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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2013 Air Force **DATE:** February 2012

| <b>APPROPRIATION/BUDGET ACTIVITY</b>                                                                                 |                |                |                     | <b>R-1 ITEM NOMENCLATURE</b>              |                      |                |                |                |                |                         |                   |
|----------------------------------------------------------------------------------------------------------------------|----------------|----------------|---------------------|-------------------------------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> |                |                |                     | PE 0305265F: <i>GPS III Space Segment</i> |                      |                |                |                |                |                         |                   |
| <b>COST (\$ in Millions)</b>                                                                                         | <b>FY 2011</b> | <b>FY 2012</b> | <b>FY 2013 Base</b> | <b>FY 2013 OCO</b>                        | <b>FY 2013 Total</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>FY 2016</b> | <b>FY 2017</b> | <b>Cost To Complete</b> | <b>Total Cost</b> |
| Total Program Element                                                                                                | 430.132        | 455.095        | 318.992             | -                                         | 318.992              | 221.276        | 215.224        | 161.621        | 76.642         | Continuing              | Continuing        |
| 676007: <i>DASS Integration, GPS</i>                                                                                 | -              | 2.143          | 1.795               | -                                         | 1.795                | 2.688          | 1.452          | 1.314          | 1.331          | Continuing              | Continuing        |
| 67A019: <i>GPS III</i>                                                                                               | 430.132        | 452.952        | 317.197             | -                                         | 317.197              | 218.588        | 213.772        | 160.307        | 75.311         | Continuing              | Continuing        |

## **Note**

The Cost to Complete and Total Cost for MDAP projects in this program element are documented in the R3. The Cost to Complete and Total Cost on the R2 are entered as "Continuing" and not reflective of the total cost for MDAP projects since the R2 does not account for prior years funding.

## **A. Mission Description and Budget Item Justification**

The Global Positioning System (GPS) is a space based navigation system that fills validated Joint Service requirements for worldwide, accurate, common grid three dimensional positioning/navigation for military aircraft, ships, and ground personnel. The consistent accuracy, unaffected by location or weather and available in real time, significantly improves effectiveness of reconnaissance, weapons delivery, mine countermeasures and rapid deployment for all services.

The system is composed of three segments: user equipment (funded under PE 0305164F), space (funded under this PE and PE 0305165F) and a control network (funded under PE 0305165F and PE 0603423F). The satellites broadcast high accuracy data using precisely synchronized signals which are received and processed by user equipment installed in military platforms. This equipment computes the platform position and velocity and provides steering vectors to target locations or navigation equipment installed in military platforms. The control segment provides daily updates to the navigation messages broadcast from the satellites to maintain system precision in three dimensions to 16 meters spherical error probable worldwide. Additionally, GPS supports the United States Nuclear Detonation (NUDET) Detection System (NDS) mission and provides strategic and tactical support to the following Department of Defense (DoD) missions: Joint Operations by providing capabilities for Positioning, Navigation, and Timing (PNT); Command, Control, Communications, and Intelligence; Special Operations; Military Operations in Urban Terrain; Defense-Wide Mission Support; Air Mobility; and Space Launch Orbital Support.

GPS III is the next generation space vehicle to join the GPS constellation. GPS III space vehicles will deliver significant enhancements, including a new civil (L1C) Galileo-compatible signal, enhanced anti-jam power, and affordable on-ramps to provide full warfighter capabilities (e.g., better signal maintainability (Digital Waveform Generator (DWG), Unified S-Band (USB), near-real time Command and Control) and the civil search and rescue payload (SAR/GPS). GPS III Satellite Vehicles (SVs) 03 - 08 are in the Production & Deployment Phase.

RDT&E, AF PE 0305265F funds for GPS III provides support research, development, test and evaluation of two GPS III space vehicles, SVs 01-02, and risk-reducing simulators through a structured systems engineering approach that matures and delivers space vehicles for launch. The program includes capability maturation and risk reduction efforts (Capability Insertion Program (CIP)) to affordably develop follow-on performance parameters including the "advanced component development and prototype" engineering and development for full GPS III warfighter capability and "system development and design" post-PDR. For example, as a part of reducing the cost to orbit, CIP includes dual launch initiatives to support 2 (two) SV's launching on 1 (one) launch vehicle. Additionally the program includes engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations supporting

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2013 Air Force | <b>DATE:</b> February 2012 |
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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> |
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civil applications that protect U.S. military and allies' use of GPS. SAR/GPS, previously known as Distress Alerting Satellite System (DASS), is an approved secondary payload on GPS III space vehicles beginning with SV 09. SAR/GPS will fill a validated National Search and Rescue Committee requirement to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue.

This program is a Budget Activity 7 - Operational System Development because it supports operational systems (GPS).

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2011</b> | <b>FY 2012</b> | <b>FY 2013 Base</b> | <b>FY 2013 OCO</b> | <b>FY 2013 Total</b> |
|---------------------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 828.171        | 463.081        | 318.782             | -                  | 318.782              |
| Current President's Budget                        | 430.132        | 455.095        | 318.992             | -                  | 318.992              |
| Total Adjustments                                 | -398.039       | -7.986         | 0.210               | -                  | 0.210                |
| • Congressional General Reductions                | -              | -2.986         |                     |                    |                      |
| • Congressional Directed Reductions               | -              | -5.000         |                     |                    |                      |
| • Congressional Rescissions                       | -              | -              |                     |                    |                      |
| • Congressional Adds                              | -              | -              |                     |                    |                      |
| • Congressional Directed Transfers                | -              | -              |                     |                    |                      |
| • Reprogrammings                                  | -              | -              |                     |                    |                      |
| • SBIR/STTR Transfer                              | -12.792        | -              |                     |                    |                      |
| • Other Adjustments                               | -385.247       | -              | 0.210               | -                  | 0.210                |

**Change Summary Explanation**

FY11: Congressional Directed Transfer to PE 0603423F, GPS III Operational Control Segment (-381.900); Congressional General Reduction: (-3.347), SBIR: (-12.792)

FY12: Congressional Directed Reduction for poor CIP justification: (-5.000), Congressional General Reduction: (-2.986)

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| Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |         |              |                                                             |               |         |         | DATE: February 2012                      |         |                  |            |
| APPROPRIATION/BUDGET ACTIVITY<br>3600: Research, Development, Test & Evaluation, Air Force<br>BA 7: Operational Systems Development                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |         |              | R-1 ITEM NOMENCLATURE<br>PE 0305265F: GPS III Space Segment |               |         |         | PROJECT<br>676007: DASS Integration, GPS |         |                  |            |
| COST (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | FY 2011 | FY 2012 | FY 2013 Base | FY 2013 OCO                                                 | FY 2013 Total | FY 2014 | FY 2015 | FY 2016                                  | FY 2017 | Cost To Complete | Total Cost |
| 676007: DASS Integration, GPS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -       | 2.143   | 1.795        | -                                                           | 1.795         | 2.688   | 1.452   | 1.314                                    | 1.331   | Continuing       | Continuing |
| Quantity of RDT&E Articles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0       | 0       | 0            | 0                                                           | 0             | 0       | 0       | 0                                        | 0       |                  |            |
| A. Mission Description and Budget Item Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |         |              |                                                             |               |         |         |                                          |         |                  |            |
| Search and Rescue GPS (SAR/GPS), previously known as Distress Alerting Satellite System (DASS), is an approved secondary payload on GPS III beginning with Satellite Vehicle (SV) 09. SAR/GPS fills validated National Search and Rescue Committee requirements to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue.                                                                                                                                                                                                                                                                                                                                                                                      |         |         |              |                                                             |               |         |         |                                          |         |                  |            |
| In addition the USAF has on-going requirements to rescue its own personnel in harm's way per Air Force Doctrine Document 2-1.6. The implementation of a US Mid Earth Orbiting Search and Rescue Space Segment is via a Canadian-Provided 406 MHZ SAR repeater on GPS III satellites presents a cost effective opportunity with low risk to provide a SAR system that accommodates existing and planned 406 MHz beacons across the globe. USAF and USCG as the US operators of the civil COSPAS/SARSAT system, the international search and rescue system, share (50/50) costs associated with integrating Canadian provided SAR repeater to GPS III beginning with SV 09 in accordance with NSPD-39 which requires civil capabilities hosted on GPS satellites be funded by the appropriate civil agencies. Costs presented represent USAF 50% Share. |         |         |              |                                                             |               |         |         |                                          |         |                  |            |
| This program is in Budget Activity 7 - Operational Systems Development because it supports operational systems.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |         |              |                                                             |               |         |         |                                          |         |                  |            |
| B. Accomplishments/Planned Programs (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |         |              |                                                             |               |         |         | FY 2011                                  | FY 2012 | FY 2013          |            |
| Title: SAR GPS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |         |              |                                                             |               |         |         | -                                        | 2.143   | 1.795            |            |
| Description: MAJOR THRUST: GPS III space segment nonrecurring costs to add one SAR/GPS unit to each SV beginning at SV 09.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |         |              |                                                             |               |         |         |                                          |         |                  |            |
| FY 2012 Plans:<br>Design and development of SAR/GPS antennas, associated hardware and cabling, and space vehicle software; system engineering associated with integrating SAR payload onto the GPS III SVs; system engineering and program management (SE/PM), Enterprise-level contractor System Engineering, Integration, Test, and Program Management (SEIT/PM). Costs do not include development and production of Canadian payload box.                                                                                                                                                                                                                                                                                                                                                                                                          |         |         |              |                                                             |               |         |         |                                          |         |                  |            |
| FY 2013 Plans:<br>Design and development of SAR/GPS antennas, associated hardware and cabling, and space vehicle software; system engineering associated with integrating SAR payload onto the GPS III SVs; system engineering and program management (SE/PM), Enterprise-level contractor SEIT/PM. Costs do not include development and production of Canadian payload box.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |         |              |                                                             |               |         |         |                                          |         |                  |            |
| Accomplishments/Planned Programs Subtotals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |         |              |                                                             |               |         |         | -                                        | 2.143   | 1.795            |            |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Air Force                                                                                      |                                                                           |                                                        | <b>DATE:</b> February 2012 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> | <b>PROJECT</b><br>676007: <i>DASS Integration, GPS</i> |                            |

## C. Other Program Funding Summary (\$ in Millions)

| <u>Line Item</u>                                                            | <u>FY 2011</u> | <u>FY 2012</u> | <u>FY 2013</u><br><u>Base</u> | <u>FY 2013</u><br><u>OCO</u> | <u>FY 2013</u><br><u>Total</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|-----------------------------------------------------------------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • P-19: <i>MPAF, PE 0305265F, GPS III Space Segment</i>                     | 0.000          | 432.244        | 410.294                       | 0.000                        | 410.294                        | 415.031        | 424.694        | 531.528        | 774.281        | 4,329.600                         | 1,371.253         |
| • P-20: <i>MPAF, PE 0305265F, GPS III Space Segment Advance Procurement</i> | 0.000          | 81.811         | 82.616                        | 0.000                        | 82.616                         | 74.167         | 117.855        | 119.993        | 121.828        | 1,058.200                         | 312.015           |

## D. Acquisition Strategy

SAR/GPS will be integrated as part of the GPS III program and follows the GPS III acquisition strategy with funding provided by USCG and USAF as the responsible civil organizations for US search and rescue.

## 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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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2013 Air Force                                                                                       |  |  |  |                                                                           |  |  |  |                                                        |  |  | <b>DATE:</b> February 2012 |  |  |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> |  |  |  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> |  |  |  | <b>PROJECT</b><br>676007: <i>DASS Integration, GPS</i> |  |  |                            |  |  |

  

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|---------------------------------------------|-----------------------------------|-------------------------------------------|-------------------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Product Development (\$ in Millions)</b> |                                   |                                           |                               | <b>FY 2012</b> |                   | <b>FY 2013 Base</b> |                   | <b>FY 2013 OCO</b> |                   | <b>FY 2013 Total</b> |                         |                   |                                 |
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Total Prior Years Cost</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| Search and Rescue SAR/GPS                   | C/Various                         | Lockheed Martin:Newtown, PA               | -                             | 2.143          | Nov 2011          | 1.795               | Nov 2012          | -                  |                   | 1.795                | 6.785                   | 10.723            | 0.000                           |
| <b>Subtotal</b>                             |                                   |                                           | -                             | 2.143          |                   | 1.795               |                   | -                  |                   | 1.795                | 6.785                   | 10.723            | 0.000                           |

  

|                                 |                                   |                                           |                               |                |                   |                     |                   |                    |                   |                      |                         |                   |                                 |
|---------------------------------|-----------------------------------|-------------------------------------------|-------------------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Support (\$ in Millions)</b> |                                   |                                           |                               | <b>FY 2012</b> |                   | <b>FY 2013 Base</b> |                   | <b>FY 2013 OCO</b> |                   | <b>FY 2013 Total</b> |                         |                   |                                 |
| <b>Cost Category Item</b>       | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Total Prior Years Cost</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Subtotal</b>                 |                                   |                                           | -                             | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.000             | 0.000                           |

  

|                                             |                                   |                                           |                               |                |                   |                     |                   |                    |                   |                      |                         |                   |                                 |
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| <b>Test and Evaluation (\$ in Millions)</b> |                                   |                                           |                               | <b>FY 2012</b> |                   | <b>FY 2013 Base</b> |                   | <b>FY 2013 OCO</b> |                   | <b>FY 2013 Total</b> |                         |                   |                                 |
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Total Prior Years Cost</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Subtotal</b>                             |                                   |                                           | -                             | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.000             | 0.000                           |

  

|                                             |                                   |                                           |                               |                |                   |                     |                   |                    |                   |                      |                         |                   |                                 |
|---------------------------------------------|-----------------------------------|-------------------------------------------|-------------------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Management Services (\$ in Millions)</b> |                                   |                                           |                               | <b>FY 2012</b> |                   | <b>FY 2013 Base</b> |                   | <b>FY 2013 OCO</b> |                   | <b>FY 2013 Total</b> |                         |                   |                                 |
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Total Prior Years Cost</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Subtotal</b>                             |                                   |                                           | -                             | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.000             | 0.000                           |

  

|                            |  |  |                               |                |  |                     |  |                    |  |                      |                         |                   |                                 |
|----------------------------|--|--|-------------------------------|----------------|--|---------------------|--|--------------------|--|----------------------|-------------------------|-------------------|---------------------------------|
|                            |  |  | <b>Total Prior Years Cost</b> | <b>FY 2012</b> |  | <b>FY 2013 Base</b> |  | <b>FY 2013 OCO</b> |  | <b>FY 2013 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b> |  |  | -                             | 2.143          |  | 1.795               |  | -                  |  | 1.795                | 6.785                   | 10.723            | 0.000                           |

  

|                |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| <b>Remarks</b> |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2013 Air Force                                                                                            |                                                                           | <b>DATE:</b> February 2012                             |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> | <b>PROJECT</b><br>676007: <i>DASS Integration, GPS</i> |
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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Air Force                                                                                           |                                                                           |                                                        | <b>DATE:</b> February 2012 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> | <b>PROJECT</b><br>676007: <i>DASS Integration, GPS</i> |                            |

Schedule Details

| Events                                     | Start   |      | End     |      |
|--------------------------------------------|---------|------|---------|------|
|                                            | Quarter | Year | Quarter | Year |
| GPS III Delta Critical Design Review (CDR) | 3       | 2014 | 3       | 2014 |

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| Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |         |              |                                                             |               |         |         | DATE: February 2012        |         |                  |            |
| APPROPRIATION/BUDGET ACTIVITY<br>3600: Research, Development, Test & Evaluation, Air Force<br>BA 7: Operational Systems Development                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |         |              | R-1 ITEM NOMENCLATURE<br>PE 0305265F: GPS III Space Segment |               |         |         | PROJECT<br>67A019: GPS III |         |                  |            |
| COST (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | FY 2011 | FY 2012 | FY 2013 Base | FY 2013 OCO                                                 | FY 2013 Total | FY 2014 | FY 2015 | FY 2016                    | FY 2017 | Cost To Complete | Total Cost |
| 67A019: GPS III                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 430.132 | 452.952 | 317.197      | -                                                           | 317.197       | 218.588 | 213.772 | 160.307                    | 75.311  | Continuing       | Continuing |
| Quantity of RDT&E Articles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0       | 0       | 0            | 0                                                           | 0             | 0       | 0       | 0                          | 0       |                  |            |
| A. Mission Description and Budget Item Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| GPS III is the next generation space vehicle supporting the GPS constellation. GPS III space vehicles will deliver significant enhancements, including a new civil (L1C) Galileo-compatible signal, enhanced anti-jam power, and a growth path to full warfighter capabilities. GPS III Satellite Vechiles (SV's) 03 - 08 are in the Production & Deployment Phase.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| Funds in this project are for GPS III SV's 01 - 08 and will support research, development, test and evaluation of two GPS III space vehicles (01 and 02) and associated simulators through a structured systems engineering approach that matures and delivers space vehicles for launch. The program includes capability maturation and risk reduction efforts (Capability Insertion Program (CIP)) to affordably develop follow-on performance parameters for example as part of reducing the cost to orbit, CIP will include dual launch initiatives to support 2 (two) SV's launching on 1 (one) launch vehicle. Additionally, the program includes engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations supporting civil applications that protect U.S. military and allies' use of GPS. |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| Funds in this PE for GPS III SV's 09 and beyond include the "advanced component development and prototype" engineering and development for full GPS III warfighter capabilities and system development and design post-PDR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| B. Accomplishments/Planned Programs (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |         |              |                                                             |               |         |         | FY 2011                    | FY 2012 | FY 2013          |            |
| Title: GPS III                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |         |              |                                                             |               |         |         | 380.832                    | 427.052 | 284.497          |            |
| Description: Development, test and evaluation of two GPS III space vehicles and associated simulators, engineering studies and analyses, trade studies, system development, test and evaluation efforts, and integrated logistics support products.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| FY 2011 Accomplishments:<br>GPS III space vehicle development, SE&I, technical and program support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| FY 2012 Plans:<br>GPS III space vehicle development, SE&I, technical and program support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| FY 2013 Plans:<br>GPS III space vehicle development, SE&I, technical and program support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |         |              |                                                             |               |         |         |                            |         |                  |            |
| Title: Capability Insertion Program (CIP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |         |              |                                                             |               |         |         | 49.300                     | 25.900  | 32.700           |            |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-----------------|-------------------------------------------------------------|------------------|---------|---------|----------------------------|---------|---------------------|------------|---------|
| Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |         |                 |                                                             |                  |         |         |                            |         | DATE: February 2012 |            |         |
| APPROPRIATION/BUDGET ACTIVITY<br>3600: Research, Development, Test & Evaluation, Air Force<br>BA 7: Operational Systems Development                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |         |                 | R-1 ITEM NOMENCLATURE<br>PE 0305265F: GPS III Space Segment |                  |         |         | PROJECT<br>67A019: GPS III |         |                     |            |         |
| B. Accomplishments/Planned Programs (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |         |                 |                                                             |                  |         |         |                            |         | FY 2011             | FY 2012    | FY 2013 |
| <b>Description:</b> GPS III CIP addresses issues related to design, systems engineering, program management, obsolescence, and efficiencies through Preliminary Design Review (PDR) for future GPS SVs beyond SV-8. Focus on capability maturation and risk reduction.<br><br><b>FY 2011 Accomplishments:</b><br>Addressed affordability/obsolescence issues and initial system designs of future capabilities, capability maturation and risk reduction efforts.<br><br><b>FY 2012 Plans:</b><br>Address affordability/obsolescence issues and initial system designs of future capabilities, capability maturation and risk reduction efforts.<br><br><b>FY 2013 Plans:</b><br>Address affordability/obsolescence issues and initial system designs of future capabilities, capability maturation and risk reduction efforts.                                                                     |         |         |                 |                                                             |                  |         |         |                            |         |                     |            |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |         |                 |                                                             |                  |         |         |                            |         |                     |            |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |         |                 |                                                             |                  |         |         |                            |         |                     |            |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |         |                 |                                                             |                  |         |         |                            |         |                     |            |         |
| Accomplishments/Planned Programs Subtotals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |         |                 |                                                             |                  |         |         |                            |         | 430.132             | 452.952    | 317.197 |
| C. Other Program Funding Summary (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |         |                 |                                                             |                  |         |         |                            |         |                     |            |         |
| Line Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FY 2011 | FY 2012 | FY 2013<br>Base | FY 2013<br>OCO                                              | FY 2013<br>Total | FY 2014 | FY 2015 | FY 2016                    | FY 2017 | Cost To<br>Complete | Total Cost |         |
| • P-19: MPAF, PE 0305265F, GPS III Space Segment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.000   | 432.244 | 410.294         | 0.000                                                       | 410.294          | 415.031 | 424.694 | 531.528                    | 774.281 | Continuing          | Continuing |         |
| • P-20: MPAF, PE 0305265F, GPS III Space Segment Advance Procurement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.000   | 81.811  | 82.616          | 0.000                                                       | 82.616           | 74.167  | 117.855 | 119.993                    | 121.828 | Continuing          | Continuing |         |
| • TBD: DOT (FAA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 18.900  | 24.500  | 27.500          | 0.000                                                       | 27.500           | 17.000  | 8.100   | 1.500                      | 1.300   | Continuing          | Continuing |         |
| D. Acquisition Strategy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |         |                 |                                                             |                  |         |         |                            |         |                     |            |         |
| The GPS III next generation space segment rapidly and affordably responds to warfighter capability requirements. The acquisition approach utilizes a disciplined systems engineering approach which focuses on mitigating cost and schedule risk through a lower risk incremental delivery of mature technologies. This approach focuses on mission success and on time delivery. The GPS III satellites will have GPS IIF capabilities plus up to a 3x - 8x increase in anti-jam signal power, 3x improved accuracy, 3+ year increased design life, a new civil (L1C) signal compatible with the European Galileo system and a satellite bus capable of supporting future Satellite Vehicles (SVs) capability additions. The "system development and design" of these capability additions will commence following the Milestone B approval of the GPS III acquisition strategy update for SV 09+. |         |         |                 |                                                             |                  |         |         |                            |         |                     |            |         |

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| Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force                                                                               |                                                                    | DATE: February 2012               |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: Research, Development, Test & Evaluation, Air Force<br>BA 7: Operational Systems Development | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: GPS III Space Segment | <b>PROJECT</b><br>67A019: GPS III |

### 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 2013 Air Force                                                                         |                        |                                |                        |                                                             |            |              |            |                            |            | DATE: February 2012 |                  |            |                          |
| APPROPRIATION/BUDGET ACTIVITY<br>3600: Research, Development, Test & Evaluation, Air Force<br>BA 7: Operational Systems Development |                        |                                |                        | R-1 ITEM NOMENCLATURE<br>PE 0305265F: GPS III Space Segment |            |              |            | PROJECT<br>67A019: GPS III |            |                     |                  |            |                          |
| Product Development (\$ in Millions)                                                                                                |                        |                                |                        | FY 2012                                                     |            | FY 2013 Base |            | FY 2013 OCO                |            | FY 2013 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 |
| Block III Development                                                                                                               | C/Various              | Lockheed Martin:Newtown, PA    | 1,099.034              | 392.368                                                     | Nov 2011   | 278.187      | Nov 2012   | -                          |            | 278.187             | 886.294          | 2,655.883  | 0.000                    |
| SE&I                                                                                                                                | C/CPAF                 | SAIC:Huntington Beach, CA      | 17.107                 | 3.993                                                       | Nov 2011   | 4.540        | Nov 2012   | -                          |            | 4.540               | 14.464           | 40.104     | 0.000                    |
| Modernization/SE & Technical Support                                                                                                | Various                | Various:Various,               | 64.722                 | 27.765                                                      | Nov 2011   | 7.980        | Nov 2012   | -                          |            | 7.980               | 25.424           | 125.891    | 0.000                    |
| Subtotal                                                                                                                            |                        |                                | 1,180.863              | 424.126                                                     |            | 290.707      |            | -                          |            | 290.707             | 926.182          | 2,821.878  | 0.000                    |
| Support (\$ in Millions)                                                                                                            |                        |                                |                        | FY 2012                                                     |            | FY 2013 Base |            | FY 2013 OCO                |            | FY 2013 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 |
| Directorate Support                                                                                                                 | Various                | Various:Various, CA            | 49.974                 | 15.860                                                      | Dec 2011   | 3.162        | Nov 2012   | -                          |            | 3.162               | 10.074           | 79.070     | 0.000                    |
| Subtotal                                                                                                                            |                        |                                | 49.974                 | 15.860                                                      |            | 3.162        |            | -                          |            | 3.162               | 10.074           | 79.070     | 0.000                    |
| Test and Evaluation (\$ in Millions)                                                                                                |                        |                                |                        | FY 2012                                                     |            | FY 2013 Base |            | FY 2013 OCO                |            | FY 2013 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 |
| Subtotal                                                                                                                            |                        |                                | -                      | -                                                           |            | -            |            | -                          |            | -                   | 0.000            | 0.000      | 0.000                    |
| Management Services (\$ in Millions)                                                                                                |                        |                                |                        | FY 2012                                                     |            | FY 2013 Base |            | FY 2013 OCO                |            | FY 2013 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 Engineering Support (FFRDC)                                                                                          | RO                     | Aerospace:El Segundo, CA       | 34.218                 | 12.966                                                      | Jan 2012   | 5.660        | Nov 2012   | -                          |            | 5.660               | 18.033           | 70.877     | 0.000                    |
| Program Managment Administration (PMA)                                                                                              | Various                | Various:Various,               | -                      | -                                                           |            | 17.668       | Nov 2012   | -                          |            | 17.668              | 56.290           | 73.958     | 0.000                    |
| Subtotal                                                                                                                            |                        |                                | 34.218                 | 12.966                                                      |            | 23.328       |            | -                          |            | 23.328              | 74.323           | 144.835    | 0.000                    |

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2013 Air Force                                                                                       |                                       |                |  |                                                                           |  |                        |  | <b>DATE:</b> February 2012               |                             |                   |                                         |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> |                                       |                |  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> |  |                        |  | <b>PROJECT</b><br>67A019: <i>GPS III</i> |                             |                   |                                         |
|                                                                                                                                                              | <b>Total Prior<br/>Years<br/>Cost</b> | <b>FY 2012</b> |  | <b>FY 2013<br/>Base</b>                                                   |  | <b>FY 2013<br/>OCO</b> |  | <b>FY 2013<br/>Total</b>                 | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> | <b>Target<br/>Value of<br/>Contract</b> |
| <b>Project Cost Totals</b>                                                                                                                                   | 1,265.055                             | 452.952        |  | 317.197                                                                   |  | -                      |  | 317.197                                  | 1,010.579                   | 3,045.783         | 0.000                                   |

Remarks

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|                                                                                                                                                              |                                                                           |                                          |
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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2013 Air Force                                                                                            |                                                                           | <b>DATE:</b> February 2012               |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> | <b>PROJECT</b><br>67A019: <i>GPS III</i> |
|                                                                                                                                                              |                                                                           |                                          |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Air Force                                                                                           |                                                                           |                                          | <b>DATE:</b> February 2012 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i><br>BA 7: <i>Operational Systems Development</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0305265F: <i>GPS III Space Segment</i> | <b>PROJECT</b><br>67A019: <i>GPS III</i> |                            |

Schedule Details

| Events                                                            | Start   |      | End     |      |
|-------------------------------------------------------------------|---------|------|---------|------|
|                                                                   | Quarter | Year | Quarter | Year |
| GPS III SV 03 - 08 Milestone C                                    | 1       | 2011 | 1       | 2011 |
| GPS III SV 09+ delta Preliminary Design Review (dPDR)             | 4       | 2012 | 4       | 2012 |
| GPS Non-Flight satellite test-bed (GNST) delivery                 | 2       | 2013 | 2       | 2013 |
| GPS III Satellite Vehicle (SV) 01 Complete Thermal Vacuum Testing | 4       | 2013 | 4       | 2013 |
| GPS III Satellite Vehicle (SV) 01 available for launch            | 3       | 2014 | 3       | 2014 |
| GPS III SV 09+ delta Critical Design Review (dCDR)                | 3       | 2014 | 3       | 2014 |
| GPS III SV 02 available for launch                                | 2       | 2015 | 2       | 2015 |