PE NUMBER: 0603438F
PE TITLE: Space Control Technology

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

DATE: February 2005

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

PE NUMBER AND TITLE: 0603438F Space Control Technology

| | 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 | 12.997 | 14.914 | 14.205 | 23.303 | 31.032 | 41.093 | 42.089 | 42.777 | Continuing | TBD |
| 2611 | Technology Insertion Planning and Analysis | 8.837 | 8.615 | 9.524 | 12.707 | 15.987 | 21.064 | 21.642 | 21.996 | Continuing | TBD |
| A007 | Space Range | 4.160 | 6.299 | 4.681 | 10.596 | 15.045 | 20.029 | 20.447 | 20.781 | Continuing | TBD |

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

This program supports a range of activities including technology planning, development, demonstrations and prototyping, as well as modeling, simulations and exercises to support development of tactics and procedures in the Space Control mission area. The types of Space Control activities accomplished are Space Situational Awareness (SSA), Defensive Counterspace (DCS) , and Offensive Counterspace (OCS). For use in the Space Control mission area, SSA includes monitoring, detecting, identifying, tracking, assessing, verifying, categorizing, and characterizing, objects and events in space. DCS includes defensive activities to protect U.S. and friendly space-systems assets, resources, and operations from enemy attempts to negate or interfere and prevention activities that limit or eliminate an adversary's ability to use U.S. space systems and services for purposes hostile to U.S. national security interests. OCS activities disrupt, deny, degrade or destroy space systems, or the information they provide, which may be used for purposes hostile to U.S. national security interests. Consistent with DOD policy, the negation efforts of this program focus only on negation technologies which have temporary, localized, and reversible effects.

Also supported is the development of the system architecture for space control elements of the space range. This includes development and demonstration of test assets, special test equipment, capabilities and systems required to test, validate, and verify performance of integrated space control systems. Additionally, this program supports the development of test range assets required to support developmental and opertational test, exercises, training, and tactics development for space control systems.

These two projects are in Budget Activity 4, Advanced Component Development and Prototypes, because they support the research, demonstration, component development and prototyping of Space Control technologies.

| Exhibit R-2, RDT&E Budget Item Justification | DATE February 2005 |
|---|---|
| BUDGET ACTIVITY<br>04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE<br>0603438F Space Control Technology |

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

| | | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|
| (U) | Previous President's Budget | 14.547 | 15.046 | 14.129 | 22.869 |
| (U) | Current PBR/President's Budget | 12.997 | 14.914 | 14.205 | 23.303 |
| (U) | Total Adjustments | -1.550 | -0.132 | | |
| (U) | Congressional Program Reductions | | -0.132 | | |
| | Congressional Rescissions | | | | |
| | Congressional Increases | | | | |
| | Reprogrammings | -1.000 | | | |
| | SBIR/STTR Transfer | -0.550 | | | |

(U) Significant Program Changes:

FY 2004: $1.000M reduction to support higher USAF priorities

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

DATE: February 2005

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

PE NUMBER AND TITLE: 0603438F Space Control Technology

PROJECT NUMBER AND TITLE: 2611 Technology Insertion Planning and Analysis

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2611 | Technology Insertion Planning and Analysis | 8.837 | 8.615 | 9.524 | 12.707 | 15.987 | 21.064 | 21.642 | 21.996 | 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 supports a range of activities including technology planning, development, demonstrations and prototyping, as well as modeling, simulations and exercises to support development of tactics and procedures in the Space Control mission area. The types of Space Control activities accomplished are Space Situational Awareness (SSA), Defensive Counterspace (DCS), and Offensive Counterspace (OCS). For use in the Space Control mission area, SSA includes monitoring, detecting, identifying, tracking, assessing, verifying, categorizing, and characterizing objects and events in space. DCS includes defensive activities to protect U.S. and friendly space-systems assets, resources, and operations from enemy attempts to negate or interfere and prevention activities that limit or eliminate an adversary's ability to use U.S. space systems and services for purposes hostile to U.S. national security interests. OCS activities disrupt, deny, degrade or destroy an adversary's space systems, or the information they provide, which may be used for purposes hostile to U.S. national security interests. Consistent with DOD policy, the negation efforts of this program focus only on negation technologies which have temporary, localized, and reversible effects.

Budget Activity Justification

This project is in Budget Activity 4, Advanced Component Development and Prototypes because it supports the research, demonstration, component development and prototyping of Space Control technologies.

| **(U) B. Accomplishments/Planned Program ($ in Millions)** | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| (U) Space Situational Awareness efforts. Continue development of key space situational awareness enabling technologies for monitoring, detecting, identifying, tracking, assessing, verifying, categorizing, and characterizing objects and events in space for use in the Space Control mission area. | 2.874 | 2.592 | 2.242 | 2.512 |
| (U) Defensive Counterspace efforts. Continue vulnerability assessments. Includes vulnerabilities of space/link/ground segments of DoD space systems. Perform assessments on new DoD space systems. Continue looking at protection measures against optical jammers. Continue investigations in key technology areas such as data fusion, data mining, radiation effects, kinetic energy impacts, anomaly resolution. Continue development and demonstration of advanced techniques and technologies for space control prevention systems in the laboratory and field. Includes techniques and technologies for denying adversary use of blue systems on communications, sensor, and navigation platforms. Includes funding for architectural engineering leading to an overall Space Control architecture. | 2.390 | 3.082 | 3.611 | 5.408 |
| (U) Offensive Counterspace efforts. Continue development and demonstration of advanced counter-communications technologies and techniques, to include bandwidth on demand communications techniques. Continue exploring technologies leading to future generation counter-communications | 2.695 | 1.463 | 2.664 | 3.529 |

| Exhibit R-2a, RDT&E Project Justification | | DATE February 2005 |
|---|---|---|
| BUDGET ACTIVITY<br>04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE<br>0603438F Space Control Technology | PROJECT NUMBER AND TITLE<br>2611 Technology Insertion Planning and Analysis |

systems and advanced target characteristics. Includes development of countermeasures for insertion into counter-communications weapons systems. Continue development of critical signal processing technology. Continue to develop, prototype, and demonstrate advanced counter surveillance, reconnaissance techniques. Continue technology development and demonstration of future generation counter surveillance and reconnaissance capabilities. Includes funding for architectural engineering leading to an overall Space Control architecture.

| | | | | | |
|---|---|---|---|---|---|
| (U) | Program Office and Other Technical Support | 0.878 | 1.478 | 1.007 | 1.258 |
| (U) | Total Cost | 8.837 | 8.615 | 9.524 | 12.707 |

**(U) C. Other Program Funding Summary ($ 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 Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| (U) None | | | | | | | | | | |

**(U) D. Acquisition Strategy**

All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible. Program consists of numerous small projects. Most funding is either executed in-house by the program office or transferred via MIPR to other agencies for execution.

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

DATE: **February 2005**

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

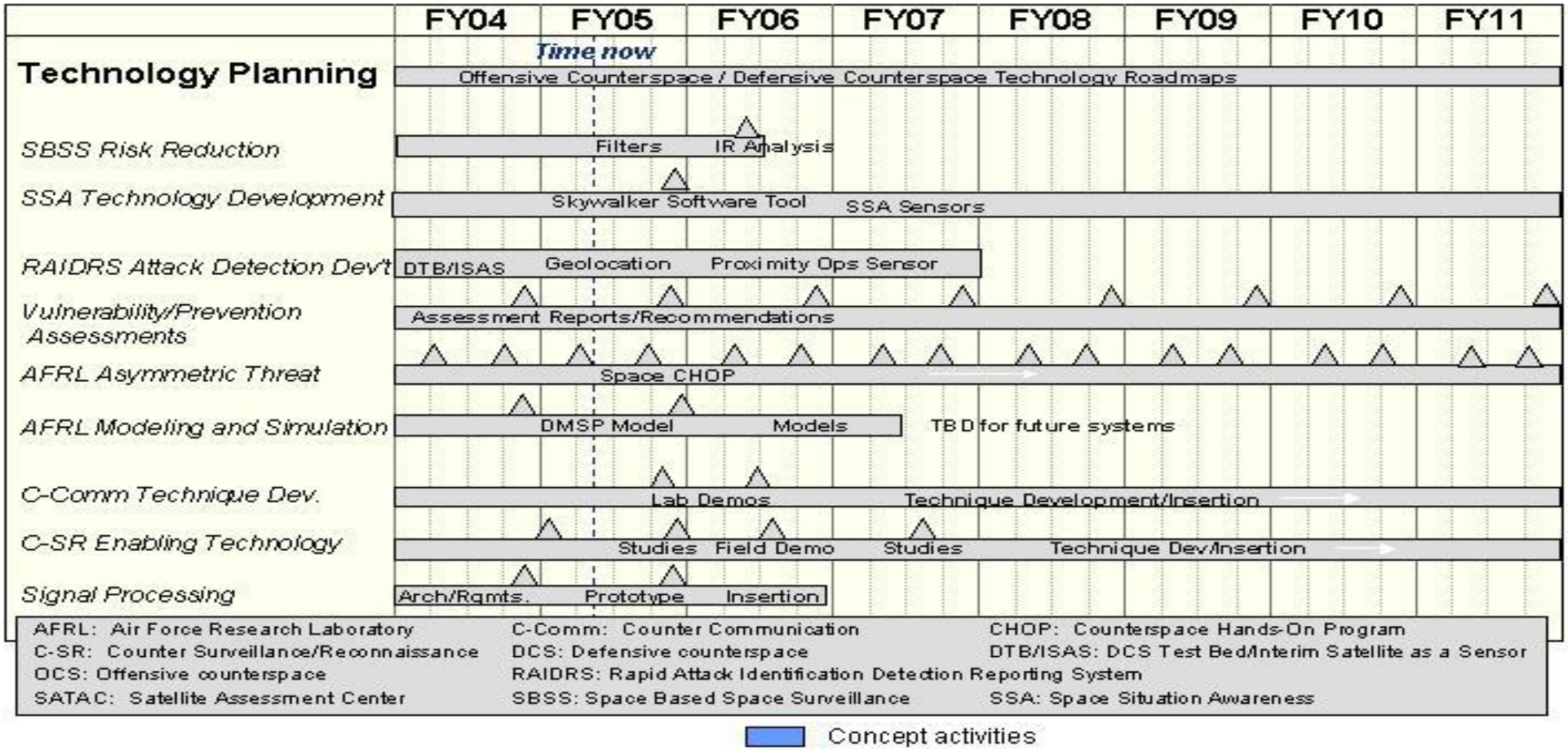
PE NUMBER AND TITLE: **0603438F Space Control Technology**

PROJECT NUMBER AND TITLE: **2611 Technology Insertion Planning and Analysis**

| (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 | | | | | | | | | | | | | | |
| SSA Development | Various | Various | 4.220 | 2.874 | Nov-03 | 2.592 | Nov-04 | 2.242 | Nov-05 | 2.512 | Nov-06 | Continuing | TBD | TBD |
| DCS Activities | Various | Various | 16.707 | 2.390 | Nov-03 | 3.082 | Nov-04 | 3.611 | Nov-05 | 5.408 | Nov-06 | Continuing | TBD | TBD |
| OCS Development | Various | Various | 36.493 | 2.695 | Nov-03 | 1.463 | Nov-04 | 2.664 | Nov-05 | 3.529 | Nov-06 | Continuing | TBD | TBD |
| Subtotal Product Development | | | 57.420 | 7.959 | | 7.137 | | 8.517 | | 11.449 | | Continuing | TBD | TBD |
| Remarks: | | | | | | | | | | | | | | |
| (U) Support | | | | | | | | | | | | | | |
| Program Office and Other Technical Support | Various | SMC- El Segundo, CA | 3.978 | 0.878 | Nov-03 | 1.478 | Nov-04 | 1.007 | Nov-05 | 1.258 | Nov-06 | Continuing | TBD | TBD |
| None | | | | | | | | | | | | | 0.000 | |
| Subtotal Support | | | 3.978 | 0.878 | | 1.478 | | 1.007 | | 1.258 | | Continuing | TBD | TBD |
| Remarks: | | | | | | | | | | | | | | |
| (U) Test & Evaluation | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | 0.000 | |
| Subtotal Test & Evaluation | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) Management | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0.000 | |
| Subtotal Management | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0.000 | |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) Total Cost | | | 61.398 | 8.837 | | 8.615 | | 9.524 | | 12.707 | | Continuing | TBD | TBD |

| Exhibit R-4, RDT&E Schedule Profile | | DATE February 2005 |
|---|---|---|
| BUDGET ACTIVITY<br>04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE<br>0603438F Space Control Technology | PROJECT NUMBER AND TITLE<br>2611 Technology Insertion Planning and Analysis |

# Space Control Technology Schedule



| Exhibit R-4a, RDT&E Schedule Detail | | DATE February 2005 |
|---|---|---|
| BUDGET ACTIVITY<br>**04 Advanced Component Development and Prototypes (ACD&P)** | PE NUMBER AND TITLE<br>**0603438F Space Control Technology** | PROJECT NUMBER AND TITLE<br>**2611 Technology Insertion Planning and Analysis** |

| **(U) Schedule Profile** | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| (U) OCS- Continue Counter Communications technique development and demonstration | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| (U) OCS- Continue Counter Surveillance/Reconnaissance technology development | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| (U) OCS- Continue Signal Processing development | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| (U) SSA- Continue SBSS Risk Reduction | 1-4Q | 1-4Q | 1-4Q | |
| (U) SSA- Continue Sensor Development | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| (U) DCS- Continue Vulnerability and threat assessments | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| (U) Continue Technology Roadmaps | 1-4Q | 1-4Q | 1-4Q | 1-4Q |

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

DATE: February 2005

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

PE NUMBER AND TITLE: 0603438F Space Control Technology

PROJECT NUMBER AND TITLE: A007 Space Range

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A007 | Space Range | 4.160 | 6.299 | 4.681 | 10.596 | 15.045 | 20.029 | 20.447 | 20.781 | 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 supports the development of space test and training range assets required to support developmental and operational test, exercises, training, and tactics development for Space Control systems and related architecture.

Budget Activity Justification

This project is in Budget Activity 4, Advanced Component Development and Prototypes because it supports the research, demonstration, component development and prototyping of Space Test & Training Range technologies & infrastructure.

| | **B. Accomplishments/Planned Program ($ in Millions)** | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|
| (U) | Threat Simulators | 2.050 | 3.499 | 2.160 | 1.616 |
| (U) | Continue development of the system architecture and acquisition of Space Control elements of the Space Range. Continue demonstration of test assets, special test equipment, capabilities and systems required to test, validate, and verify performance of integrated Space Control systems. | 1.874 | 1.954 | 1.397 | 6.597 |
| (U) | Program Office and Other Technical Support | 0.236 | 0.846 | 1.124 | 2.383 |
| (U) | Total Cost | 4.160 | 6.299 | 4.681 | 10.596 |

**(U) C. Other Program Funding Summary ($ 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 Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| (U) None | | | | | | | | | | |

**(U) D. Acquisition Strategy**

All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible. Current contracts are Cost Plus Award Fee. Future contracts TBD.

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

DATE: February 2005

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

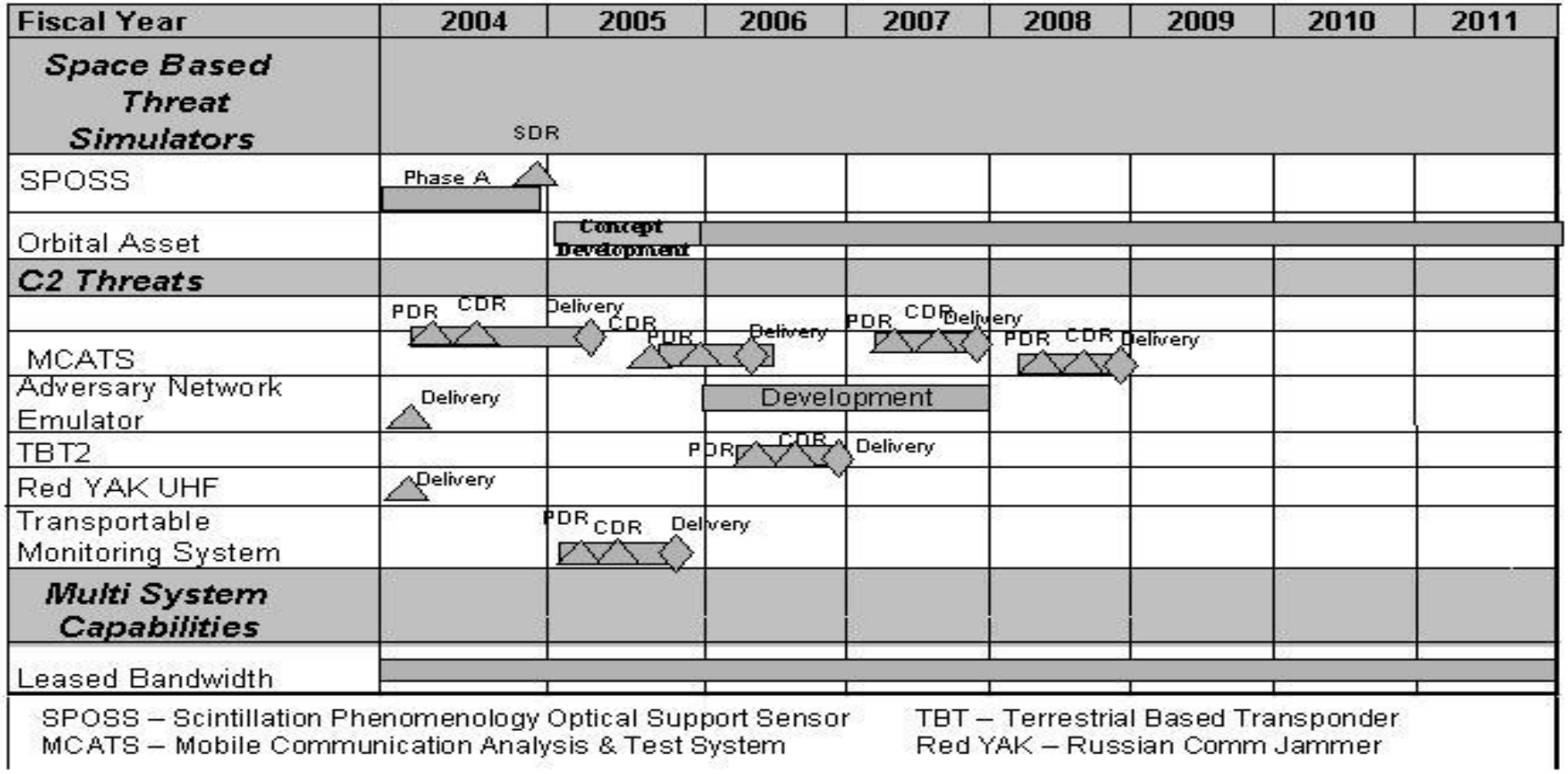
PE NUMBER AND TITLE: 0603438F Space Control Technology

PROJECT NUMBER AND TITLE: A007 Space Range

| (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 | | | | | | | | | | | | | | |
| MAPIC | CPAF | Northrup Grumman, El Segundo, CA | | 1.874 | Jan-04 | 1.954 | Dec-04 | 1.685 | Jan-06 | 4.813 | Jan-07 | Continuing | TBD | TBD |
| TMC | CPAF | Las Cruces, NM | | 2.050 | Jan-04 | 3.499 | Jan-05 | 1.872 | Jan-06 | 3.400 | Jan-07 | Continuing | TBD | TBD |
| Subtotal Product Development | | | 0.000 | 3.924 | | 5.453 | | 3.557 | | 8.213 | | Continuing | TBD | TBD |
| Remarks: | | | | | | | | | | | | | | |
| (U) Support | | | | | | | | | | | | | | |
| Program Office and Other Technical Support | Various | SMC, El Segundo, CA | | 0.236 | Jan-04 | 0.446 | Jan-05 | 0.724 | Dec-06 | 1.263 | Dec-07 | Continuing | TBD | TBD |
| Program Office and Other Technical Support | CPAF | MAPIC, Redondo Beach, CA | | | | 0.400 | Jan-05 | 0.400 | Dec-06 | 1.120 | Dec-07 | Continuing | TBD | TBD |
| Subtotal Support | | | 0.000 | 0.236 | | 0.846 | | 1.124 | | 2.383 | | Continuing | TBD | TBD |
| Remarks: | | | | | | | | | | | | | | |
| (U) Test & Evaluation | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | 0.000 | |
| None | | | | | | | | | | | | | 0.000 | |
| Subtotal Test & Evaluation | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) Management | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0.000 | |
| Subtotal Management | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) Total Cost | | | 0.000 | 4.160 | | 6.299 | | 4.681 | | 10.596 | | Continuing | TBD | TBD |

| Exhibit R-4, RDT&E Schedule Profile | | DATE February 2005 |
|---|---|---|
| BUDGET ACTIVITY<br>04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE<br>0603438F Space Control Technology | PROJECT NUMBER AND TITLE<br>A007 Space Range |

# Space Test and Training Range Schedule



# Exhibit R-4a, RDT&E Schedule Detail

DATE: February 2005

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT NUMBER AND TITLE |
|---|---|---|
| 04 Advanced Component Development and Prototypes (ACD&P) | 0603438F Space Control Technology | A007 Space Range |

| (U) Schedule Profile | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| (U) Develop STTR Architecture | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| (U) Continue with Scitillation Phenomonology Support Sensor (SPOSS) Development | 2-4Q | | | |
| (U) Develop Orbital Asset | | | 1-4Q | 1-4Q |
| (U) Develop & Deliver Mobile Comm analysis and Test System | 2-4Q | 1-4Q | 1-2Q | 2-4Q |
| (U) Adversary Network Emulator | 1Q | | 1-4Q | 1-4Q |
| (U) Deliver Terrestrial Based Transponder | | | 4Q | |
| (U) Red YAK UHF System | 1Q | | | |
| (U) Deliver Transportable Monitoring System | | 4Q | | |
| (U) Leased Bandwidth | 1-4Q | 1-4Q | 1-4Q | |