace)	5.120	8.181	0.169	0.100	0.100	Continuing	TBD	TBD
		FFRDCs	& SETA								
Subtotal Management				5.120	8.181	0.169	0.100	0.100	Continuing	TBD	TBD
Remarks:											
(U)	Total Cost			1,057.158	142.198	147.037	188.301	131.624	Continuing	TBD	TBD

## Exhibit R-4, RDT&amp;E Schedule Profile

DATE

February 2005

BUDGET ACTIVITY

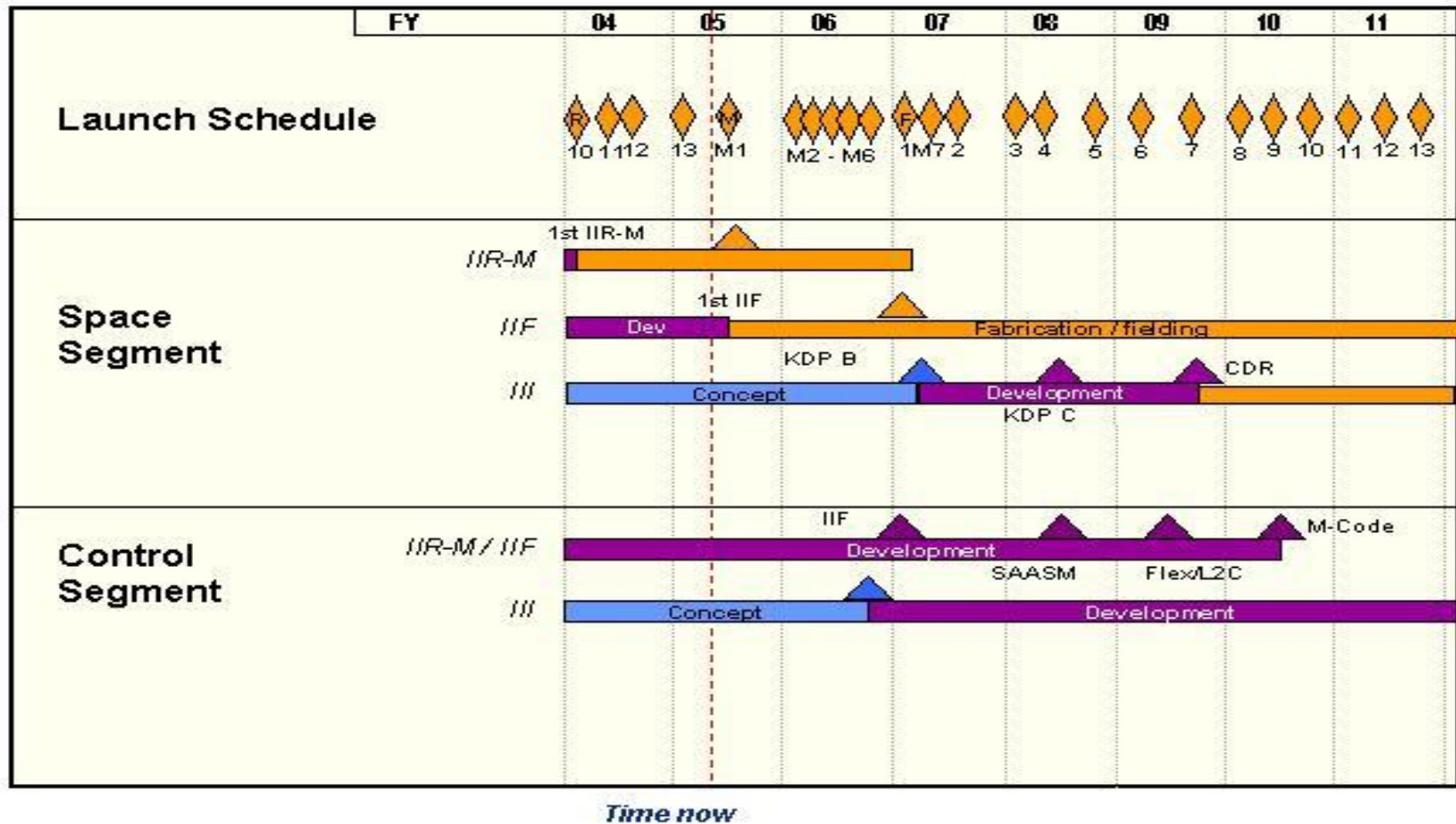
07 Operational System Development

PE NUMBER AND TITLE

0305165F NAVSTAR GPS (Space)

PROJECT NUMBER AND TITLE

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Exhibit R-4a, RDT&E Schedule Detail						DATE February 2005	
BUDGET ACTIVITY <b>07 Operational System Development</b>				PE NUMBER AND TITLE <b>0305165F NAVSTAR GPS (Space)</b>		PROJECT NUMBER AND TITLE <b>3030 NAVSTAR GPS (Space &amp; Control)</b>	
<b>(U) Schedule Profile</b>				<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue OCS Architectural Implementation (COTS upgrade) complete				1Q			
(U) Enhanced IIA IMOSC Development complete				4Q			
(U) IIF IMOSC Development Complete				4Q			
(U) Legacy Accuracy Improvement Initiative (AII) Capability complete					1Q		
(U) Launch, Anomaly resolution & Disposal Operations (LADO) Release 1 delivery to site					2Q		
(U) IIF flight software development delivery to site					3Q		
(U) GPS Block IIF Development Complete					4Q		
(U) M-Code development begins						1Q	
(U) LADO Release 2 Complete						1Q	
(U) SAASM development Formal Qualification Test (FQT)						2Q	
(U) IIF flight software development Complete							1Q
(U) First IIF satellite launch							1Q
(U) M-code Software Detail Design Complete							3Q
Project 3030							
R-1 Shopping List - Item No. 191-8 of 191-8							
Exhibit R-4a (PE 0305165F)							