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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Air Force **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>					PE 0603605F: <i>Advanced Weapons Technology</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	45.823	19.004	19.000	-	19.000	25.374	27.053	27.799	28.313	Continuing	Continuing
633150: <i>Advanced Optics Technology</i>	-	20.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
633151: <i>Lasers and Imaging Development and Integration</i>	-	14.795	9.313	9.518	-	9.518	17.843	15.880	16.524	14.087	Continuing	Continuing
633152: <i>High Power Microwave Development and Integration</i>	-	11.028	9.691	9.482	-	9.482	7.531	11.173	11.275	14.226	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This program provides for the development, integration, demonstration, and detailed assessment of directed energy weapon technologies including high energy laser, high power electromagnetics (HPEM), and other unconventional weapon generation and transmission technologies, which can support a wide range of Air Force applications. The program develops a corresponding susceptibility, vulnerability, and lethality database for directed energy weapons. 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 develops 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 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	48.666	19.004	19.950	-	19.950
Current President's Budget	45.823	19.004	19.000	-	19.000
Total Adjustments	-2.843	0.000	-0.950	-	-0.950
• Congressional General Reductions	-	0.000			
• Congressional Directed Reductions	-	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	-	0.000			
• Congressional Directed Transfers	-	0.000			
• Reprogrammings	-2.127	0.000			
• SBIR/STTR Transfer	-0.733	0.000			
• Other Adjustments	0.017	0.000	-0.950	-	-0.950

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<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u>		FY 2012	FY 2013
Project: 633150: <i>Advanced Optics Technology</i>			
Congressional Add: <i>Space Situational Awareness.</i>		20.000	-
Congressional Add Subtotals for Project: 633150		20.000	0.000
Congressional Add Totals for all Projects		20.000	0.000
<u>Change Summary Explanation</u> Reprogrammed funds for higher Air Force priorities; Reprogrammed for specific projects in accordance with Section 219 of the Duncan Hunter National Defense Authorization Act for Fiscal Year (FY) 2009, as amended by Section 2801 of the National Defense Authorization Act for FY 2010.			

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>					R-1 ITEM NOMENCLATURE PE 0603605F: <i>Advanced Weapons Technology</i>				PROJECT 633150: <i>Advanced Optics Technology</i>			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
633150: <i>Advanced Optics Technology</i>	-	20.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
<u>A. Mission Description and Budget Item Justification</u> This project develops advanced optical technologies for various strategic and tactical beam control applications.												
<u>B. Accomplishments/Planned Programs (\$ in Millions)</u>								FY 2012	FY 2013			
<i>Congressional Add:</i> Space Situational Awareness.								20.000	-			
<i>FY 2012 Accomplishments:</i> Conducted Congressionally-directed effort.												
Congressional Adds Subtotals								20.000	0.000			
<u>C. Other Program Funding Summary (\$ in Millions)</u> N/A												
<u>Remarks</u>												
<u>D. Acquisition Strategy</u> N/A												
<u>E. Performance Metrics</u> 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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APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603605F: Advanced Weapons Technology				PROJECT 633151: Lasers and Imaging Development and Integration			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
633151: Lasers and Imaging Development and Integration	-	14.795	9.313	9.518	-	9.518	17.843	15.880	16.524	14.087	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project provides for the development, integration, demonstration, and detailed assessment of high energy laser and beam control technologies needed for applications such as force protection, force application, precision engagement, and aircraft self-protection. Laser system concept assessments to include vulnerability assessments and target effect testing are performed.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: High Energy Laser/Beam Control									14.795	9.313	9.518	
Description: Develop and demonstrate advanced beam control technologies, integrated laser systems, and aircraft self-protection laser technologies. Demonstrate beam control components integrated with high energy lasers for military utility.												
FY 2012 Accomplishments: With DARPA, prepared to integrate a high energy electric laser device with a beam control subsystem on the ground. Developed technologies and concepts for the integration of a high power electric laser and a beam control system. Developed an integrated breadboard to demonstrate focal plane array damage technologies for aircraft self-protection.												
FY 2013 Plans: Complete build-up and characterization of the beam control system and complete the Acquisition Tracker Interface, and the Command and Control code for the Air Force/DARPA demonstration of an integrated high energy electric laser device with a beam control subsystem on the ground. Integrate the DARPA device with the beam control system. Investigate subsystem and system level capability concepts that integrate technologies for aircraft self-protection.												
FY 2014 Plans: With DARPA, conduct high power testing against static and moving targets using the integrated high energy electric laser device and beam control system on level ground and from a 3000 foot high peak. Continue to plan technologies and develop concepts for a future airborne electric laser. Plan aircraft self-protection field testing.												
Accomplishments/Planned Programs Subtotals									14.795	9.313	9.518	

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APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603605F: <i>Advanced Weapons Technology</i>	PROJECT 633151: <i>Lasers and Imaging Development and Integration</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
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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APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 3: Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603605F: Advanced Weapons Technology				PROJECT 633152: High Power Microwave Development and Integration			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
633152: High Power Microwave Development and Integration	-	11.028	9.691	9.482	-	9.482	7.531	11.173	11.275	14.226	Continuing	Continuing
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project develops and demonstrates high power electromagnetics (HPEM) and other unconventional weapon generation and transmission technologies that support a wide range of Air Force missions such as the potential disruption, degradation, damage, or destruction of an adversary's electronic infrastructure and military capability. It also provides inputs to the susceptibility, vulnerability, and lethality databases.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Title: HPEM Technologies										11.028	9.691	9.482
Description: Develop and evaluate HPEM and other unconventional weapon technologies for various platforms, including aerial, for applications such as counter-electronics. Develop and evaluate HPEM technologies for non-lethal, anti-personnel weapon applications.												
FY 2012 Accomplishments: Prepared for a FY 2013 flight demonstration of the high power microwave (HPM) payload for the Counter-Electronics HPM Airborne Munition Program (CHAMP) Joint Capability Technology Demonstration (JCTD) against a wide range of targets in multiple buildings. Evaluated the effectiveness of CHAMP in a static test against the various targets.												
FY 2013 Plans: Conducted a very successful flight test of the HPM payload for the CHAMP JCTD. Analyze the large amount of data from the flight test. Develop and evaluate technologies to reduce size, weight, and power consumption for compact multi-pulse HPM system in an integrated platform with anti-tamper and battle damage assessment capabilities.												
FY 2014 Plans: Evaluate four candidate source technologies for potential use in a multi-target, reusable HPM counter-electronics munition demonstrator. Develop and evaluate technologies to reduce size, weight, and power consumption for a compact multi-pulse system in an integrated platform with anti-tamper and battle damage assessment capabilities.												
Accomplishments/Planned Programs Subtotals										11.028	9.691	9.482

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C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
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.		