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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2002			
BUDGET ACTIVITY 04 - Demonstration and Validation				PE NUMBER AND TITLE 0603434F National Polar-Orbiting Operational Environmental Satellite System (NPOESS)				PROJECT 4056			
COST (\$ in Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost	
4056	National Polar-orbiting Operational Env. Sat. Syst.	71,032	155,834	237,199	306,532	259,314	239,945	161,712	290,311	1,925,329	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	2	2	
<p>Notes: Total Cost includes approximately \$203.450M in funds prior to FY01 Quantity of RDT&E articles are based on year of delivery.</p> <p>(U) <u>A. Mission Description</u> Presidential Decision Directive/NSTC-2 (May 1994) directs the Departments of Defense (DoD) and Commerce (DOC) and the National Aeronautics and Space Administration to establish a converged national polar-orbiting weather satellite program. The converged program, the National Polar-orbiting Operational Environmental Satellite System (NPOESS), will combine the follow-on to DoD's Defense Meteorological Satellite Program (DMSP) and the DOC's Polar-orbiting Operational Environmental Satellite (POES) program. A tri-agency Integrated Program Office (IPO) was established on 1 Oct 94 to manage the acquisition and operations of the converged system. NPOESS will provide operational military commanders and civilian leaders timely, quality weather and environmental information to effectively employ weapon systems and protect national resources. 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 require a combination of satellites in sun synchronous 450 nm polar-orbit at all times (sun synchronous means the satellites cross the equator at the same local sun time on each of their 14 orbits/day). The first two satellites will be incrementally funded with RDT&E funding. The remaining satellites will be fully funded with Missile Procurement funding. NPOESS successfully completed Milestone I on 17 March 1997.</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <p>(U) \$643 Continued program office support for Program Definition and Risk Reduction (PDRR) efforts.</p> <p>(U) \$24,800 Completed system architecture studies and continue system definition contracts and ground system risk reduction to include competitive contracts between TRW and Lockheed Martin to definitize the NPOESS space and ground segment architectures.</p> <p>(U) \$45,589 Continued critical Visible/Infrared Imager/Radiometer Suite (VIIRS), Conical Microwave Imager/Sounder (CMIS), Crosstrack Infrared Sounder (CrIS), Ozone Mapping and Profiler Suite (OMPS), and Global Positioning System Occultation Sensor (GPSOS) sensor and associated algorithm development efforts and sensor design and fabrication for risk reduction missions.</p> <p>(U) \$71,032 Total</p>											
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<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$920 Continue program office support for PDRR and Engineering and Manufacturing Development (EMD) efforts.</p> <p>(U) \$30,170 Complete system definition contracts and ground system risk reduction to include competitive contracts between TRW and Lockheed Martin to definitize the NPOESS space and ground segment architectures.</p> <p>(U) \$94,744 Transition critical VIIRS, CMIS, CrIS, OMPS, and GPSOS sensor and associated algorithm development efforts and sensor design and fabrication for risk reduction missions to EMD/Production contract.</p> <p>(U) \$30,000 Initiate System Engineering and Manufacturing Development effort including sensor and associated algorithm development, design and fabrication.</p> <p>(U) \$155,834 Total</p> <p>(U) <u>FY 2003 (\$ in Thousands)</u></p> <p>(U) \$682 Continue program office support for EMD efforts.</p> <p>(U) \$236,517 Continue System Engineering and Manufacturing Development effort including sensor and associated algorithm development, design and fabrication.</p> <p>(U) \$237,199 Total</p> <p>(U) <u>B. Budget Activity Justification</u> This PE is in Budget Activity 4 (Demonstration and Validation) because it currently supports sensor and satellite bus development prior to a milestone B/C decision.</p> <p>(U) <u>C. Program Change Summary (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 10%; text-align: center;"><u>FY 2001</u></th> <th style="width: 10%; text-align: center;"><u>FY 2002</u></th> <th style="width: 10%; text-align: center;"><u>FY 2003</u></th> <th style="width: 10%; text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget</td> <td style="text-align: center;">75,950</td> <td style="text-align: center;">157,394</td> <td style="text-align: center;">238,038</td> <td style="text-align: center;">1,930,461</td> </tr> <tr> <td>(U) Appropriated Value</td> <td style="text-align: center;">71,032</td> <td style="text-align: center;">157,394</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">a. Congressional/General Reductions</td> <td></td> <td style="text-align: center;">-1,560</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">b. Small Business Innovative Research</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">d. Below Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Total Cost</u>	(U) Previous President's Budget	75,950	157,394	238,038	1,930,461	(U) Appropriated Value	71,032	157,394			(U) Adjustments to Appropriated Value					a. Congressional/General Reductions		-1,560			b. Small Business Innovative Research					c. Omnibus or Other Above Threshold Reprogram					d. Below Threshold Reprogram				
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							February 2002		
BUDGET ACTIVITY				PE NUMBER AND TITLE			PROJECT		
04 - Demonstration and Validation				0603434F National Polar-Orbiting Operational Environmental Satellite System (NPOESS)			4056		
(U) C. Program Change Summary (\$ in Thousands) Continued									
				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>		<u>Total Cost</u>	
e. Rescissions									
(U)	Adjustments to Budget Years Since FY 2002 PBR					-839		-5,132	
(U)	Current Budget Submit/FY 2003 PBR			71,032	155,834	237,199		1,925,329	
<u>Significant Program Changes:</u>									
(U) D. Other Program Funding Summary (\$ in Thousands)									
		<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</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>Cost to Complete</u>
(U)	Related NOAA PAC Funding:	73,164	157,394	237,250	302,900	285,900	312,050	328,100	1,391,000
	Polar Convergence*								
(U)	Related NPOESS MPAF:				33,917		0	163,494	279,190
	PE0305178F								
(U)	Related EELV MPAF:					75,000		0	375,000
	PE0305953F**								
(U)	Other operations and sustainment funding***							399,535	399,535
<p>* National Oceanic and Atmospheric Administration Procurement, Acquisition, and Construction (NOAA PAC) appropriation. The Air Force (DoD) and NOAA (DoC) fund NPOESS 50/50. Total cost includes prior-year amount of \$199.272M. Total NPOESS program cost is the sum of NPOESS RDT&E AF 0603434F, MPAF 0305178F, NPOESS portion of Evolved Expendable Launch Vehicle (EELV) MPAF 0305953F, and Polar Convergence NOAA PAC. The actual share of funding for specific program expenses is determined in the year of execution based on the availability of DoD and DOC funds.</p> <p>** NPOESS Launch vehicle funding is budgeted entirely in EELV PE 0305953F, and represents a portion of the DoD's 50% funding contribution in specific given years.</p> <p>*** Operations and sustainment (O&S) after Initial Operational Capability (IOC) may be funded as either Operations & Maintenance AF, NOAA Operations Research and Facilities (ORF) or other appropriations depending on the concept selected for post IOC O&S. Prior to IOC, O&S funding will be through a combination of RDT&E (AF) and NOAA PAC. These funds will be transferred to the specific appropriation as the budget enters the FYDP.</p>									
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BUDGET ACTIVITY 04 - Demonstration and Validation	PE NUMBER AND TITLE 0603434F National Polar-Orbiting Operational Environmental Satellite System (NPOESS)	PROJECT 4056
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(U) E. Acquisition Strategy

The guiding tenets for NPOESS acquisition include accomplishing substantial risk reduction with a focus on payload development, enhancing data utility to users, deferring major system decisions as long as reasonable, and protecting maximum flexibility to ensure the best overall system design. The program pursues a significant investment in the development and on-orbit testing of selected payload sensors while deferring individual sensor selections among competing international, NASA, military, and industry alternatives to assess and determine the optimum technical performance potential of each candidate sensor. NPOESS is currently pursuing two missions to reduce sensor development and data user segment risk. The Wind Sat/Coriolis mission will prove technologies to be used for the NPOESS Conical-Scanning Microwave Imager/Sounder (CMIS) sensor. The NPOESS Preparatory Project will fly and test-out three of NPOESS's most complex sensors: the Visible/Infrared Imager Radiometer Suite (VIIRS), the Cross Track Infrared Sounder (CrIS), and the Advanced Technology Microwave Sounder (ATMS). Overall system prime contractor selection was deferred until 2002 to minimize system level preliminary costs, allow sensor complement maturation, and delay the commitment to full system acquisition until approximately six years before the first satellite need date. The first two satellites will be incrementally funded with RDT&E funding. The rest will be fully funded with Missile Procurement funding.

(U) F. Schedule Profile

	<u>FY 2001</u>				<u>FY 2002</u>				<u>FY 2003</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Program Rebaselined		*										
(U) Competitive Sensor Development Contracts Downselected				*								
(U) Milestone B/C decision and Award of EMD/Production contract									X			
(U) Sensors Critical Design Reviews										X	X	
(U) * = Completed Event X = Planned Event												

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2002			
BUDGET ACTIVITY					PE NUMBER AND TITLE			PROJECT		
04 - Demonstration and Validation					0603434F National Polar-Orbiting Operational Environmental Satellite System (NPOESS)			4056		
(U) A. Project Cost Breakdown (\$ in Thousands)										
						<u>FY 2001</u>		<u>FY 2002</u>		<u>FY 2003</u>
(U)	Program Office Support for PDRR efforts					643		920		682
(U)	System Architecture Studies/Definition/Ground System Risk Reduction					24,800		30,170		0
(U)	Government Led Risk Reduction/ Technology efforts					0		0		0
(U)	Sensor/Algorithm Development and Design/Fabrication for Risk Reduction Missions/Program Support					45,589		94,744		0
(U)	Engineering and Manufacturing Development effort					0		30,000		236,517
(U)	Total					71,032		155,834		237,199
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 2001</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget FY 2003</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Product Development Organizations</u>										
Syst. Arch. Studies	C/CPFF	Sep 96	12,820	12,820	12,820					12,820
TRW (PDRR)	C/FFP	Dec 99	28,535	28,535	1,050	12,400	15,085			28,535
Lockheed Martin (PDRR)	C/FFP	Dec 99	28,035	28,035	550	12,400	15,085			28,035
Lockheed Martin	C/CPAF	Dec 94	4,489	4,489	4,489					4,489
Raytheon (VIIRS & CrIS)	C/CPFF	Jul 97	28,716	28,716	28,716					28,716
Ball Aerospace (CMIS & OMPS)	C/CPFF	Jul 97	29,746	29,746	23,993	5,753				29,746
Ball Aerospace (OMPS)	C/CPAF	May 99	35,910	35,910	6,135	13,482	16,293			35,910
ITT Aerospace (VIIRS & CrIS)	C/CPFF	Jul 97	30,475	30,475	30,475					30,475
Boeing (formerly Hughes)	C/CPFF	Jul 97	27,195	27,195	23,379	3,816				27,195
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(U) <u>Performing Organizations Continued:</u>										
<u>Product Development Organizations</u>										
Space and Communications (CMIS)										
Orbital Sciences (OMPS)	C/CPFF	Jul 97	2,578	2,578	2,578					2,578
SAAB Ericsson (GPSOS)	C/CPFF	Jul 97	2,786	2,786	2,786					2,786
SAAB Ericsson (GPSOS)	SS/FFP	Aug 99	6,200	6,200	850	2,450	2,900			6,200
ITT Aerospace (CrIS)	C/CPAF	Aug 99	34,875	34,875	3,700	7,000	24,085			34,785
Raytheon (VIIRS)	C/CPAF	Nov 00	40,309	40,309		13,053	27,256			40,309
Boeing (CMIS)	C/CPAF	Jul 01	24,210	24,210			24,210			24,210
Other Contracts (Shared System Performance Responsibility(SSPR), ground system, leveraged sensors)	MISC	Various	N/A	N/A	21,796	35	30,000	236,517	1,250,763	1,539,111
Government Led Studies	Gov. Orgs.	Various	26,302	26,302	26,302					26,302
<u>Support and Management Organizations</u>										
Integrated Program Office (IPO) Support	Various	Various	23,127	23,127	13,831	643	920	682	7,051	23,127
<u>Test and Evaluation Organizations</u>										
TBD										
(U) <u>Government Furnished Property:</u>										
	<u>Contract Method/Type</u>	<u>Award or</u>								
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>		<u>to FY 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>										
NOT APPLICABLE										
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(U) <u>Government Furnished Property Continued:</u>						
<u>Support and Management Property</u>						
NOT APPLICABLE						
<u>Test and Evaluation Property</u>						
NOT APPLICABLE						
		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
		<u>to FY 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>
		<u>Program</u>				
<u>Subtotals</u>						
Subtotal Product Development		189,619	70,389	154,914	236,517	1,250,763
Subtotal Support and Management		13,831	643	920	682	7,051
Subtotal Test and Evaluation						
Total Project		203,450	71,032	155,834	237,199	1,257,814
						1,925,329