

UNCLASSIFIED

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|--|----------------|------------------|-----------------------|---|------------------------|------------------|------------------|------------------|---------------------|------------------|------------|
| 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 5: Development & Demonstration (SDD) | | | | R-1 ITEM NOMENCLATURE PE 0604441F: Space Based Infrared Systems (SBIRS) High EMD | | | | | | | |
| 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 | 542.404 | 521.156 | 530.047 | 0.000 | 530.047 | 504.409 | 389.243 | 313.347 | 179.896 | Continuing | Continuing |
| 653616: SBIRS High Element EMD | 542.404 | 521.156 | 511.847 | 0.000 | 511.847 | 487.609 | 389.243 | 313.347 | 179.896 | Continuing | Continuing |
| 65A040: Commercially Hosted Infrared Payload (CHIRP) | 0.000 | 0.000 | 18.200 | 0.000 | 18.200 | 16.800 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| A. Mission Description and Budget Item Justification | | | | | | | | | | | |
| <p>(U) The Space-Based Infrared Systems (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS will incorporate new technologies to enhance detection and improve reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance in order to meet requirements in US Strategic Command's Capstone Requirements Document and Air Force Space Command's Operational Requirements Document. The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. The HEO-1 and HEO-2 payloads are accepted and certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. Concept studies/activities may be implemented to investigate obsolescence issues, OPIR solutions to potential operational concerns, and future evolution paths of the ground and/or space segment.</p> | | | | | | | | | | | |
| <p>(U) The Department of Defense terminated the Third Generation Infrared Surveillance (3GIRS) program (PE 0604443F) beginning in FY11. 3GIRS included development efforts for the Commercially Hosted Infrared Payload (CHIRP) demonstration. FY11 and FY12 funds supporting the CHIRP demonstration for technology maturation of space and ground technologies was moved to the SBIRS RDT&E PE under a separate project number. CHIRP will perform risk reduction and evaluation of Wide-Field-of-View (WFOV) IR staring and data processing technology to potentially evolve future SBIRS staring sensors and processing algorithms. An on-orbit demonstration will quantify performance levels of a WFOV sensor in an operational environment. CHIRP sensor testing will also provide Focal Plane Array (FPA) performance/calibration characteristics, validate WFOV staring algorithm performance in an operational environment, and investigate compatibility with current Overhead Persistent Infrared (OPIR) ground systems for missile warning, missile defense, and other mission areas.</p> | | | | | | | | | | | |

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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 0604441F: Space Based Infrared Systems (SBIRS) High EMD | | | |
| BA 5: Development & Demonstration (SDD) | | | | | |
| (U) This program is assigned to Budget Activity 5, System Development and Demonstration (SDD), because it funds the development activities for the SBIRS High program and CHIRP demonstration. | | | | | |
| B. Program Change Summary (\$ in Millions) | | | | | |
| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
| Previous President's Budget | 542.411 | 512.642 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 542.404 | 521.156 | 530.047 | 0.000 | 530.047 |
| Total Adjustments | -0.007 | 8.514 | 530.047 | 0.000 | 530.047 |
| • Congressional General Reductions | | -2.776 | | | |
| • Congressional Directed Reductions | | 0.000 | | | |
| • Congressional Rescissions | 0.000 | -2.510 | | | |
| • Congressional Adds | | 13.800 | | | |
| • Congressional Directed Transfers | | 0.000 | | | |
| • Reprogrammings | 0.000 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | -0.007 | 0.000 | 530.047 | 0.000 | 530.047 |
| Change Summary Explanation | | | | | |
| FY10: Congressional Program Reduction of \$2.7M for Federally Funded Research & Development Center (FFRDC) | | | | | |
| FY10: Congressional Recissions of -2.5M for Revised Economic Assumptions | | | | | |
| FY10: Congressional Increase of \$13.8M for Data Processing/Exploitation | | | | | |
| FY11: The FY 2010 President's Budget submittal did not reflect FY 2011 through FY 2015 funding. Therefore, explanation of changes between the two budget positions cannot be made in a relvant matter. | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force | | | | | | | | DATE: February 2010 | | | |
| APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>Development & Demonstration (SDD)</i> | | | | R-1 ITEM NOMENCLATURE PE 0604441F: <i>Space Based Infrared Systems (SBIRS) High EMD</i> | | | | PROJECT 653616: <i>SBIRS High Element EMD</i> | | | |
| 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 |
| 653616: <i>SBIRS High Element EMD</i> | 542.404 | 521.156 | 511.847 | 0.000 | 511.847 | 487.609 | 389.243 | 313.347 | 179.896 | Continuing | Continuing |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

A. Mission Description and Budget Item Justification

(U) The Space-Based Infrared Systems (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS will incorporate new technologies to enhance detection and improve reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance in order to meet requirements in US Strategic Command's Capstone Requirements Document and Air Force Space Command's Operational Requirements Document. The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. The HEO-1 and HEO-2 payloads are accepted and certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. Concept studies/activities may be implemented to investigate obsolescence issues, OPIR solutions to potential operational concerns, and future evolution paths of the ground and/or space segment.

(U) This program is assigned to Budget Activity 5, System Development and Demonstration (SDD), because it funds the development activities for the SBIRS High program.

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

| | | | | | |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
| MAJOR THRUST: Continue EMD contracts for Space and Ground segment development, concept studies/activities for obsolescence issues. | 542.404 | 521.156 | 511.847 | 0.000 | 511.847 |

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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 5: Development & Demonstration (SDD) | | R-1 ITEM NOMENCLATURE PE 0604441F: Space Based Infrared Systems (SBIRS) High EMD | | PROJECT 653616: SBIRS High Element EMD | | |
| B. Accomplishments/Planned Program (\$ in Millions) | | | | | | |
| | | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
| FY 2009 Accomplishments: In FY 2009: Continued GEO development, GEO 1&2 integration, assembly and test, design activities for GEO block upgrades, proposal preparation, HEO integration and test, HEO message certification, Ground System Development, System Engineering and Program Management, Host program office support, Technical Intelligence activities, Data Processing/Exploitation/ground integration activities, Combined Task Force (CTF) support activities, and continuation of systems integration and test studies. Continued Program Office and related support activities (to include SETA), technical analysis and independent verification and validation of contractor. Continued Systems Engineering and Integration (SE&I). | | | | | | |
| FY 2010 Plans: In FY 2010: Implement Ground segment restructure (Block 10 hardware/software to address obsolesence issues, information assurance, and improve data fusion). Continue GEO development, GEO 1&2 integration, assembly and test, design activities for GEO block upgrades, proposal preparation, HEO integration and test, Ground System Development, System Engineering and Program Management, Host program office support, Technical Intelligence activities, Data Processing/Exploitation/ground integration activities, Combined Task Force (CTF) support activities, and continuation of systems integration and test studies. Continue Program Office and related support activities (to include SETA), technical analysis and independent verification and validation of contractor. Continue Systems Engineering and Integration (SE&I). | | | | | | |
| FY 2011 Base Plans: In FY 2011: Continue Ground segment restructure (Block 10 hardware/software), GEO development, GEO 1&2 integration, assembly and test, design activities for GEO block upgrades, proposal preparation, HEO integration and test, Ground System Development, System Engineering and Program Management, Host program office support, Technical Intelligence activities, Data Processing/Exploitation/ground integration activities, Combined Task Force (CTF) support activities, and continuation of systems integration and test studies. Execute GEO-1 launch campaign. Continue | | | | | | |

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|---|----------------|----------------|---|------------------------|--------------------------|---|----------------------------|-------------------------|------------------------|-----------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force | | | | | | | DATE: February 2010 | | | | |
| APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>Development & Demonstration (SDD)</i> | | | R-1 ITEM NOMENCLATURE PE 0604441F: <i>Space Based Infrared Systems (SBIRS) High EMD</i> | | | PROJECT 653616: <i>SBIRS High Element EMD</i> | | | | | |
| B. Accomplishments/Planned Program (\$ in Millions) | | | | | | | | | | | |
| | | | | | | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total | |
| Program Office and related support activities (to include SETA), technical analysis and independent verification and validation of contractor. Continue Systems Engineering and Integration (SE&I). <i>FY 2011 OCO Plans:</i> In FY 2011 OCO: N/A | | | | | | | | | | | |
| Accomplishments/Planned Programs Subtotals | | | | | | 542.404 | 521.156 | 511.847 | 0.000 | 511.847 | |
| 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 0305915F: <i>BA-03, Other Procurement</i> | 80.168 | 2.000 | 24.878 | 0.000 | 24.878 | 39.521 | 24.810 | 3.601 | 4.980 | 0.000 | 0.000 |
| • PE 0305915F (1): <i>BA-05, P-30, Missile Procurement</i> | 1,832.976 | 466.456 | 975.709 | 0.000 | 975.709 | 1,313.407 | 785.346 | 107.598 | 109.223 | 0.000 | 0.000 |
| D. Acquisition Strategy | | | | | | | | | | | |
| The pre-SDD SBIRS contracts were competed in full and open competition. Two contracts were awarded to Lockheed/Loral/Aerojet and Hughes/TRW in 1995 for the pre-SDD phase. A single contract was awarded to Lockheed Martin in 1996 for the SDD phase. | | | | | | | | | | | |
| E. Performance Metrics | | | | | | | | | | | |
| 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. | | | | | | | | | | | |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force | | | | | | | | | | | DATE: February 2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------|----------------------------------|------------------------|---|------------|--------------|------------|---|------------|---------------|----------------------------|------------|--------------------------|--------------------|------------------------|--------------------------------|------------------------|---------|--|--------------|--|-------------|--|---------------|------------------|------------|--------------------------|------|------------|------|------------|------|------------|------|-------------------------|--------|------------|---------|-------|--|-------|--|-------|--|-------|-------|---------|---------|------------|--------|----------------------------------|-----------|---------|--|---------|--|-------|--|---------|-----------|-----------|-----------|---------------------|---------|------------|-------|-------|--|-------|--|-------|--|-------|---------|---------|---------|-----------------------------------|---------|------------|-------|-------|--|-------|--|-------|--|-------|-------|-------|-------|------------|---------------------|------------|--------|-------|--|-------|--|-------|--|-------|-------|--------|--------|---------------|---------------------|------------|--------|-------|--|-------|--|-------|--|-------|-------|--------|--------|--------------------------------|---------------------|------------|--------|-------|--|-------|--|-------|--|-------|-------|--------|--------|-----------------|--|--|-----------|---------|--|---------|--|-------|--|---------|-----------|-----------|-----------|
| APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>Development & Demonstration (SDD)</i> | | | | R-1 ITEM NOMENCLATURE PE 0604441F: <i>Space Based Infrared Systems (SBIRS) High EMD</i> | | | | PROJECT 653616: <i>SBIRS High Element EMD</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Development (\$ in Millions) <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Cost Category Item</th> <th rowspan="2">Contract Method & Type</th> <th rowspan="2">Performing Activity & Location</th> <th rowspan="2">Total Prior Years Cost</th> <th colspan="2">FY 2010</th> <th colspan="2">FY 2011 Base</th> <th colspan="2">FY 2011 OCO</th> <th>FY 2011 Total</th> <th rowspan="2">Cost To Complete</th> <th rowspan="2">Total Cost</th> <th rowspan="2">Target Value of Contract</th> </tr> <tr> <th>Cost</th> <th>Award Date</th> <th>Cost</th> <th>Award Date</th> <th>Cost</th> <th>Award Date</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>LMMS & Hughes (Pre-SDD)</td> <td>C/CPFF</td> <td>TBD TBD</td> <td align="right">159.600</td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td align="right">0.000</td> <td align="right">159.600</td> <td align="right">159.600</td> </tr> <tr> <td>LMMS (SDD)</td> <td>C/CPAF</td> <td>Lockheed Martin Sunnyvale, CA</td> <td align="right">6,617.068</td> <td align="right">458.744</td> <td></td> <td align="right">461.903</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">461.903</td> <td align="right">1,609.739</td> <td align="right">9,147.454</td> <td align="right">9,147.454</td> </tr> <tr> <td>Obsolescence Issues</td> <td>TBD/TBD</td> <td>TBD TBD</td> <td align="right">0.000</td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td align="right">384.000</td> <td align="right">384.000</td> <td align="right">384.000</td> </tr> <tr> <td>SBIRS Pre-SDD Contract Adjustment</td> <td>TBD/TBD</td> <td>TBD TBD</td> <td align="right">4.780</td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td align="right">0.000</td> <td align="right">4.780</td> <td align="right">4.780</td> </tr> <tr> <td>Technology</td> <td>Various/ Various</td> <td>TBD TBD</td> <td align="right">11.600</td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td align="right">0.000</td> <td align="right">11.600</td> <td align="right">11.600</td> </tr> <tr> <td>Phenomenology</td> <td>Various/ Various</td> <td>TBD TBD</td> <td align="right">17.350</td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td align="right">0.000</td> <td align="right">17.350</td> <td align="right">17.350</td> </tr> <tr> <td>Sandia Nat'l Lab (Cobra Brass)</td> <td>Various/ Various</td> <td>TBD TBD</td> <td align="right">10.000</td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td></td> <td align="right">0.000</td> <td align="right">0.000</td> <td align="right">10.000</td> <td align="right">10.000</td> </tr> <tr> <td align="right" colspan="3">Subtotal</td><td align="right">6,820.398</td><td align="right">458.744</td><td></td><td align="right">461.903</td><td></td><td align="right">0.000</td><td></td><td align="right">461.903</td><td align="right">1,993.739</td><td align="right">9,734.784</td><td align="right">9,734.784</td></tr> </tbody> </table> | | | | | | | | | | | | | | Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | LMMS & Hughes (Pre-SDD) | C/CPFF | TBD TBD | 159.600 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 159.600 | 159.600 | LMMS (SDD) | C/CPAF | Lockheed Martin Sunnyvale, CA | 6,617.068 | 458.744 | | 461.903 | | 0.000 | | 461.903 | 1,609.739 | 9,147.454 | 9,147.454 | Obsolescence Issues | TBD/TBD | TBD TBD | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 384.000 | 384.000 | 384.000 | SBIRS Pre-SDD Contract Adjustment | TBD/TBD | TBD TBD | 4.780 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 4.780 | 4.780 | Technology | Various/ Various | TBD TBD | 11.600 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 11.600 | 11.600 | Phenomenology | Various/ Various | TBD TBD | 17.350 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 17.350 | 17.350 | Sandia Nat'l Lab (Cobra Brass) | Various/ Various | TBD TBD | 10.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 10.000 | 10.000 | Subtotal | | | 6,820.398 | 458.744 | | 461.903 | | 0.000 | | 461.903 | 1,993.739 | 9,734.784 | 9,734.784 |
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LMMS & Hughes (Pre-SDD) | C/CPFF | TBD TBD | 159.600 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 159.600 | 159.600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LMMS (SDD) | C/CPAF | Lockheed Martin Sunnyvale, CA | 6,617.068 | 458.744 | | 461.903 | | 0.000 | | 461.903 | 1,609.739 | 9,147.454 | 9,147.454 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Obsolescence Issues | TBD/TBD | TBD TBD | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 384.000 | 384.000 | 384.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SBIRS Pre-SDD Contract Adjustment | TBD/TBD | TBD TBD | 4.780 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 4.780 | 4.780 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Technology | Various/ Various | TBD TBD | 11.600 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 11.600 | 11.600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phenomenology | Various/ Various | TBD TBD | 17.350 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 17.350 | 17.350 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sandia Nat'l Lab (Cobra Brass) | Various/ Various | TBD TBD | 10.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 10.000 | 10.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | | | 6,820.398 | 458.744 | | 461.903 | | 0.000 | | 461.903 | 1,993.739 | 9,734.784 | 9,734.784 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force | | | | | | | | | | | DATE: February 2010 | | |
| APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>Development & Demonstration (SDD)</i> | | | | R-1 ITEM NOMENCLATURE PE 0604441F: <i>Space Based Infrared Systems (SBIRS) High EMD</i> | | | | PROJECT 653616: <i>SBIRS High Element EMD</i> | | | | | |
| Support (\$ 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 |
| Aerospace Corp | TBD/TBD | Aerospace Corp El Segundo CA | 322.048 | 32.374 | | 24.871 | | 0.000 | | 24.871 | 42.763 | 422.056 | 422.056 |
| Program Management Support | Various/ Various | Various Various | 144.560 | 17.288 | | 11.878 | | 0.000 | | 11.878 | 28.551 | 202.277 | 202.277 |
| Systems Engineering and Integration (SEI). | TBD/TBD | TBD TBD | 0.000 | 12.750 | | 13.195 | | 0.000 | | 13.195 | 31.920 | 57.865 | 57.865 |
| Subtotal | | | 466.608 | 62.412 | | 49.944 | | 0.000 | | 49.944 | 103.234 | 682.198 | 682.198 |
| Remarks | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | Total Prior Years Cost | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract |
| Project Cost Totals | | | 7,287.006 | 521.156 | | 511.847 | | 0.000 | | 511.847 | 2,096.973 | 10,416.982 | 10,416.982 |
| Remarks Total Prior Years Cost may include only FY 2009 data. | | | | | | | | | | | | | |

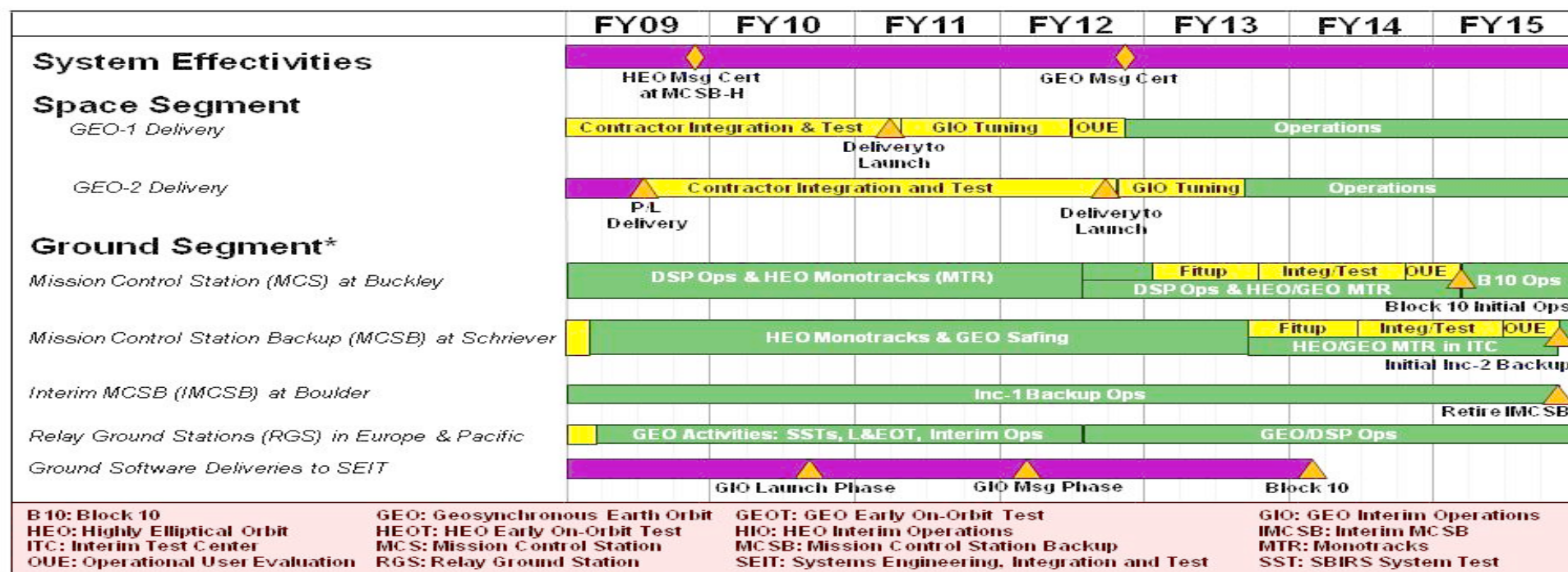
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| Exhibit R-4, RDT&E Schedule Profile: PB 2011 Air Force | | DATE: February 2010 |
| APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: Development & Demonstration (SDD) | R-1 ITEM NOMENCLATURE PE 0604441F: Space Based Infrared Systems (SBIRS) High EMD | PROJECT 653616: SBIRS High Element EMD |



Design / development
 Production / fielding
 Integration / test
 Operations / sustainment
 Key events

*Denotes dates are under review pending the determination of ground delivery/implementation strategy

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|--|---|---|----------------------------|
| Exhibit R-4A, RDT&E Schedule Details: PB 2011 Air Force | | | DATE: February 2010 |
| APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>Development & Demonstration (SDD)</i> | R-1 ITEM NOMENCLATURE PE 0604441F: <i>Space Based Infrared Systems</i> (SBIRS) <i>High EMD</i> | PROJECT 653616: <i>SBIRS High Element EMD</i> | |

Schedule Details

| Event | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| GEO-1 SPA Software Item Qualification Test (SIQT) Complete | 1 | 2009 | 1 | 2009 |
| HEO-1 Message Certification | 1 | 2009 | 1 | 2009 |
| GEO-2 Payload delivery to prime for integration with spacecraft | 3 | 2009 | 3 | 2009 |
| HEO Message Certification at MCSB-H | 4 | 2009 | 4 | 2009 |
| HEO-2 Operation Acceptance | 4 | 2009 | 4 | 2009 |
| GEO-1 TVAC Closed Door Test | 4 | 2009 | 1 | 2010 |
| GEO Interim Operations (GIO) Software Delivery for Launch | 3 | 2010 | 3 | 2010 |
| GEO-1 FIST Complete | 3 | 2010 | 3 | 2010 |
| GEO-1 Satellite Delivery | 1 | 2011 | 1 | 2011 |
| GEO-2 BIST-2 Complete | 1 | 2011 | 2 | 2011 |
| GEO-2 Acoustic Test Complete | 2 | 2011 | 2 | 2011 |
| GEO-1 P/L Calibration and Tuning | 2 | 2011 | 4 | 2011 |
| GEO-2 TVAC Closed Door Test | 3 | 2011 | 4 | 2011 |

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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 5: Development & Demonstration (SDD) | | | | R-1 ITEM NOMENCLATURE PE 0604441F: Space Based Infrared Systems (SBIRS) High EMD | | | | PROJECT 65A040: Commercially Hosted Infrared Payload (CHIRP) | | | |
| 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 |
| 65A040: Commercially Hosted Infrared Payload (CHIRP) | 0.000 | 0.000 | 18.200 | 0.000 | 18.200 | 16.800 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| A. Mission Description and Budget Item Justification | | | | | | | | | | | |
| (U) The Department of Defense terminated the Third Generation Infrared Surveillance (3GIRS) program (PE 0604443F) beginning in FY11. 3GIRS included development efforts for the Commercially Hosted Infrared Payload (CHIRP) demonstration. FY11 and FY12 funds supporting the CHIRP demonstration for technology maturation of space and ground technologies was moved to the SBIRS RDT&E PE under a separate project number. | | | | | | | | | | | |
| (U) CHIRP will perform risk reduction and evaluation of Wide-Field-of-View (WFOV) IR staring and data processing technology to potentially evolve future SBIRS staring sensors and processing algorithms. An on-orbit demonstration will quantify performance levels of a WFOV sensor in an operational environment. CHIRP sensor testing will also provide Focal Plane Array (FPA) performance/calibration characteristics, validate WFOV staring algorithm performance in an operational environment, and investigate compatibility with current Overhead Persistent Infrared (OPIR) ground systems for missile warning, missile defense, and other mission areas. | | | | | | | | | | | |
| (U) This program is assigned to Budget Activity 5, System Development and Demonstration (SDD) because it funds the development activities for the CHIRP demonstration. | | | | | | | | | | | |
| B. Accomplishments/Planned Program (\$ in Millions) | | | | | | | | | | | |
| | | | | | | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total | |
| MAJOR THRUST: Continue contracts for Commercially Hosted Infrared Payload (CHIRP) demonstration and related support activities. | | | | | | 0.000 | 0.000 | 18.200 | 0.000 | 18.200 | |
| FY 2009 Accomplishments: In FY 2009: N/A | | | | | | | | | | | |

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|---|----------------|----------------|---|--------------------|----------------------|---|----------------------------|---------------------|--------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force | | | | | | | DATE: February 2010 | | | | |
| APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>Development & Demonstration (SDD)</i> | | | R-1 ITEM NOMENCLATURE PE 0604441F: <i>Space Based Infrared Systems (SBIRS) High EMD</i> | | | PROJECT 65A040: <i>Commercially Hosted Infrared Payload (CHIRP)</i> | | | | | |
| B. Accomplishments/Planned Program (\$ in Millions) | | | | | | | | | | | |
| | | | | | | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total | |
| <p><i>FY 2010 Plans:</i> In FY 2010: N/A</p> <p><i>FY 2011 Base Plans:</i> In FY 2011: Demonstrate CHIRP on-orbit operations to include fusion of CHIRP data with DSP and other OPIR systems. Collect and archive on-orbit data against cooperative targets and continue to mature WFOV algorithms. Continue Program Office and related support activities (to include SETA). Continue Systems Engineering and Integration (SE&I).</p> <p><i>FY 2011 OCO Plans:</i> In FY 2011 OCO: N/A</p> | | | | | | | | | | | |
| Accomplishments/Planned Programs Subtotals | | | | | | 0.000 | 0.000 | 18.200 | 0.000 | 18.200 | |
| 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 (15452): <i>Activity Not Provided</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| D. Acquisition Strategy | | | | | | | | | | | |
| Continuation of risk reduction and evaluation of WFOV IR staring and data processing technology within CHIRP will be performed through contracts previously funded by the 3GIRS program. | | | | | | | | | | | |
| E. Performance Metrics | | | | | | | | | | | |
| 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. | | | | | | | | | | | |

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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 5: Development & Demonstration (SDD) | | | | R-1 ITEM NOMENCLATURE PE 0604441F: Space Based Infrared Systems (SBIRS) High EMD | | | | PROJECT 65A040: Commercially Hosted Infrared Payload (CHIRP) | | | | | | |
| 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 | |
| WFOV IR staring technologies risk reduction activities | Various/ Various | Various Various | 0.000 | 0.000 | | 15.600 | | 0.000 | | 15.600 | 14.200 | 29.800 | 0.000 | |
| Subtotal | | | 0.000 | 0.000 | | 15.600 | | 0.000 | | 15.600 | 14.200 | 29.800 | 0.000 | |
| Remarks | | | | | | | | | | | | | | |
| Support (\$ 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 | |
| Program office, developmental planning, and technical support including Federally Funded Research and Development Center (FFRDC/SEAT) | TBD/TBD | TBD TBD | 0.000 | 0.000 | | 2.600 | | 0.000 | | 2.600 | 2.600 | 5.200 | 0.000 | |
| Subtotal | | | 0.000 | 0.000 | | 2.600 | | 0.000 | | 2.600 | 2.600 | 5.200 | 0.000 | |
| Remarks | | | | | | | | | | | | | | |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force | | | | | | | DATE: February 2010 | | | | | | | | | | | | | | | | | | | | |
|---|---------------------------|---------|---|----------------|------------------|---|----------------------------|--------------------------------|--|--|---------------------------|---------|-----------------|----------------|------------------|---------------------|------------|--------------------------------|----------------------------|-------|-------|--------|-------|--------|--------|--------|-------|
| APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>Development & Demonstration (SDD)</i> | | | R-1 ITEM NOMENCLATURE PE 0604441F: <i>Space Based Infrared Systems (SBIRS) High EMD</i> | | | PROJECT 65A040: <i>Commercially Hosted Infrared Payload (CHIRP)</i> | | | | | | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 25%;"></div> <table border="1" style="width: 75%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 10%;">Total Prior Years Cost</th> <th style="width: 10%;">FY 2010</th> <th style="width: 10%;">FY 2011 Base</th> <th style="width: 10%;">FY 2011 OCO</th> <th style="width: 10%;">FY 2011 Total</th> <th style="width: 10%;">Cost To Complete</th> <th style="width: 10%;">Total Cost</th> <th style="width: 10%;">Target Value of Contract</th> </tr> </thead> <tbody> <tr> <td style="text-align: right;">Project Cost Totals</td> <td>0.000</td> <td>0.000</td> <td>18.200</td> <td>0.000</td> <td>18.200</td> <td>16.800</td> <td>35.000</td> <td>0.000</td> </tr> </tbody> </table> </div> | | | | | | | | | | | Total Prior Years Cost | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract | Project Cost Totals | 0.000 | 0.000 | 18.200 | 0.000 | 18.200 | 16.800 | 35.000 | 0.000 |
| | Total Prior Years Cost | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract | | | | | | | | | | | | | | | | | | | |
| Project Cost Totals | 0.000 | 0.000 | 18.200 | 0.000 | 18.200 | 16.800 | 35.000 | 0.000 | | | | | | | | | | | | | | | | | | | |
| Remarks 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

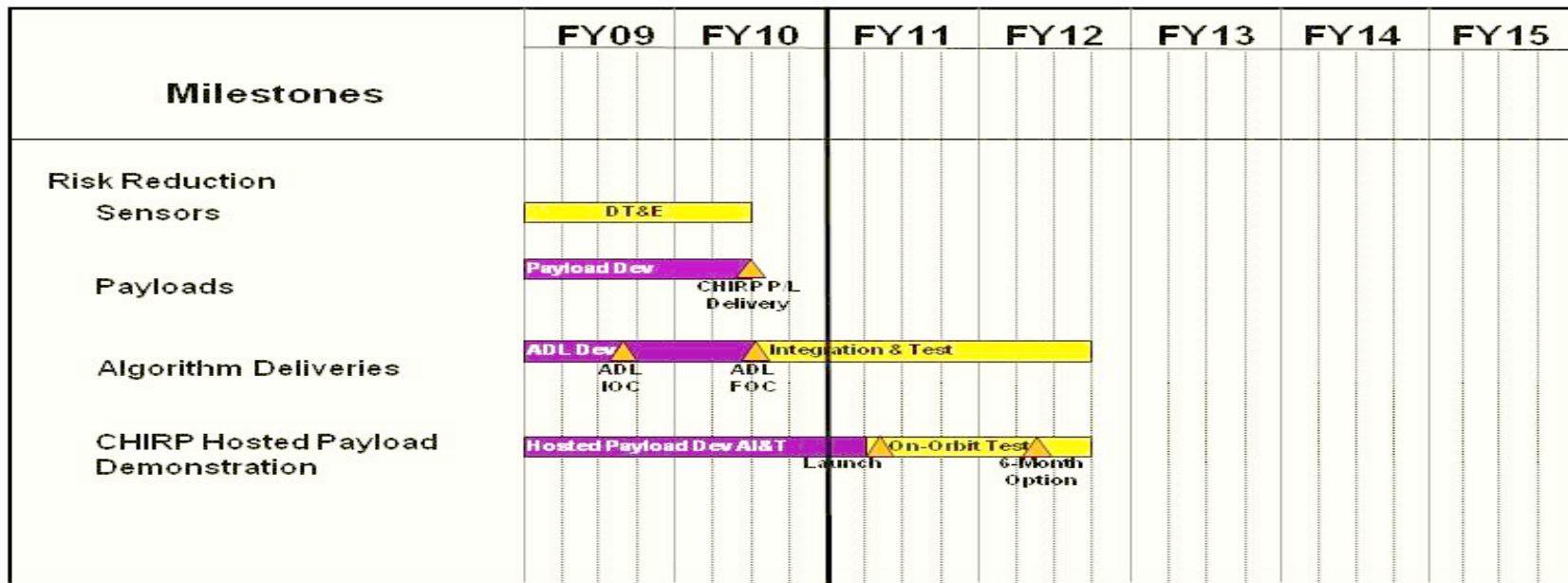
3600: Research, Development, Test & Evaluation, Air Force
BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0604441F: Space Based Infrared Systems
(SBIRS) High EMD

PROJECT

65A040: Commercially Hosted Infrared
Payload (CHIRP)



AI&T: Assembly, Integration & Test ADL: Algorithm Development Lab AoA: Analysis of Alternatives CDD: Capability Development Document
DT&E: Development Test & Eval ICD: Initial Capabilities Document IOC: Initial Operational Capability ITB: Integrated Test Bed

Concept activities
 Integration / test
 Production / fielding
 Design / development
 Operations / sustainment
▲◆ Key events

Activities prior to FY11 funded in PE 0604443F, Third Generation Infrared Surveillance (3GIRS)

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|---|---|---|---------------------|------|
| Exhibit R-4A, RDT&E Schedule Details: PB 2011 Air Force | | | DATE: February 2010 | |
| APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: Development & Demonstration (SDD) | R-1 ITEM NOMENCLATURE PE 0604441F: Space Based Infrared Systems (SBIRS) High EMD | PROJECT 65A040: Commercially Hosted Infrared Payload (CHIRP) | | |
| Schedule Details | | | | |
| | Start | | End | |
| Event | Quarter | Year | Quarter | Year |
| Algorithm Deliveries | 1 | 2011 | 1 | 2011 |
| Commercially Hosted IR Payload (CHIRP) Launch | 2 | 2011 | 2 | 2011 |
| CHIRP Flight Demo | 2 | 2011 | 4 | 2011 |

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