

**UNCLASSIFIED**

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0305178F: National Polar-Orbiting Op Env Satellite							
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	287.532	386.611	325.505	0.000	325.505	405.984	321.260	220.014	137.202	Continuing	Continuing
644056: National Polar-orbiting Operational Env. Sat. Syst.	287.532	386.611	325.505	0.000	325.505	405.984	321.260	220.014	137.202	63.935	3,210.512

**Note**

This table represents the RDT&E portion of the Air Force share of the NPOESS program, which is funded 50/50 by the Department of Defense and Department of Commerce. Total program funding is listed in section C, Other Program Funding Summary. In FY05, Project 4056, PE 0603434F NPOESS, BA 04, funding was transferred to Project 4056, PE 0305178 NPOESS, BA 04 Advanced Component Development and Prototypes.

**A. Mission Description and Budget Item Justification**

Presidential Decision Directive/National Science and Technology Council-2 (PDD/NSTC-2) (May 1994) directs the Department of Defense (DoD), Department of Commerce (DOC), and the National Aeronautics and Space Administration (NASA) to establish a converged national polar-orbiting weather satellite program. The converged program, the National Polar-orbiting Operational Environmental Satellite System (NPOESS), combines the follow-on to DoD's Defense Meteorological Satellite Program (DMSP) and the DOC's Polar-orbiting Operational Environmental Satellite (POES) program. The Air Force (DoD) and NOAA (DOC) fund NPOESS 50/50 (by year) at the total program level. Note: part of the Air Force share also resides in the launch vehicle PE MPAF 0305953F. Apportionment of DoD and DOC funds is accomplished at the program level, rather than to specific activities. EELV funds for launching NPOESS satellites are included in computing the DoD share. The converged program will be the nation's primary source of global weather and environmental data for operational military and civil use. It will provide visible and infrared cloud cover imagery and other atmospheric, oceanographic, terrestrial, and space environmental information. NPOESS will provide a constellation of satellites in sun synchronous, 450 nautical mile (NM) polar-orbits (sun synchronous means the satellites cross the equator at the same local sun time on each of their 14 orbits/day).

This exhibit describes the Air Force's portion of the RDT&E funds used for NPOESS. These RDT&E funds will be used for the development and acquisition of three NPOESS sensors (Visible Infrared Imager Radiometer Suite (VIIRS), Cross-track Infrared Sounder (CrIS), and the Ozone Mapping/Profiler Suite (OMPS)) for the NPOESS Preparatory Project (NPP) and the sensors for the first two NPOESS satellites (C-1 and C-2). RDT&E funds also include spacecraft (C-1 and C-2), ground system, algorithm development, and the use of the NPOESS McMurdo communication system to provide routing of mission data for the DMSP mission.

On 4 Mar 2009, the NPOESS System Program Director notified the NPOESS Tri-agency Executive Committee (EXCOM) the NPOESS program first satellite launch availability and Initial Operational Capability (IOC) dates deviated from the schedule threshold in the approved Acquisition Program Baseline (APB) dated 11 Dec 2008. On 3 Apr 2009, the Milestone Decision Authority (MDA) was notified.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force				DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
3600: Research, Development, Test & Evaluation, Air Force		PE 0305178F: National Polar-Orbiting Op Env Satellite			
BA 4: Advanced Component Development & Prototypes (ACD&P)					
The Authorization Conference report prohibits the Air Force from spending more than 50 percent of the funds available for NPOESS until a management and funding strategy is submitted. The Air Force is also prohibited from spending more than 75 percent of the funds available until the implementation plan is submitted to the relevant congressional committees					
The DoD Appropriations Act directs not more than 50 percent of the funds made available to the Department of Defense for the NPOESS program shall be obligated or expended until the Under Secretary of Defense (Acquisition, Technology and Logistics) certifies in writing to the congressional defense committees the NPOESS program is being executed in support of the requirements, timelines and acquisition policies needed to meet Department of Defense missions.					
This PE has been consolidated with PE 0603434F, beginning in FY05. The program remains in BA 04 because near-term efforts focus on Engineering and Manufacturing Development with the PE 0603434F portion of the contract.					
B. Program Change Summary (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	287.532	396.641	0.000	0.000	0.000
Current President's Budget	287.532	386.611	325.505	0.000	325.505
Total Adjustments	0.000	-10.030	325.505	0.000	325.505
• Congressional General Reductions		-7.650			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	-2.380	325.505	0.000	325.505
Change Summary Explanation					
FY11: The FY2010 President's Budget submittal did not reflect FY2011 through FY2015 funding. Therefore, explanation of changes between the two budget positions cannot be made in a relevant manner.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Air Force								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0305178F: <i>National Polar-Orbiting Op Env Satellite</i>				<b>PROJECT</b> 644056: <i>National Polar-orbiting Operational Env. Sat. Syst.</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>FY 2011 Base Estimate</b>	<b>FY 2011 OCO Estimate</b>	<b>FY 2011 Total Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
644056: <i>National Polar-orbiting Operational Env. Sat. Syst.</i>	287.532	386.611	325.505	0.000	325.505	405.984	321.260	220.014	137.202	63.935	3,210.512
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
<p><b>Note</b></p> <p>This table represents the RDT&amp;E portion of the Air Force share of the NPOESS program, which is funded 50/50 by the Department of Defense and Department of Commerce. Total program funding is listed in section C, Other Program Funding Summary. In FY2005, Project 4056, PE 0603434F NPOESS, BA 04, funding was transferred to Project 4056, PE 0305178F NPOESS, BA 04 Advanced Component Development and Prototypes.</p> <p><b>A. Mission Description and Budget Item Justification</b></p> <p>Presidential Decision Directive/National Science and Technology Council-2 (PDD/NSTC-2) (May 1994) directs the Department of Defense (DoD), Department of Commerce (DOC), and the National Aeronautics and Space Administration (NASA) to establish a converged national polar-orbiting weather satellite program. The converged program, the National Polar-orbiting Operational Environmental Satellite System (NPOESS), combines the follow-on to DoD's Defense Meteorological Satellite Program (DMSP) and the DOC's Polar-orbiting Operational Environmental Satellite (POES) program. The Air Force (DoD) and NOAA (DOC) fund NPOESS 50/50 (by year) at the total program level. Note: part of the Air Force share also resides in the launch vehicle PE MPAF 0305953F. Apportionment of DoD and DOC funds is accomplished at the program level, rather than to specific activities. EELV funds for launching NPOESS satellites are included in computing the DoD share. The converged program will be the nation's primary source of global weather and environmental data for operational military and civil use. It will provide visible and infrared cloud cover imagery and other atmospheric, oceanographic, terrestrial, and space environmental information. NPOESS will provide a constellation of satellites in sun synchronous, 450 nautical mile (NM) polar-orbits (sun synchronous means the satellites cross the equator at the same local sun time on each of their 14 orbits/day).</p> <p>This exhibit describes the Air Force's portion of the RDT&amp;E funds used for NPOESS. These RDT&amp;E funds will be used for the development and acquisition of three NPOESS sensors (Visible Infrared Imager Radiometer Suite (VIIRS), Cross-track Infrared Sounder (CrIS), and the Ozone Mapping/Profiler Suite (OMPS)) for the NPOESS Preparatory Project (NPP) and the sensors for the first two NPOESS satellites (C-1 and C-2). RDT&amp;E funds also include spacecraft (C-1 and C-2), ground system, algorithm development, and the use of the NPOESS McMurdo communication system to provide routing of mission data for the DMSP mission.</p> <p>On 4 Mar 2009, the NPOESS System Program Director notified the NPOESS Tri-agency Executive Committee (EXCOM) the NPOESS program first satellite launch availability and Initial Operational Capability (IOC) dates deviated from the schedule threshold in the approved Acquisition Program Baseline (APB) dated 11 Dec 2008. On 3 Apr 2009, the Milestone Decision Authority (MDA) was notified.</p>											

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force				DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0305178F: National Polar-Orbiting Op Env Satellite		PROJECT 644056: National Polar-orbiting Operational Env. Sat. Syst.		
The Authorization Conference report prohibits the Air Force from spending more than 50 percent of the funds available for NPOESS until a management and funding strategy is submitted. The Air Force is also prohibited from spending more than 75 percent of the funds available until the implementation plan is submitted to the relevant congressional committees The DoD Appropriations Act directs not more than 50 percent of the funds made available to the Department of Defense for the NPOESS program shall be obligated or expended until the Under Secretary of Defense (Acquisition, Technology and Logistics) certifies in writing to the congressional defense committees the NPOESS program is being executed in support of the requirements, timelines and acquisition policies needed to meet Department of Defense missions. This PE has been consolidated with PE 0603434F, beginning in FY05. The program remains in BA 04 because near-term efforts focus on Engineering and Manufacturing Development with the PE 0603434F portion of the contract.						
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Major Thrust: Next generation environmental monitoring system development with 4-times improvement in operational data delivery time and a 10-time improvement in data volume/forecast accuracy.		287.532	386.611	325.505	0.000	325.505
FY 2009 Accomplishments: In FY2009: Continued system Acquisition and Operations (A&O) effort including ground and space system development, design and fabrication for risk reduction missions and routing of mission data for the DMSP mission. Completed prime contractor Critical Design Review (CDR), and spacecraft critical design audit. Delivered the Ozone Mapping and Profiler Suite (OMPS) sensor. Started Command and Data Handling (C&DH) integration and completed the Interface Data Processing Segment (IDPS) to Operations and Support (O&S) transition.						
FY 2010 Plans: In FY2010: Continued system A&O effort including ground and space system development, design and fabrication for risk reduction missions and routing of mission data for the DMSP mission. Deliver the Visible/Infrared Imager Radiometer Suite (VIIRS) and the Cross-track Infrared Sounder (CrIS) sensors for the NPOESS Preparatory Project (NPP). Begin the Manufacturing of the C-1 structure. Conduct the Microwave Imager Sounder (MIS) preliminary design review, IDPS critical design walkthrough and complete C&DH integration.						

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0305178F: National Polar-Orbiting Op Env Satellite			PROJECT 644056: National Polar-orbiting Operational Env. Sat. Syst.				
B. Accomplishments/Planned Program (\$ in Millions)											
						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
FY 2011 Base Plans: In FY2011: Continued system A&O with sensor and satellite development for operational NPOESS satellites (C-1 and C-2) with the first launch in late 2014. Preparation for operation of NPP risk reduction mission and maturation of NPOESS ground systems for two NPOESS satellites. Continues routing of mission data for the DMSP mission.											
FY 2011 OCO Plans: In FY2011 OCO: Not applicable											
Accomplishments/Planned Programs Subtotals						287.532	386.611	325.505	0.000	325.505	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE Not Provided (118): Activity Not Provided	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE Not Provided (130): NOAA PAC, Polar Convergence*	313.411	382.200	515.800	0.000	515.800	383.900	413.800	501.700	458.919	0.000	0.000
• PE 0603434F: NPOESS RDT&E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	922.221
• PE 0305178F: NPOESS RDT&E	287.532	386.611	325.505	0.000	325.505	405.984	321.260	220.014	137.202	0.000	0.000
• PE 0305178F (1): NPOESS MPAF	0.000	3.889	26.308	0.000	26.308	84.799	118.180	118.436	271.509	0.000	0.000
• PE 0305953F**: EELV MPAF	0.000	0.000	0.000	0.000	0.000	0.000	93.600	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	46.928	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0305178F: National Polar-Orbiting Op Env Satellite				PROJECT 644056: National Polar-orbiting Operational Env. Sat. Syst.			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE Not Provided (190): Other operations and sustainment funding***											
D. Acquisition Strategy											
<p>Accomplish substantial risk reduction with a focus on developing payloads, enhancing data utility to users, and protecting maximum flexibility to ensure the best overall system design by pursuing a significant investment in the development and on-orbit testing of selected payload sensors; the first two satellites will be incrementally funded with RDT&amp;E funding. Additionally, the Nunn-McCurdy certifying official, USD (AT&amp;L), approved the plan to incrementally fund production satellites C-3 and C-4. On 4 Mar 2009, the NPOESS System Program Director notified the NPOESS Tri-agency Executive Committee (EXCOM) the NPOESS program first satellite launch availability and Initial Operational Capability (IOC) dates deviated from the schedule threshold in the approved Acquisition Program Baseline (APB) dated 11 Dec 2008. On 3 Apr 2009, the Milestone Decision Authority (MDA) was notified.</p> <p>The Authorization Conference report prohibits the Air Force from spending more than 50 percent of the funds available for NPOESS until a management and funding strategy is submitted. The Air Force is also prohibited from spending more than 75 percent of the funds available until the implementation plan is submitted to the relevant congressional committees</p> <p>The DoD Appropriations Act directs not more than 50 percent of the funds made available to the Department of Defense for the NPOESS program shall be obligated or expended until the Under Secretary of Defense (Acquisition, Technology and Logistics) certifies in writing to the congressional defense committees the NPOESS program is being executed in support of the requirements, timelines and acquisition policies needed to meet Department of Defense missions.</p>											
E. Performance Metrics											
<p>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.</p>											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force											DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)						R-1 ITEM NOMENCLATURE PE 0305178F: National Polar-Orbiting Op Env Satellite				PROJECT 644056: National Polar-orbiting Operational Env. Sat. Syst.				
Product Development (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 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	
Northrop Grumman (A&O)	C/CPAF	System development Redondo Beach, CA	1,503.737	344.736	Oct 2009	248.447	Oct 2010	0.000		248.447	Continuing	Continuing	0.000	
GFE Sensor Development	MIPR	Sensor Development Laurel, MD & Wahsington, DC	24.656	39.875	Dec 2009	73.439	Dec 2010	0.000		73.439	Continuing	Continuing	0.000	
Controlled Cryptographic Items	MIPR	Crypto items Lackland AFB	1.410	0.000		0.000		0.000		0.000	0.000	1.410	0.000	
Government Led Studies	MIPR	Various Various	7.249	0.000		0.000		0.000		0.000	0.000	7.249	0.000	
Launch Mission Integration Studies	Allot	Launch integration studies El Segundo, CA	6.433	1.000	Mar 2010	1.237	Mar 2011	0.000		1.237	Continuing	Continuing	0.000	
Small Business Innovative Reseach	MIPR	SBIR Kirtland AFB, New Mexico	40.830	0.000		0.000		0.000		0.000	0.000	40.830	0.000	
Subtotal			1,584.315	385.611		323.123		0.000		323.123			0.000	
Remarks FY05 funding consolidated in PE 0305178F. Prior year costs included in PE 0603434F.														

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force											DATE: February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0305178F: <i>National Polar-Orbiting Op Env Satellite</i>				<b>PROJECT</b> 644056: <i>National Polar-orbiting Operational Env. Sat. Syst.</i>					
<b>Support (\$ in Millions)</b>													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 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
Integrated Program Office (IPO) Support	Various/ Various	Support El Segundo, CA	5.038	1.000	Oct 2009	2.382	Oct 2010	0.000		2.382	Continuing	Continuing	0.000
<b>Subtotal</b>			5.038	1.000		2.382		0.000		2.382			0.000
<b>Remarks</b> FY05 funding consolidated in PE 0305178F. Prior year costs included in PE 0603434F.													
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			1,589.353	386.611		325.505		0.000		325.505			0.000
<b>Remarks</b> Total Prior Years Cost may include only FY 2009 data.													

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Air Force

DATE: February 2010

**APPROPRIATION/BUDGET ACTIVITY**

3600: Research, Development, Test & Evaluation, Air Force  
BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 ITEM NOMENCLATURE**

PE 0305178F: National Polar-Orbiting Op Env  
Satellite

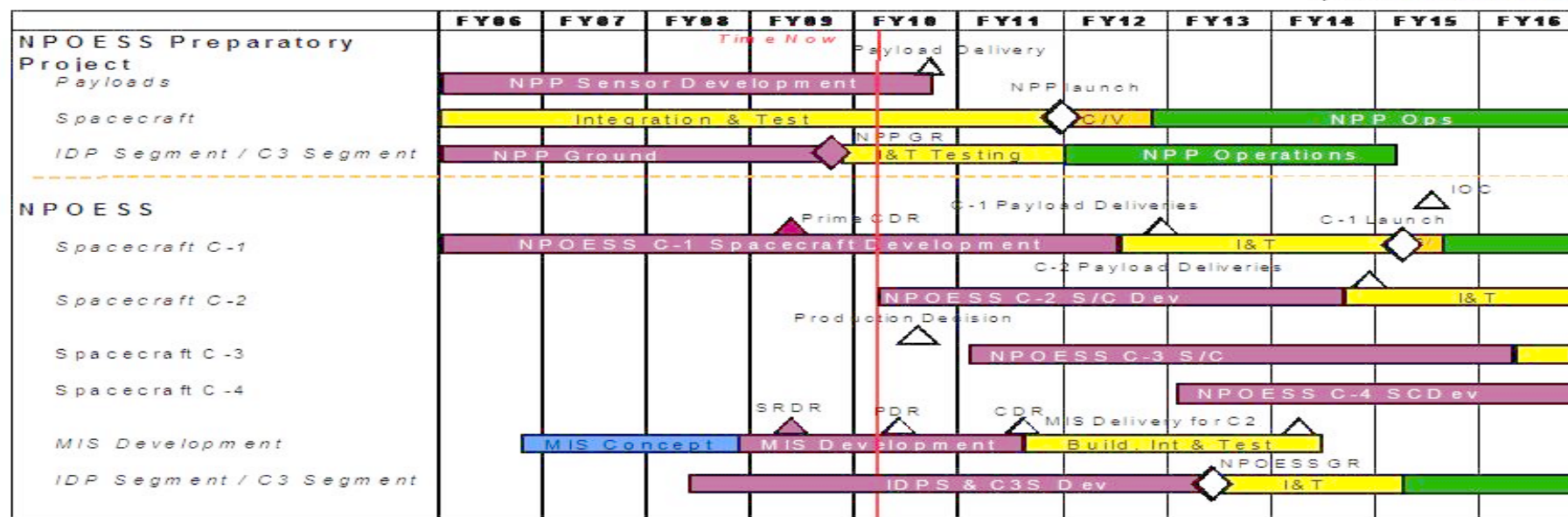
**PROJECT**

644056: National Polar-orbiting Operational  
Env. Sat. Syst.



# NPOESS Proposed Threshold Schedule\*

(as of December 2009)



\*The schedule supports the NPOESS program's proposed threshold launch dates

- Concept Activities
- Design/Development
- Integration/Test
- Calibration/Validation
- Operations/Sustainment
- Key Events

C3: Command, Control, Communications  
I&T: Integration & Test

C/V: Calibration/Validation  
IDP: Interface Data Processing

CDR: Critical Design Review  
IOC: Initial Operational Capability

GR: Ground Readiness  
FOC: Full Operational Capability

NOTE: The program schedule is dependent upon approval of an execution year (FY10) Above Threshold Reprogramming of \$86M.

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2011 Air Force			<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0305178F: <i>National Polar-Orbiting Op Env Satellite</i>	<b>PROJECT</b> 644056: <i>National Polar-orbiting Operational Env. Sat. Syst.</i>	

## Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
NPOESS Prime System Critical Design Review (CDR)	3	2009	3	2009
NPP Interface Data Processing Segment (IDPS) to Operations and Support Transition	4	2009	4	2009
Spacecraft Critical Design Audit	2	2009	2	2009
Ozone Mapping and Profiler Suite (OMPS) delivery	1	2009	1	2009
Command and Data Handling (C&DH) Integration	3	2009	3	2010
Cross-track Infrared Sounder (CrIS) for NPP	3	2010	3	2010
Visible Infrared Imager Radiometer Suite (VIIRS) for NPP	2	2010	2	2010
NPOESS C-1 Structure Manufacturing	3	2010	4	2011
Start of Electrical Engineering Model Testbed (EEMTB)	2	2011	2	2011
Microwave Imager Sounder (MIS) CDR	3	2011	3	2011
NPP Launch	4	2011	4	2011

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