

UNCLASSIFIED

PE NUMBER: 0603858F
 PE TITLE: Space-Based Radar Dem/Val

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|---|------------------------------|
| Exhibit R-2, RDT&E Budget Item Justification | DATE February 2005 |
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| BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE 0603858F Space-Based Radar Dem/Val |
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| 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 | 165.125 | 73.847 | 225.839 | 356.178 | 568.485 | 1,068.368 | 1,315.760 | 1,410.736 | Continuing | TBD |
| A004 SBR Concept and Technology Development | 165.125 | 73.847 | 225.839 | 356.178 | 568.485 | 1,068.368 | 1,315.760 | 1,410.736 | Continuing | TBD |

(U) A. Mission Description and Budget Item Justification

Space Based Radar (SBR) name was changed to Space Radar (SR) to represent the fundamental restructure of joint DoD and intelligence community (IC) program. DoD and National users have agreed on a path to converge to a single common space radar system that affordably meets the nation's needs. The SR program mission partners are committed to deliver an affordable, capabilities-driven system as part of a horizontally integrated system-of-systems designed to meet National Intelligence and Joint Commanders requirements by providing high-volume, readily taskable Synthetic Aperture Radar (SAR) imaging; Surface Moving Target Indications (SMTI); and High-Resolution Terrain Information (HRTI). Designed to be tightly integrated with present and planned intelligence systems, the resultant Space Radar will provide transformational capabilities to both the National Intelligence Community and Warfighting agencies alike through agile, responsive intelligence collections using near-real time tasking and data dissemination. The SR system will allow a 'deep look' into denied areas of interest in all weather, day or night, without risk to personnel or equipment. SR's on-demand intelligence capability will have global utility across the spectrum of conflict.

The 2006 program focuses on overall program affordability by stressing innovation through program risk reduction and technology maturation. The program will leverage National Reconnaissance Office (NRO), National Geospatial-Intelligence Agency (NGA), Defense Advanced Research Projects Agency (DARPA), and Air Force Research Laboratory (AFRL) activities to ensure both DoD and Intelligence Community requirements are satisfied in the baseline SR effort. In addition, an on orbit demonstration will be developed to validate Space Radar costs and technology maturity.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACDP), because it involves evaluating integrated technologies in as realistic an operating environment as possible to assess the performance or cost reduction potential of advanced technology.

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

| | <u>FY 2004</u> | <u>FY 2005</u> | <u>FY 2006</u> | <u>FY 2007</u> |
|--------------------------------------|----------------|----------------|----------------|----------------|
| (U) Previous President's Budget | 172.625 | 327.732 | 466.189 | 502.738 |
| (U) Current PBR/President's Budget | 165.125 | 73.847 | 225.839 | 356.178 |
| (U) Total Adjustments | -7.500 | -253.885 | | |
| (U) Congressional Program Reductions | | -252.732 | | |
| Congressional Rescissions | | | | |
| Congressional Increases | | | | |
| Reprogrammings | | | | |
| SBIR/STTR Transfer | -7.500 | -1.153 | | |

(U) Significant Program Changes:

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04 Advanced Component Development and Prototypes (ACD&P)

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The FY 2005 Appropriations Bill reduced the President's Budget from \$327M to \$75M, and redirected the Air Force's development efforts "towards technologies and concepts that would lead to program costs far lower than currently conceived" and "breakthroughs that fundamentally change the cost-benefit equation for a space based radar system."

To address Congressional concerns and to arrive at a technically feasible solution, the Air Force placed increased emphasis on innovation and affordability on the SR concept exploration efforts. This emphasis has resulted in significant changes to the SR program. While continuing to be dual-use to meet Department of Defense (DoD) and IC needs, the SR is focused on smaller constellations of high performance, more affordable satellites. This move to smaller, more affordable constellations was driven by the realization that it is ultimately unaffordable for a single system to provide global continuous target tracking capability. The resulting more affordable system concepts remain highly effective by leveraging advanced technologies and increased levels of horizontal integration with other ISR platforms, national infrastructure and DoD weapon systems.

Air Force and OSD leadership will further address Congressional concerns through an on orbit demonstration that will validate Space Radar costs and technology maturity. The program will also shift focus towards payload maturation, a robust technology risk reduction and system-of-systems engineering program, and a structured revalidation of requirements. In addition, leadership commissioned an Independent Technology Assessment to look at alternative technologies to reduce cost and improve utility.

Exhibit R-2a, RDT&E Project Justification

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|--|----------------|------------------|------------------|------------------|--|------------------|------------------|--|------------------|-------|
| BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P) | | | | | PE NUMBER AND TITLE 0603858F Space-Based Radar Dem/Val | | | PROJECT NUMBER AND TITLE A004 SBR Concept and Technology Development | | |
| 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 |
| A004 SBR Concept and Technology Development | 165.125 | 73.847 | 225.839 | 356.178 | 568.485 | 1,068.368 | 1,315.760 | 1,410.736 | Continuing | TBD |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

(U) A. Mission Description and Budget Item Justification

Space Based Radar (SBR) name was changed to Space Radar (SR) to represent the fundamental restructure of joint DoD and intelligence community (IC) program. DoD and National users have agreed on a path to converge to a single common space radar system that affordably meets the nation's needs. The SR program mission partners are committed to deliver an affordable, capabilities-driven system as part of a horizontally integrated system-of-systems designed to meet National Intelligence and Joint Commanders requirements by providing high-volume, readily taskable Synthetic Aperture Radar (SAR) imaging; Surface Moving Target Indications (SMTI); and High-Resolution Terrain Information (HRTI). Designed to be tightly integrated with present and planned intelligence systems, the resultant Space Radar will provide transformational capabilities to both the National Intelligence Community and Warfighting agencies alike through agile, responsive intelligence collections using near-real time tasking and data dissemination. The SR system will allow a 'deep look' into denied areas of interest in all weather, day or night, without risk to personnel or equipment. SR's on-demand intelligence capability will have global utility across the spectrum of conflict.

The 2006 program focuses on overall program affordability by stressing innovation through program risk reduction and technology maturation. The program will leverage National Reconnaissance Office (NRO), National Geospatial-Intelligence Agency (NGA), Defense Advanced Research Projects Agency (DARPA), and Air Force Research Laboratory (AFRL) activities to ensure both DoD and Intelligence Community requirements are satisfied in the baseline SR effort. In addition, an on orbit demonstration will be developed to validate Space Radar costs and technology maturity.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACDP), because it involves evaluating integrated technologies in as realistic an operating environment as possible to assess the performance or cost reduction potential of advanced technology.

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

| | <u>FY 2004</u> | <u>FY 2005</u> | <u>FY 2006</u> | <u>FY 2007</u> |
|--|----------------|----------------|----------------|----------------|
| (U) Continued Technology Risk Reduction activities on Electronically Scanned Array (ESA) and on-board processing efforts that included end-to-end payload testbeds and development of alternative signal processing algorithms, expanded Battle Management Command, Control, Communications (BMC3) effort that included interface identification and definition, and provided Advanced Concept Technology Demonstration (ACTD) support. | 66.120 | | | |
| (U) Concept Definition continued with the award of two Phase A Concept Development contracts. | 85.003 | | | |
| (U) Invest in technology and concept definition activities to include but not limited to up-front, in-depth system engineering, risk reduction activities. Continue Technology Risk Reduction activities on Electronically Scanned Array (ESA) and on-board processing efforts that included end-to-end payload test beds and prototype development of high-risk signal processing algorithms, expanded tactical integration effort that includes interface identification and definition, support an Advanced Concept | | 66.376 | 210.782 | 320.560 |

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| BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P) | PE NUMBER AND TITLE 0603858F Space-Based Radar Dem/Val | PROJECT NUMBER AND TITLE A004 SBR Concept and Technology Development |
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Technology Demonstration (ACTD) and on-orbit demonstrations. Additional near term efforts include technology risk reduction demonstrations as well as, system-of-systems engineering activities, wargames and experiments, and Modeling & Simulation (M&S) capability, to include access to operational C4ISR systems for enhanced data exploitation.

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|--|---------|--------|---------|---------|
| (U) Program Support activities include but are not limited to acquisition planning, schedule management, requirements development, source selection, and financial management. | 14.002 | 7.471 | 15.057 | 35.618 |
| (U) Total Cost | 165.125 | 73.847 | 225.839 | 356.178 |

(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) Other APPN- MILCON | | | | | | | 3.000 | 32.500 | Continuing | TBD |

(U) D. Acquisition Strategy

The Air Force will lead the SR Joint Program Office (JPO) with the National Reconnaissance Office (NRO) and National Geospatial- Intelligence Agency (NGA) as the principal partners with other Service, DoD, and Intelligence Community participation. The SR JPO has awarded two contracts for Concept Definition and plans to select a single contractor after KDP-B.

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Exhibit R-3, RDT&E Project Cost Analysis

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| BUDGET ACTIVITY | | | | PE NUMBER AND TITLE | | | | PROJECT NUMBER AND TITLE | | | |
| 04 Advanced Component Development and Prototypes (ACD&P) | | | | 0603858F Space-Based Radar Dem/Val | | | | A004 SBR Concept and Technology Development | | | |

| (U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions) | <u>Contract Method & Type</u> | <u>Performing Activity & Location</u> | <u>Total Prior to FY 2004 Cost</u> | <u>FY 2004 Cost</u> | <u>FY 2004 Award Date</u> | <u>FY 2005 Cost</u> | <u>FY 2005 Award Date</u> | <u>FY 2006 Cost</u> | <u>FY 2006 Award Date</u> | <u>FY 2007 Cost</u> | <u>FY 2007 Award Date</u> | <u>Cost to Complete</u> | <u>Total Cost</u> | <u>Target Value of Contract</u> |
|--|--|---|------------------------------------|---------------------|---------------------------|---------------------|---------------------------|---------------------|---------------------------|---------------------|---------------------------|-------------------------|-------------------|---------------------------------|
| (U) <u>Product Development</u> | | | | | | | | | | | | | | |
| Technology Risk Reduction Efforts | Various Contracts | Various | 9.980 | 66.120 | | | | | | | | | 76.100 | |
| Requirements Development | FFRDC/S ETA and GSA Contracts | Various | 10.939 | | | | | | | | | | 10.939 | |
| Concept Definition | Competitive | Various | 17.779 | 85.003 | Apr-04 | | | | | | | | 102.782 | |
| Phase A Concept Development/Technology Risk Reduction Activities | Various Contracts | Various | | | | 66.376 | Oct-04 | 210.782 | | 320.560 | | Continuing | TBD | |
| Subtotal Product Development | | | 38.698 | 151.123 | | 66.376 | | 210.782 | | 320.560 | | Continuing | TBD | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) <u>Support</u> | | | | | | | | | | | | | | |
| SMC, ESC, AFSPC, NRO & NGA | Various Contracts | Various | 6.704 | 14.002 | | 7.471 | | 15.057 | | 35.618 | | Continuing | TBD | |
| Subtotal Support | | | 6.704 | 14.002 | | 7.471 | | 15.057 | | 35.618 | | Continuing | TBD | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) <u>Test & Evaluation</u> | | | | | | | | | | | | | | |
| N/A | | | | | | | | | | | | | 0.000 | |
| Subtotal Test & Evaluation | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) <u>Management</u> | | | | | | | | | | | | | | |
| N/A | | | | | | | | | | | | | 0.000 | |
| Subtotal Management | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 |
| Remarks: | | | | | | | | | | | | | | |
| (U) Total Cost | | | 45.402 | 165.125 | | 73.847 | | 225.839 | | 356.178 | | Continuing | TBD | 0.000 |

Exhibit R-4, RDT&E Schedule Profile

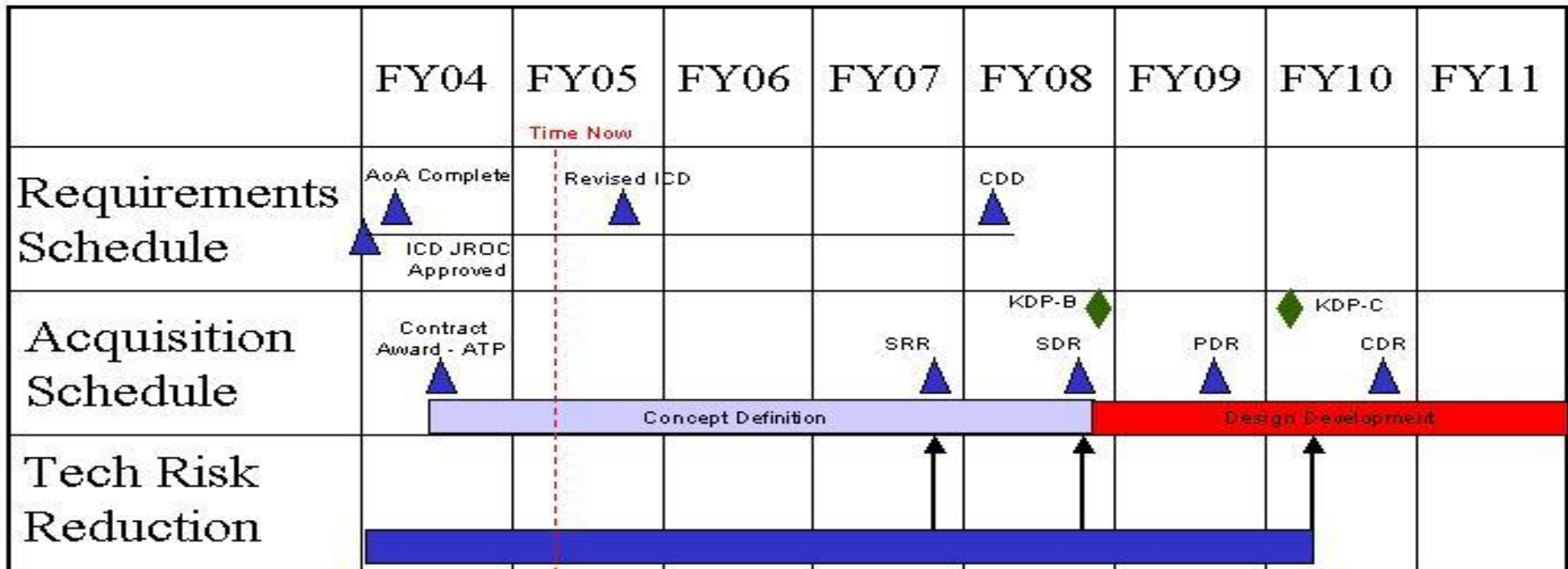
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04 Advanced Component Development and Prototypes (ACD&P)

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Development

SR Schedule



AoA: Analysis of Alternatives CDR: Critical Design Review ICD: Initial Capabilities Document CDD: Capabilities Dev Doc
 PDR: Preliminary Design Rev SDR: System Design Review SRR: System Requirements Review D/S: Down Select

Concept Definition
 Design Development
 Tech Risk Reduction
 ▲ ◆ Key Events

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| Exhibit R-4a, RDT&E Schedule Detail | DATE February 2005 |
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|---|---|---|

| | <u>FY 2004</u> | <u>FY 2005</u> | <u>FY 2006</u> | <u>FY 2007</u> |
|---|----------------|----------------|----------------|----------------|
| (U) Schedule Profile | | | | |
| (U) AoA Completion | 1Q | | | |
| (U) Award Phase A Concept Development Contracts | 2Q | | | |
| (U) JROC MRB Approved Revised ICD | | 4Q | | |
| (U) System Requirements Review (SRR) | | | | 4Q |