PE NUMBER: 0305178F
PE TITLE: National Polar-Orbiting Op Env Satellite

## Exhibit R-2, RDT&E Budget Item Justification

DATE: February 2006

BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)

PE NUMBER AND TITLE: 0305178F National Polar-Orbiting Op Env Satellite

| Cost ($ in Millions) | | FY 2005 Actual | 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 | 306.120 | 319.053 | 349.311 | 220.695 | 165.935 | 137.906 | 89.006 | 0.000 | 1,588.026 |
| 4056 | National Polar-orbiting Operational Env. Sat. Syst. | 306.120 | 319.053 | 349.311 | 220.695 | 165.935 | 137.906 | 89.006 | 0.000 | 1,588.026 |

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.

**(U) 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 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. However, apportionment of DoD and DOC funds to specific activities does not have to be 50/50 and is at the program office discretion. 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. 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 provide a combination of satellites in sun synchronous 450 nautical miles (NM) polar-orbits 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 NPOESS launch is scheduled for Nov 2009, with Initial Operational Capability (IOC) in Jul 2011 and Full Operational Capability (FOC) in Oct 2013 with the launch of the third satellite. The first two satellites (C1-C2) are incrementally funded with RDT&E. The remaining satellites (C3-C6) will be fully funded with Missile Procurement funding. In Aug 02, the NPOESS program was approved to enter Key Decision Point C (KDP-C) Acquisition & Operations (A&O) phase at the Defense Space Acquisition Board (DSAB). However, due to technical difficulties with the Visible Infrared Imager Radiometer Suite (VIIRS), Conical Microwave Imager Sounder (CMIS), Ozone Mapper/Profiler Suite (OMPS) and to a lesser extent the spacecraft effort, the current schedule will not be executable. The Tri-agency Executive Committee for NPOESS has established an Independent Program Assessment team to review executable program schedule options and associated costs. NPOESS is undergoing a Nunn-McCurdy recertification, scheduled for completion NLT Jun 06. These assessments may reshape the program. NPOESS remains in BA 04 because near-term efforts focus on Advanced Component Development and Prototypes.

| Exhibit R-2, RDT&E Budget Item Justification | DATE February 2006 |
|---|---|
| BUDGET ACTIVITY<br>04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE<br>0305178F National Polar-Orbiting Op Env Satellite |

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

| | | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| (U) | Previous President's Budget | 303.784 | 323.665 | 350.516 |
| (U) | Current PBR/President's Budget | 306.120 | 319.053 | 349.311 |
| (U) | Total Adjustments | 2.336 | -4.612 | |
| (U) | Congressional Program Reductions | -0.464 | | |
| | Congressional Rescissions | | -4.612 | |
| | Congressional Increases | | | |
| | Reprogrammings | 2.800 | | |
| | SBIR/STTR Transfer | | | |
| (U) | Significant Program Changes: | | | |

| Exhibit R-2a, RDT&E Project Justification | | | DATE: February 2006 |
|---|---|---|---|
| BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE: 0305178F National Polar-Orbiting Op Env Satellite | PROJECT NUMBER AND TITLE: 4056 National Polar-orbiting Operational Env. Sat. Syst. | |

| Cost ($ in Millions) | | FY 2005 Actual | FY 2006 Estimate | FY 2007 Estimate | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | Cost to Complete | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 4056 | National Polar-orbiting Operational Env. Sat. Syst. | 306.120 | 319.053 | 349.311 | 220.695 | 165.935 | 137.906 | 89.006 | 0.000 | 1,588.026 |
| | Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

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.

**(U) 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 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. However, apportionment of DoD and DOC funds to specific activities does not have to be 50/50 and is at the program office discretion. 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. 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 provide a combination of satellites in sun synchronous 450 nautical miles (NM) polar-orbits 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 NPOESS launch is scheduled for Nov 2009, with Initial Operational Capability (IOC) in Jul 2011 and Full Operational Capability (FOC) in Oct 2013 with the launch of the third satellite. The first two satellites (C1-C2) are incrementally funded with RDT&E. The remaining satellites (C3-C6) will be fully funded with Missile Procurement funding. In Aug 02, the NPOESS program was approved to enter Key Decision Point C (KDP-C) Acquisition & Operations (A&O) phase at the Defense Space Acquisition Board (DSAB). However, due to technical difficulties with the Visible Infrared Imager Radiometer Suite (VIIRS), Conical Microwave Imager Sounder (CMIS), Ozone Mapper/Profiler Suite (OMPS) and to a lesser extent the spacecraft effort, the current schedule will not be executable. The Tri-agency Executive Committee for NPOESS has established an Independent Program Assessment team to review executable program schedule options and associated costs. NPOESS is undergoing a Nunn-McCurdy recertification, scheduled for completion NLT Jun 06. These assessments may reshape the program. NPOESS remains in BA 04 because near-term efforts focus on Advanced Component Development and Prototypes.

| **(U) B. Accomplishments/Planned Program ($ in Millions)** | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|
| (U) Continue DoD funded program office support for Acquisition and Operations (A&O) efforts. | 0.882 | 1.000 | 1.000 |
| (U) Continue System A&O effort including ground and space system development, design and fabrication for risk reduction missions. | 295.793 | 314.589 | 348.311 |
| (U) Windsat data analysis, refinement, calibration, modeling and retreival algorithms | 1.854 | 3.464 | |

| Exhibit R-2a, RDT&E Project Justification | | DATE February 2006 |
|---|---|---|
| BUDGET ACTIVITY<br>04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE<br>0305178F National Polar-Orbiting Op Env Satellite | PROJECT NUMBER AND TITLE<br>4056 National Polar-orbiting Operational Env. Sat. Syst. |

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

| | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|
| (U) SBIR Transfer | 7.591 | | |
| (U) Total Cost | 306.120 | 319.053 | 349.311 |

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

| | FY 2005 Actual | FY 2006 Estimate | FY 2007 Estimate | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|
| (U) Related NOAA PAC funding: Polar Convergence* | 300.528 | 316.581 | 341.276 | 343.863 | 297.225 | 373.872 | 405.923 | 743.266 | 3,775.113 |
| (U) Related NPOESS RDT&E: PE 0603434F | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 922.221 |
| (U) NPOESS RDT&E: PE 0305178F | 306.120 | 319.053 | 349.311 | 220.695 | 165.935 | 137.906 | 89.006 | 0.000 | 1,588.026 |
| (U) Related NPOESS MPAF: PE 0305178F | 0.000 | 0.000 | 0.000 | 25.576 | 32.046 | 250.898 | 229.412 | 187.467 | 725.399 |
| (U) Related EELV MPAF: PE 0305953F** | 0.000 | 0.000 | 0.000 | 138.278 | 138.278 | 0.000 | 124.375 | 373.125 | 774.056 |
| (U) Other operations and sustainment funding*** | 0.000 | 0.000 | 0.000 | 2.601 | 2.313 | 0.000 | 0.000 | 340.758 | 345.671 |
| (U) Total NPOESS Air Force | 306.120 | 319.053 | 349.311 | 387.150 | 338.572 | 388.804 | 442.793 | 901.350 | 4,355.373 |

* National Oceanic and Atmospheric Administration Procurement, Acquisition, and Construction (NOAA PAC) appropriation. The Air Force (DoD) and NOAA (DoC) fund NPOESS 50/50. AF total cost includes prior-year amount of $922.2M (included in PE 0603434F). Total NPOESS program cost is the sum of NPOESS RDT&E AF PE 0603434F/AF PE 0305178F, MPAF PE 0305178F, NPOESS portion of Evolved Expendable Launch Vehicle (EELV) MPAF PE 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. Due to higher EELV launch service costs, NOAA will work to adjust funds during launch years to match AF funding.

** NPOESS launch vehicle funding is budgeted entirely in EELV PE 0305953F; includes booster and infrastructure share, and represents a portion of the DoD's 50% funding contribution.

*** 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.

**(U) D. Acquisition Strategy**

Accomplish substantial risk reduction with a focus on payload development, 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&E funding; the rest of the satellites will be fully funded with Missile Procurement funding.

# Exhibit R-3, RDT&E Project Cost Analysis

DATE: **February 2006**

BUDGET ACTIVITY: **04 Advanced Component Development and Prototypes (ACD&P)**

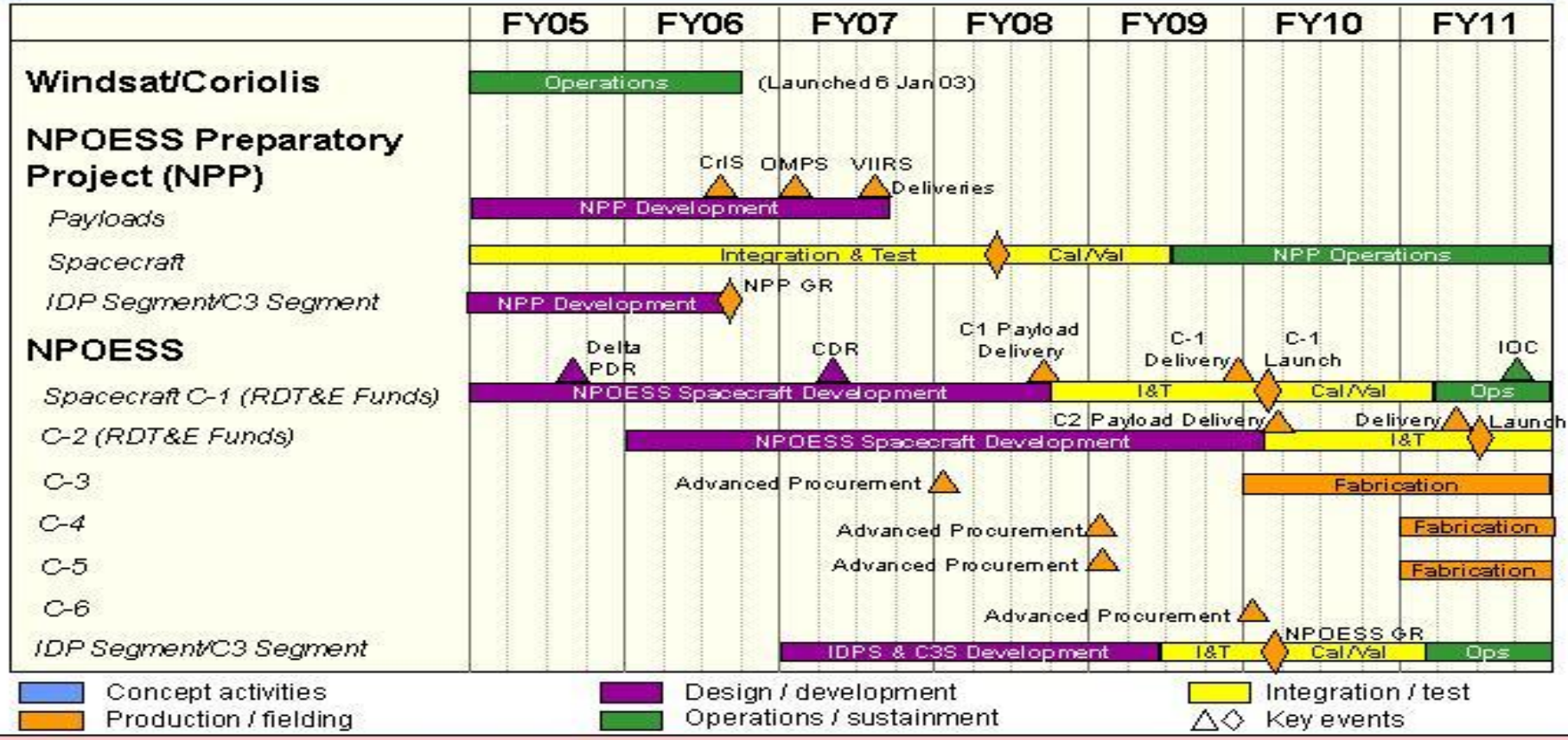
PE NUMBER AND TITLE: **0305178F National Polar-Orbiting Op Env Satellite**

PROJECT NUMBER AND TITLE: **4056 National Polar-orbiting Operational Env. Sat. Syst.**

| (U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions) | Contract Method & Type | Performing Activity & Location | Total Prior to FY 2005 Cost | 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 | | | | | | | | | | | | |
| Northrop Grumman (A&O) | C/CPAF | Primary, Redondo Beach, CA | | 295.793 | Oct-04 | 314.589 | Oct-05 | 348.311 | Oct-06 | 598.225 | 1,556.918 | |
| Government Led Studies | Gov. Orgs. | Various | | 1.854 | Oct-04 | 3.464 | Jan-06 | | | | 5.318 | |
| Subtotal Product Development | | | 0.000 | 297.647 | | 318.053 | | 348.311 | | 598.225 | 1,562.236 | 0.000 |
| Remarks: FY05 funding consolidated in PE 0305178F. Prior year costs included in PE 0603434F. | | | | | | | | | | | | |
| (U) Support | | | | | | | | | | | | |
| Integrated Program Office (IPO) Support | Various | Program Office, Silver Spring, MD | | 0.882 | Oct-04 | 1.000 | Oct-05 | 1.000 | Oct-06 | 15.317 | 18.199 | |
| SBIR Transfer | | | | 7.591 | | | | | | | 7.591 | |
| Subtotal Support | | | 0.000 | 8.473 | | 1.000 | | 1.000 | | 15.317 | 25.790 | 0.000 |
| Remarks: FY05 funding consolidated in PE 0305178F. Prior year costs included in PE 0603434F. | | | | | | | | | | | | |
| (U) Test & Evaluation | | | | | | | | | | | | |
| Included in IPO Support | | | | | | | | | | | 0.000 | |
| Subtotal Test & Evaluation | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | |
| (U) Management | | | | | | | | | | | | |
| Included in IPO Support | | | | | | | | | | | 0.000 | |
| Subtotal Management | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | |
| (U) Total Cost | | | 0.000 | 306.120 | | 319.053 | | 349.311 | | 613.542 | 1,588.026 | 0.000 |

| Exhibit R-4, RDT&E Schedule Profile | | DATE February 2006 |
|---|---|---|
| BUDGET ACTIVITY<br>04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE<br>0305178F National Polar-Orbiting Op Env Satellite | PROJECT NUMBER AND TITLE<br>4056 National Polar-orbiting Operational Env. Sat. Syst. |

***NOTE: NPOESS program is currently undergoing Nunn-McCurdy certification (due out NLT May 06) and schedule is subject to change***



| Exhibit R-4a, RDT&E Schedule Detail | | DATE February 2006 |
|---|---|---|
| BUDGET ACTIVITY<br>**04 Advanced Component Development and Prototypes (ACD&P)** | PE NUMBER AND TITLE<br>**0305178F National Polar-Orbiting Op Env Satellite** | PROJECT NUMBER AND TITLE<br>**4056 National Polar-orbiting Operational Env. Sat. Syst.** |

| (U) **Schedule Profile** | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|
| (U) NPOESS System Delta Preliminary Design Review | 3Q | | |
| (U) Independent Program Assessment | | 1Q | |
| (U) Cross-track Infrared Sounder (CrIS) NPP sensor delivery | | 3Q | |
| (U) NPP Ground Ready | | 3Q | |
| (U) Ozone Mapper/Profiler Suite (OMPS) NPP sensor delivery | | | 1Q |
| (U) Visible Infrared Imager Radiometer Suite (VIIRS) NPP sensor delivery | | | 3Q |
| (U) NPOESS System Critical Design Review | | | 2Q |