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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>	<b>R-1 ITEM NOMENCLATURE</b>										
3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>	PE 0603605F: <i>Advanced Weapons Technology</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	16.104	48.666	19.004	-	19.004	19.950	31.056	31.181	31.730	Continuing	Continuing
633150: <i>Advanced Optics Technology</i>	-	20.000	-	-	-	-	-	-	-	Continuing	Continuing
633151: <i>Lasers and Imaging Development and Integration</i>	6.182	16.477	9.313	-	9.313	9.518	19.775	19.806	20.139	Continuing	Continuing
633152: <i>High Power Microwave Development and Integration</i>	9.922	12.189	9.691	-	9.691	10.432	11.281	11.375	11.591	Continuing	Continuing

**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 microwave (HPM), 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 data base for directed energy weapons. Efforts in this program have been coordinated through the Reliance 21 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>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	17.461	28.683	32.749	-	32.749
Current President's Budget	16.104	48.666	19.004	-	19.004
Total Adjustments	-1.357	19.983	-13.745	-	-13.745
• Congressional General Reductions	-	-0.017			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	20.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.798	-			
• SBIR/STTR Transfer	-0.470	-			
• Other Adjustments	-0.089	-	-13.745	-	-13.745

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 633150: *Advanced Optics Technology*

Congressional Add: *Space Situational Awareness.*

<b>FY 2011</b>	<b>FY 2012</b>
-	20.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603605F: <i>Advanced Weapons Technology</i>	
<b><u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u></b>		<b>FY 2011</b>	<b>FY 2012</b>
Congressional Add Subtotals for Project: 633150		-	20.000
Congressional Add Totals for all Projects		-	20.000
<b><u>Change Summary Explanation</u></b>			
FY11: Other Adjustments include -0.089 Congressional General Reductions			
Decrease in FY13 is due to higher Department of Defense priorities.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Air Force	<b>DATE:</b> February 2012
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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
3600: Research, Development, Test & Evaluation, Air Force BA 3: Advanced Technology Development (ATD)				PE 0603605F: Advanced Weapons Technology				633150: Advanced Optics Technology			
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
633150: Advanced Optics Technology	-	20.000	-	-	-	-	-	-	-	Continuing	Continuing

**Note**

Note: Funding in this project is due to Congressional adds.

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

This project develops advanced optical technologies for various strategic and tactical beam control applications.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2011	FY 2012
<b>Congressional Add:</b> Space Situational Awareness.	-	20.000
<b>FY 2011 Accomplishments:</b> N/A		
<b>FY 2012 Plans:</b> Conduct Congressionally-directed effort.		
<b>Congressional Adds Subtotals</b>	-	20.000

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

Line Item	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
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**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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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force									DATE: February 2012		
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)	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
633151: Lasers and Imaging Development and Integration	6.182	16.477	9.313	-	9.313	9.518	19.775	19.806	20.139	Continuing	Continuing
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 aircraft self-protection, force protection, force application, and precision engagement. Laser system concept assessments to include vulnerability assessments and target effect testing are performed.											
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Major Thrust 1.							1.970	0.533	0.174	-	0.174
Description: Develop and demonstrate laser technologies for applications such as aircraft self-protection from threats not susceptible to traditional jamming techniques.											
FY 2011 Accomplishments: Investigated integrated breadboard aircraft self-protection technologies compatible with mid-wave infrared detection and jamming capabilities. Validated aircraft self-protection fly-out model codes with effects/lethality data.											
FY 2012 Plans: Develop an integrated breadboard to demonstrate focal plane array damage technologies for aircraft self-protection.											
FY 2013 Base Plans: Investigate subsystem and system level capability concepts that integrate technologies for aircraft self-protection.											
FY 2013 OCO Plans: N/A											
Title: Major Thrust 2.							4.212	15.944	9.139	-	9.139
Description: Develop and demonstrate advanced beam control technologies and demonstrate beam control components integrated with high energy lasers.											
FY 2011 Accomplishments:											

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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> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603605F: <i>Advanced Weapons Technology</i>			<b>PROJECT</b> 633151: <i>Lasers and Imaging Development and Integration</i>				
<b>B. Accomplishments/Planned Programs (\$ 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>
<p>With Defense Advanced Research Projects Agency (DARPA), continued to mature technologies to integrate their high power solid state laser device with the appropriate beam control subsystems and began checkout and subsystem performance testing in preparation for the FY 2013/2014 ground demonstrations.</p> <p><b><i>FY 2012 Plans:</i></b>            With DARPA, integrate a high energy electric laser device with a beam control subsystem on the ground. Develop technologies and concepts for the integration of a high power electric laser and a beam control system on a large aircraft.</p> <p><b><i>FY 2013 Base Plans:</i></b>            With DARPA, demonstrate an integrated high energy electric laser device with a beam control subsystem on the ground. Plan for technologies and concepts for the integration of an electric laser and a beam control system on a large aircraft.</p> <p><b><i>FY 2013 OCO Plans:</i></b>            N/A</p>											
<b>Accomplishments/Planned Programs Subtotals</b>							6.182	16.477	9.313	-	9.313
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</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>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>D. Acquisition Strategy</b> N/A											
<b>E. Performance Metrics</b> 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-2A, RDT&E Project Justification: PB 2013 Air Force								DATE: February 2012			
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)	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
633152: High Power Microwave Development and Integration	9.922	12.189	9.691	-	9.691	10.432	11.281	11.375	11.591	Continuing	Continuing
A. Mission Description and Budget Item Justification This project develops and demonstrates high power microwave (HPM) 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 develops a susceptibility, vulnerability, and lethality data base.											
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Major Thrust 1.  Description: Develop and evaluate HPM and other unconventional weapon technologies for various platforms, including aerial for applications such as counter-electronics. Develop and evaluate HPM technologies for non-lethal, anti-personnel weapon applications.  FY 2011 Accomplishments: Completed the integration of narrowband HPM components into the Counter-electronics High Power Microwave Advanced Missile Project (CHAMP) aerial platform. Conducted additional ground testing of the CHAMP HPM system including effects testing and characterization of the performance. Conducted an inert flight test with the aerial platform to verify the guidance system accuracy, platform controllability for beam pointing, and timing for triggering of the HPM payload. Developed and evaluated technologies for Air Force non-lethal weapons applications. Began prime power hardware development for next generation transmitters. Provided technical expertise and background to external organizations tailoring Active Denial concepts and capabilities to their needs and gleaned data relevant to airborne applications.  FY 2012 Plans: Conduct two flight tests of the HPM payload for the CHAMP Joint Capability Technology Demonstration against a wide range of targets in multiple buildings. Evaluate the effectiveness of CHAMP against the various targets.  FY 2013 Base Plans:							9.922	12.189	9.691	-	9.691

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<b>B. Accomplishments/Planned Programs (\$ 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>
Begin development of a multi-target, re-useable HPM counter-electronics munition demonstrator. Develop and evaluate technologies to reduce size, weight, and power consumption for compact systems in an integrated platform with anti-tamper and battle damage assessment capabilities.											
<b>FY 2013 OCO Plans:</b> N/A											
<b>Accomplishments/Planned Programs Subtotals</b>							9.922	12.189	9.691	-	9.691
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</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>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>D. Acquisition Strategy</b> N/A											
<b>E. Performance Metrics</b> 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.											