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| Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |         |         |              |                                                                                          |               |             |               |         | Date: March 2014 |                  |            |
| Appropriation/Budget Activity<br>3600: Research, Development, Test & Evaluation, Air Force I BA 3: Advanced Technology Development (ATD)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |         |         |              | R-1 Program Element (Number/Name)<br>PE 0603444F I Maui Space Surveillance System (MSSS) |               |             |               |         |                  |                  |            |
| COST (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Prior Years | FY 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO #                                                                            | FY 2015 Total | FY 2016     | FY 2017       | FY 2018 | FY 2019          | Cost To Complete | Total Cost |
| Total Program Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -           | 26.235  | 26.299  | 14.031       | -                                                                                        | 14.031        | 12.938      | 11.773        | 11.778  | 12.012           | Continuing       | Continuing |
| 634868: Maui Space Surveillance System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | -           | 26.235  | 26.299  | 14.031       | -                                                                                        | 14.031        | 12.938      | 11.773        | 11.778  | 12.012           | Continuing       | Continuing |
| # The FY 2015 OCO Request will be submitted at a later date.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |         |         |              |                                                                                          |               |             |               |         |                  |                  |            |
| A. Mission Description and Budget Item Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |         |         |              |                                                                                          |               |             |               |         |                  |                  |            |
| This program funds ground-based optical space situational awareness (SSA) technology development and demonstration at the Maui Space Surveillance System (MSSS) in Hawaii, as well as the operation and upgrade of the facility. Efforts in this program have been coordinated through the Department of Defense (DoD) Science and Technology (S&T) Executive Committee process to harmonize efforts and eliminate duplication. This program is in Budget Activity 3, Advanced Technology Development, since it enables and demonstrates technologies for existing system upgrades and/or new system developments that have military utility and address warfighter needs. |             |         |         |              |                                                                                          |               |             |               |         |                  |                  |            |
| B. Program Change Summary (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |         |         | FY 2013      | FY 2014                                                                                  | FY 2015 Base  | FY 2015 OCO | FY 2015 Total |         |                  |                  |            |
| Previous President's Budget                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |             |         |         | 29.256       | 26.299                                                                                   | 15.774        | -           | 15.774        |         |                  |                  |            |
| Current President's Budget                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |         |         | 26.235       | 26.299                                                                                   | 14.031        | -           | 14.031        |         |                  |                  |            |
| Total Adjustments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |         |         | -3.021       | -                                                                                        | -1.743        | -           | -1.743        |         |                  |                  |            |
| • Congressional General Reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |         |         | -0.038       | -                                                                                        |               |             |               |         |                  |                  |            |
| • Congressional Directed Reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |         |         | -            | -                                                                                        |               |             |               |         |                  |                  |            |
| • Congressional Rescissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |             |         |         | -            | -                                                                                        |               |             |               |         |                  |                  |            |
| • Congressional Adds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |         |         | -            | -                                                                                        |               |             |               |         |                  |                  |            |
| • Congressional Directed Transfers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |         |         | -            | -                                                                                        |               |             |               |         |                  |                  |            |
| • Reprogrammings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |         |         | -            | -                                                                                        |               |             |               |         |                  |                  |            |
| • SBIR/STTR Transfer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |         |         | -0.569       | -                                                                                        |               |             |               |         |                  |                  |            |
| • Other Adjustments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |         |         | -2.414       | -                                                                                        | -1.743        | -           | -1.743        |         |                  |                  |            |
| Change Summary Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |         |         |              |                                                                                          |               |             |               |         |                  |                  |            |
| Decrease in FY13 Other Adjustments was due to Sequestration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |         |         |              |                                                                                          |               |             |               |         |                  |                  |            |
| Decrease in FY15 is due to higher DoD priorities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |         |         |              |                                                                                          |               |             |               |         |                  |                  |            |
| C. Accomplishments/Planned Programs (\$ in Millions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |         |         |              |                                                                                          |               |             |               |         | FY 2013          | FY 2014          | FY 2015    |
| Title: Operate and Upgrade Maui Space Surveillance System (MSSS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |         |         |              |                                                                                          |               |             |               |         | 18.026           | 15.944           | 13.002     |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2015 Air Force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | <b>Date:</b> March 2014                                                                                |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 3: Advanced Technology Development (ATD)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603444F / <i>Maui Space Surveillance System (MSSS)</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | <b>FY 2013</b>                                                                                         | <b>FY 2014</b> | <b>FY 2015</b> |
| <b>Description:</b> Operate and upgrade the MSSS to support development, demonstration, and integration of ground-based optical SSA technologies.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                                                                                        |                |                |
| <b>FY 2013 Accomplishments:</b><br>Maintained MSSS facility and experimental equipment in a mission-ready state. Delivered components for upgraded Laser Guidestar system at MSSS. Began refurbishment of 1.6 meter dome with repaint, new gaskets to prevent leaking and advanced electronics. Operated MSSS facility for development and demonstration of ground based optical SSA capabilities such as characterization and identification of space objects. Developed procedures supporting a new mix of research, customer programs, and operational SSA support.                                  |  |                                                                                                        |                |                |
| <b>FY 2014 Plans:</b><br>Maintain MSSS facility and experimental equipment in a mission-ready state. Perform needed upgrades and modernization to keep facilities and equipment in good working order and allow MSSS to perform efficiently and reliably including completing refurbishment of 1.6 meter dome. Complete delivery and begin installation of the upgraded Laser Guidestar system at MSSS. Implement procedures and operate MSSS facility for development and demonstration of ground based optical SSA capabilities in conjunction with customer programs and an operational SSA mission. |  |                                                                                                        |                |                |
| <b>FY 2015 Plans:</b><br>Maintain MSSS facility and experimental equipment in a mission-ready state. Perform needed upgrades and modernization to keep facilities and equipment in good working order and allow MSSS to perform efficiently and reliably. Operate MSSS facility for development and demonstration of ground based optical SSA capabilities in conjunction with customer programs and an operational SSA mission. Complete installation and testing of equipment for upgraded Laser Guidestar system at MSSS.                                                                            |  |                                                                                                        |                |                |
| <b>Title:</b> Geosynchronous Object Sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | 8.209                                                                                                  | 10.355         | 1.029          |
| <b>Description:</b> Develop and demonstrate dual-use integrated sensor technology for imaging of geosynchronous objects as well as other long-range applications.                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                                                                                        |                |                |
| <b>FY 2013 Accomplishments:</b><br>Began development of a dual-use sensor technology for identification of objects in geosynchronous orbit.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                        |                |                |
| <b>FY 2014 Plans:</b><br>Continue to develop laser detection and ranging transceiver for initial low-power technology demonstration to image objects in geosynchronous orbit.                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                                                        |                |                |
| <b>FY 2015 Plans:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |                                                                                                        |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2015 Air Force                                                                                                                                                                                                          |  | <b>Date:</b> March 2014                                                                                |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 3: Advanced Technology Development (ATD)</i>                                                                                                                          |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603444F <i>I Maui Space Surveillance System (MSSS)</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>                                                                                                                                                                                                                         |  | <b>FY 2013</b>                                                                                         | <b>FY 2014</b> | <b>FY 2015</b> |
| Integrate low power transceiver hardware prior to low power testing to image objects in geosynchronous orbit.                                                                                                                                                                       |  |                                                                                                        |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>                                                                                                                                                                                                                                   |  | 26.235                                                                                                 | 26.299         | 14.031         |
| <b>D. Other Program Funding Summary (\$ in Millions)</b><br>N/A                                                                                                                                                                                                                     |  |                                                                                                        |                |                |
| <b>Remarks</b>                                                                                                                                                                                                                                                                      |  |                                                                                                        |                |                |
| <b>E. Acquisition Strategy</b><br>N/A                                                                                                                                                                                                                                               |  |                                                                                                        |                |                |
| <b>F. Performance Metrics</b><br>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. |  |                                                                                                        |                |                |