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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 3: Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603231F: Crew Systems and Personnel Protection Technology							
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	35.742	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
632830: Decision Effectiveness Technology	25.064	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
634924: Warfighter Readiness Technology	7.830	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
635020: Bioeffects & Protection Technology	2.848	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Note Note: In FY 2010, Decision Effectiveness Technology efforts will move from PE 0603231F, Project 2830 to PE 0603456F, Project 5324, Project 5326, and Project 5327; Warfighter Readiness Technology efforts will move from PE 0603231F, Project 4924 to PE 0603456F, Project 5325; and Bioeffects & Protection Technology efforts will move from PE 0603231F, Project 5020 to PE 0603456F, Project 5323 and Project 5326 to better align efforts. Funds for the FY 2008 Congressionally-directed Virtual Medical Trainer in the amount of \$2.4 million are in the process of being moved to the Defense Health Program from PE 0603231F, Crew Systems and Personnel Protection Technology, for execution.											
A. Mission Description and Budget Item Justification This program develops and demonstrates technologies to enhance human performance and effectiveness and to enable the aerospace force. State-of-the-art advances are made to train personnel, protect and sustain warfighters, and improve human interfaces with weapon systems. The Decision Effectiveness Technology project develops and demonstrates warfighter capability enhancing technologies that promote effective decision-making, control, and mission execution in the emerging network-enabled operational environments. The Warfighter Readiness Technology project develops and demonstrates advanced training, simulation, and mission rehearsal technologies. The Bioeffects and Protection Technology project develops and demonstrates advanced technologies to provide laser eye protection, assure the safety of personnel involved with test, deployment, and operation of high-energy laser weapons, enhance capabilities for sustained operations in extreme environments, and deliver novel, tailored bio-taggant and identification/neutralization capabilities to meet specific AF special operations needs. This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies to protect and enhance the performance of Air Force personnel in operational environments.											

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
3600: Research, Development, Test & Evaluation, Air Force		PE 0603231F: Crew Systems and Personnel Protection Technology			
BA 3: Advanced Technology Development (ATD)					
B. Program Change Summary (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	36.411	0.000	0.000	0.000	0.000
Current President's Budget	35.742	0.000	0.000	0.000	0.000
Total Adjustments	-0.669	0.000	0.000	0.000	0.000
• 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	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.669	0.000	0.000	0.000	0.000
Congressional Add Details (\$ in Millions, and Includes General Reductions)					
Project: 632830: Decision Effectiveness Technology				FY 2009	FY 2010
Congressional Add: Air Purification with Carbon Nanotube Nanostructured Material.				4.986	0.000
Congressional Add: PhasorBIRD Helmet Tracker.				2.473	0.000
Congressional Add Subtotals for Project: 632830				7.459	0.000
Project: 634924: Warfighter Readiness Technology				FY 2009	FY 2010
Congressional Add: Joint Theater Air Ground Simulation System.				2.393	0.000
Congressional Add Subtotals for Project: 634924				2.393	0.000
Congressional Add Totals for all Projects				9.852	0.000
Change Summary Explanation					
C. Performance Metrics					
Under Development.					

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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
632830: <i>Decision Effectiveness Technology</i>	25.064	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

Note: In FY 2010, Decision Effectiveness Technology efforts will move from PE 0603231F, Project 2830 to PE 0603456F, Project 5324, Project 5326, and Project 5327 to better align efforts.

A. Mission Description and Budget Item Justification

This project develops and demonstrates warfighter capability enhancing technologies and information operations technologies that promote effective decision-making, control, and mission execution in the emerging network-enabled operational environment. Included are advanced technologies that improve the ability of battlefield Airmen to rapidly assimilate critical information and make timely and correct decisions, display technologies and decision aids that enhance time-critical strikes, and warfighter interface technologies that simplify and speed critical operations in air operation centers and battle management platforms. The project also develops technologies that enhance logistics functions, improve the fidelity and accuracy of large-scale military simulations, protect deployed personnel, improve human effectiveness during aerospace and cyber operations, support development of novel, tailored bio-taggant and identification/neutralization capabilities, develop aircrew system technologies to support long duration missions, and improve the manhunt capabilities of AF special operations. The ultimate goal is to assure warfighter decision effectiveness in AF operations.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
MAJOR THRUST: Develop/demonstrate human-centered tools for the AF Information Operations (IO) and Intelligence, Surveillance and Reconnaissance (ISR) communities.	2.591	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Designed advanced IO/ISR/Cyber technologies and demonstrated next-generation IO/ISR/Cyber operator workstation capabilities to operationally integrate/normalize AF non-kinetic capabilities with kinetic operations. Developed operator-aiding and training tools for IO/ISR/Cyber					

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
operators. Initiated advanced Cyber influence development. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5324 to better align efforts. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable. FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop/demonstrate human effectiveness technologies to improve combat effectiveness reporting, situation assessment, and decision support for Combined Air/Space Operation Center (CAOC). FY 2009 Accomplishments: In FY 2009: Integrated visualization tools with other collaborative tools to create a seamless flow of operational assessment data into strategy planning data. Demonstrated a final visually-oriented, unified strategy planning and assessment support tool in a simulated CAOC. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5324 to better align efforts. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable. FY 2011 OCO Plans: In FY 2011 OCO: N/A		1.825	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
MAJOR THRUST: Develop/demonstrate technologies to interface between ground controllers and multiple machine components through unified visual and auditory displays. FY 2009 Accomplishments: In FY 2009: Developed and demonstrated human systems integration concepts for ground controllers and other battlefield Airmen. Demonstrated technologies for three-dimensional audio navigation in visually obscured environments while improving team situational awareness by geo-location of voice communications. Incorporated a geo-located survival guide into a wearable computer and demonstrated its value in an operationally relevant environment. Developed and incorporated an advanced battlefield air traffic control capability in the combat controller's software suite. Incorporated intelligent agent technology to improve battlefield Airmen situational awareness in a dynamic wartime scenario. Completed hardware and software implementation of a supervisory control station technology baseline and a next-generation supervisory control station. Planned a technology demonstration program using real-time system simulation and field testing in spiral demonstration phases. Established the scope of simulation and test activities, selected experimental variables, determined key performance measures, and commenced the assessment. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5327 to better align efforts. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable. FY 2011 OCO Plans: In FY 2011 OCO: N/A	3.748	0.000	0.000	0.000	0.000
MAJOR THRUST: Develop/demonstrate decision-aiding technologies to rapidly assess battlefield situations, predict most likely adversary behaviors, and select/prioritize appropriate courses of action.	2.147	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: In FY 2009: Integrated tools developed in first spiral of Commander's Predictive Environment (CPE) decision aids into identified technology demonstration program. Evaluated the CPE decision aids and simulation tools in the technology demonstration environment. Refined tools and began the second spiral development cycle informed by the results of the technology demonstration with humanitarian relief and global war on terrorism emphases. Identified exercise to evaluate the expanded benefits and utility of the decision aid tools and simulation. Planned a technology demonstration program. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5324 to better align efforts.						
FY 2010 Plans: In FY 2010: Not Applicable.						
FY 2011 Base Plans: In FY 2011: Not Applicable.						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop/demonstrate bio-taggant and identification/neutralization capabilities to meet AF needs to enhance force protection/enable air operations commanders to maintain operations tempo.		1.497	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Developed the selected bio-taggant technologies and refined application to mission need to include incorporation of quantum dot and mixed-metal nanoparticle technologies. Developed models of optimal insertion/distribution of bio-tagchants in target areas. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5326 to better align efforts.						
FY 2010 Plans: In FY 2010: Not Applicable.						

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: In FY 2011: Not Applicable.						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop/demonstrate intelligent software agents, realistic human and organizational behavior models, and advanced job performance aiding technologies. FY 2009 Accomplishments: In FY 2009: Developed human behavior modeling of individuals and groups in highly dynamic situations. Experimented with system-of-systems societal modeling, using increasingly complex scenarios. Demonstrated how information flows through and is modified by a society. Developed design reference scenarios to be used as standards for evaluating different modeling approaches. Evaluated promising models and modeling approaches. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5324 to better align efforts. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable. FY 2011 OCO Plans: In FY 2011 OCO: N/A		1.125	0.000	0.000	0.000	0.000
MAJOR THRUST: Develop/demonstrate logistics technologies for improved deployment operations and improved system supportability.		0.863	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: In FY 2009: Developed organizational-level change templates for effective applications of net-based logistics operations. Validated these change templates in operational settings (e.g., airlift control centers, logistics readiness centers) for effective implementation of advanced automation technologies. NOTE: In FY 2009, this effort is terminated due to higher AF priorities.						
FY 2010 Plans: In FY 2010: Not Applicable.						
FY 2011 Base Plans: In FY 2011: Not Applicable.						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop/demonstrate cognitive-based analytic and design methods and computer software tools for C2 operations to synchronize personnel in distributed locations.		1.865	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Refined the methods and techniques to decrease the analysis, design, and development time of providing work-centered support services for global C2 operations. Demonstrated in a simulation of global C2 operations that geographically distributed personnel can develop a shared situation understanding of the C2 battlespace. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5327 to better align efforts.						
FY 2010 Plans: In FY 2010: Not Applicable.						

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: In FY 2011: Not Applicable.						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop/demonstrate technologies for improved force protection, maintenance of peak performance in known toxic environments and identification of difficult-to-detect enemy threats.		1.944	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Developed biomarker-based detection technologies. Developed methods for collecting human biosample input in the field. Developed new concepts for lightweight monitoring devices that are operable by non-medical personnel for demonstration of the analysis and detection techniques. These technologies will identify potentially threatening toxic exposures to warfighters to protect AF personnel. Developed predictive human models for threat detection and exposure. Developed enhanced anthropometric visualization techniques that integrate heterogeneous sensor data of potential adversaries. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5326 to better align efforts.						
FY 2010 Plans: In FY 2010: Not Applicable.						
FY 2011 Base Plans: In FY 2011: Not Applicable.						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
Accomplishments/Planned Programs Subtotals		17.605	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)											
								FY 2009	FY 2010		
Congressional Add: Air Purification with Carbon Nanotube Nanostructured Material. FY 2009 Accomplishments: In FY 2009: Conducted Congressionally-directed effort for Air Purification with Carbon Nanotube Nanostructured Material. FY 2010 Plans: In FY 2010: Not Applicable.								4.986	0.000		
Congressional Add: PhasorBIRD Helmet Tracker. FY 2009 Accomplishments: In FY 2009: Conducted Congressionally-directed effort for PhasorBIRD Helmet Tracker. FY 2010 Plans: In FY 2010: Not Applicable.								2.473	0.000		
Congressional Adds Subtotals								7.459	0.000		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE 0602202F: Human Effectiveness Applied Research.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0603456F: Human Effectiveness Adv Tech Dev.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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<u>C. Other Program Funding Summary (\$ in Millions)</u>											
<u>Line Item</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u> <u>Base</u>	<u>FY 2011</u> <u>OCO</u>	<u>FY 2011</u> <u>Total</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
<ul style="list-style-type: none"> • PE 0604706F: <i>Life Support Systems.</i> 											
<u>D. Acquisition Strategy</u>											
Not Applicable.											
<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: <i>Research, Development, Test & Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>				R-1 ITEM NOMENCLATURE PE 0603231F: <i>Crew Systems and Personnel Protection Technology</i>				PROJECT 634924: <i>Warfighter Readiness Technology</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
634924: <i>Warfighter Readiness Technology</i>	7.830	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

Note: In FY 2010, Warfighter Readiness Technology efforts will move from PE 0603231F, Project 4924 to PE 0603456F, Project 5325 to better align efforts.

A. Mission Description and Budget Item Justification

This project develops and demonstrates advanced training, simulation, and mission rehearsal technologies that will improve warfighter capabilities and mission readiness by enhancing operator and team performance skills. This effort includes the development of technologies that enable integration of computer models, live weapon systems, and weapon system simulators to portray the global battlespace, including all-weather, day/night flight operations, C2, force protection, and aerospace operations. This project develops and demonstrates advanced training and simulation technologies that will improve warfighter readiness by enhancing mission training and mission rehearsal capabilities. Development and effective use of the global battlespace requires advances in training systems and in interconnection, information, visual, and representation technologies. The resulting mission training and rehearsal capabilities will enhance the mission essential competencies of combat and combat support individuals and teams that comprise the aerospace force.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
MAJOR THRUST: Advance aerospace/organizational behavior models for integrated warfighter training and rehearsal. Adds realism operations, C2, force protection, and air base defense warfighters.	2.426	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Demonstrated adaptive training within Distributed Mission Operations (DMO) using embedded knowledge and skills assessment. Developed common tools for mission planning, briefing, and after action review that function across air combat, ground operations, and combat operations and planning in an Air and Space Operations Center (AOC). Completed integration and evaluation of joint close air support (JCAS) environment for schoolhouse training. Demonstrated and validated technology alternatives for in-garrison and field deployable JCAS training and rehearsal system.					

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Initiated development of specifications for integrating forward deployed battlefield coordination and command simulation with JCAS schoolhouse training. Demonstrated embedded training and performance assessment in a deployed combat training environment. Demonstrated integrated deployed DMO capability in large scale Live, Virtual, and Constructive (LVC) event. Demonstrated quantitative methods for certifying simulation fidelity and readiness training capabilities. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable. FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop low-cost, deployable visual simulation system with sufficient image resolution/ performance capable of supporting imaging of high-resolution fast-moving targets. FY 2009 Accomplishments: In FY 2009: Developed combat immersive visual environments head-mounted and compact off-the-head display/image generation proof of concept component demonstrations. Began human factors analyses and technology performance evaluations of the concept demonstrations. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable.		1.074	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop/demonstrate a high-fidelity DMO training and rehearsal capability for operators in an AOC. FY 2009 Accomplishments: In FY 2009: Developed integrated strategy and plans division trainer based on competency-based training requirements and optimum mission rehearsal strategies. Developed integration methods for fielded and emerging systems and applications. Developed team, inter-team, and division-level event specifications for mission qualification training and continuation training scenarios. Validated environment approaches through exercise simulations, data capture, and analysis to define quality of experience, spectrum of training capability, and performance assessment capabilities. Completed live EW range integration into DMO. Developed a simulation of an advanced platform-specific EW sensor suite for DMO. Developed a proof-of-concept desktop system integrating multiple EW suite simulations with a synthetic threat environment featuring advanced missile fly out models and basic directed energy threats. Began measuring and validating improvements in EW training using these technologies and techniques. Began the development of methods for improved, embedded EW training capability on airborne aircraft and design systems and demonstrated these technologies during a live-fly exercise at an EW training range. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable. FY 2011 OCO Plans: In FY 2011 OCO: N/A		1.937	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)											
						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
Accomplishments/Planned Programs Subtotals						5.437	0.000	0.000	0.000	0.000	
						FY 2009	FY 2010				
Congressional Add: Joint Theater Air Ground Simulation System. <i>FY 2009 Accomplishments:</i> In FY 2009: Conducted Congressionally-directed effort for Joint Theater Air Ground Simulation System. <i>FY 2010 Plans:</i> In FY 2010: Not Applicable.						2.393	0.000				
Congressional Adds Subtotals						2.393	0.000				
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE 0602202F: <i>Human Effectiveness Applied Research.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0603456F: <i>Human Effectiveness Adv Tech Dev.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0604227F: <i>Distributed Mission Training.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
D. Acquisition Strategy Not Applicable.											

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603231F: <i>Crew Systems and Personnel Protection Technology</i>	PROJECT 634924: <i>Warfighter Readiness Technology</i>
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 2011 Air Force								DATE: February 2010			
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 0603231F: <i>Crew Systems and Personnel Protection Technology</i>				PROJECT 635020: <i>Bioeffects & Protection Technology</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
635020: <i>Bioeffects & Protection Technology</i>	2.848	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Note Note: In FY 2010, Bioeffects & Protection Technology efforts will move from PE 0603231F, Project 5020 to PE 0603456F, Project 5323 and Project 5326 to better align efforts.											
A. Mission Description and Budget Item Justification This project integrates and demonstrates technologies to provide protection against directed energy threats and hazards, without compromising performance, vigilance, or mission effectiveness, and man-portable technologies for the neutralization of threats. Development and demonstration efforts focus on advanced technologies for laser eye protection (LEP), preventing injurious exposures of personnel involved with test and evaluation of high power microwave or high-energy laser weapons, and enabling operational employment of these systems. It also develops tools and guidelines for testing and deploying high power microwave and high-energy laser systems and technologies to enhance personnel safety and effectiveness in aerospace operations. Biobehavioral performance capabilities are developed and demonstrated to enable sustained and enhanced operations in extreme environments to include surge, night, global, information warfare, C2, and other operations.											
B. Accomplishments/Planned Program (\$ in Millions)											
						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
MAJOR THRUST: Develop and demonstrate technologies that permit safe testing, deployment, and use of high energy laser weapons and systems. <i>FY 2009 Accomplishments:</i> In FY 2009: Completed validation, verification, and accreditation package for laser range safety tool. Released collateral hazard assessment software tool to enable analysis of tactical uses for high-energy laser systems. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5323 to better align efforts.						1.093	0.000	0.000	0.000	0.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force				DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 3: Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603231F: Crew Systems and Personnel Protection Technology		PROJECT 635020: Bioeffects & Protection Technology		
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: In FY 2010: Not Applicable.						
FY 2011 Base Plans: In FY 2011: Not Applicable.						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: Develop and demonstrate technologies to assess bioeffects and protection from radio frequency (RF) systems, including terahertz technologies.		1.420	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Developed laser and RF and other non-ionizing protective solutions for personnel protection. Developed bioeffects-based fire-control algorithms for directed energy weapons. Integrated laser protective technologies with those for RF, microwave, terahertz, and other regimes of electromagnetic radiation for personnel protection. Established preliminary design specifications for directed energy protective equipment. Conducted long-term studies of RF weapon systems effects. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5323 to better align efforts.						
FY 2010 Plans: In FY 2010: Not Applicable.						
FY 2011 Base Plans: In FY 2011: Not Applicable.						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
		0.335	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 3: Advanced Technology Development (ATD)			R-1 ITEM NOMENCLATURE PE 0603231F: Crew Systems and Personnel Protection Technology			PROJECT 635020: Bioeffects & Protection Technology					
B. Accomplishments/Planned Program (\$ in Millions)						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
MAJOR THRUST: Develop and demonstrate ability to support testing of counterforce technologies and to enable man-portable threat neutralization capabilities. FY 2009 Accomplishments: In FY 2009: Developed technologies that will provide the capability to neutralize threats without evidence for special applications. Improved technologies to enable safe return and avoid contaminating aircraft or other equipment. NOTE: In FY 2010, this major thrust will move to PE 0603456F, Project 5326 to better align efforts. FY 2010 Plans: In FY 2010: Not Applicable. FY 2011 Base Plans: In FY 2011: Not Applicable. FY 2011 OCO Plans: In FY 2011 OCO: N/A											
Accomplishments/Planned Programs Subtotals						2.848	0.000	0.000	0.000	0.000	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE 0602102F: Materials.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0602202F: Human Effectiveness Applied Research.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0603112F: Advanced Materials for Weapon Systems.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0603319F: Airborne Laser Program.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
3600: Research, Development, Test & Evaluation, Air Force BA 3: Advanced Technology Development (ATD)				PE 0603231F: Crew Systems and Personnel Protection Technology				635020: Bioeffects & Protection Technology			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE 0603456F: Human Effectiveness Adv Tech Dev.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0604706F: Life Support Systems.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
D. Acquisition Strategy											
Not Applicable.											
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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