PE NUMBER: 0601108F

PE TITLE: High Energy Laser Research Initiatives

	Exhibit R-2, RDT&E Budget Item Justification										2005
	PE NUMBER AND TITLE 1 Basic Research 0601108F High Energy Laser Research Initiative							tiatives			
	Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
	Total Program Element (PE) Cost	11.611	12.223	11.894	12.263	12.339	13.374	13.685	13.917	Continuing	TBD
5097	High Energy Laser Research Initiatves	11.611	12.223	11.894	12.263	12.339	13.374	13.685	13.917	Continuing	TBD

Note: In FY 2004, this program was transferred to the Air Force by the Office of the Secretary of Defense. The Air Force continues the tri-Service operation of the program under the High Energy Laser Joint Technology Office.

(U) A. Mission Description and Budget Item Justification

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense (DoD) High Energy Laser (HEL) systems. HEL systems have many potential advantages, including speed-of-light velocity, high precision, significant magazine depth, low-cost per kill, and reduced logistics requirements. As a result, HELs have the potential to perform a wide variety of military missions including interception of ballistic missiles in boost phase; defeat of high-speed, maneuvering anti-ship and anti-aircraft missiles; and ultra-precision negation of targets in urban environments with no collateral damage. This program is part of an overall DoD effort in HEL science and technology conducted by the HEL Joint Technology Office. In general, efforts funded under this program are chosen for their potential to have a broad impact on multiple HEL systems and Service missions while complementing Service/Agency programs that are directed at more specific Service needs. A broad range of technologies are addressed in key areas such as chemical lasers, solid state lasers, beam control, optics, propagation, and free electron lasers. The program funds theoretical, computational, and experimental investigations.

This program is in Budget Activity 1, Basic Research, because it funds scientific study and experimentation. Through this program, the DoD invests in research directed toward increasing knowledge and understanding in those fields of science and engineering related to long-term national security needs.

(U) B. Program Change Summary (\$ in Millions)

	FY 2004	FY 2005	FY 2006	FY 2007
(U) Previous President's Budget	11.961	12.331	12.467	12.716
(U) Current PBR/President's Budget	11.611	12.223	11.894	12.263
(U) Total Adjustments	-0.350	-0.108		
(U) Congressional Program Reductions				
Congressional Rescissions		-0.108		
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer	-0.350			

(U) Significant Program Changes:

In FY 2004, this program was transferred to the Air Force by the Office of the Secretary of Defense. The Air Force continues the tri-Service operation of the program under the High Energy Laser (HEL) Joint Technology Office (JTO).

R-1 Shopping List - Item No. 3-1 of 3-11

Exhibit R-2 (PE 0601108F)

Exhibit	DATE February 2005	
BUDGET ACTIVITY 01 Basic Research	PE NUMBER AND TITLE 0601108F High Energy Laser Resea	
C. Performance Metrics Under Development.		
	R-1 Shopping List - Item No. 3-2 of 3-11	Exhibit R-2 (PE 0601108F)

	Exhibit R-2a, RDT&E Project Justification								DATE	February 2005	
	T ACTIVITY sic Research				060110	BER AND TITLE 8F High End ch Initiative	ergy Laser	509	DJECT NUMBE 97 High Ene t iatves	R AND TITLE rgy Laser Re	esearch
	Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5097	High Energy Laser Research Initiatves	11.611	12.223	11.894	12.263	12.339	13.374	13.685	13.917	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense (DoD) High Energy Laser (HEL) systems. HEL systems have many potential advantages, including speed-of-light velocity, high precision, significant magazine depth, low-cost per kill, and reduced logistics requirements. As a result, HELs have the potential to perform a wide variety of military missions including interception of ballistic missiles in boost phase; defeat of high-speed, maneuvering anti-ship and anti-aircraft missiles; and ultra-precision negation of targets in urban environments with no collateral damage. This program is part of an overall DoD effort in HEL science and technology conducted by the HEL Joint Technology Office. In general, efforts funded under this program are chosen for their potential to have a broad impact on multiple HEL systems and Service missions while complementing Service/Agency programs that are directed at more specific Service needs. A broad range of technologies are addressed in key areas such as chemical lasers, solid state lasers, beam control, optics, propagation, and free electron lasers. The program funds theoretical, computational, and experimental investigations.

This program is in Budget Activity 1, Basic Research, because it funds scientific study and experimentation. Through this program, the DoD invests in research directed toward increasing knowledge and understanding in those fields of science and engineering related to long-term national security needs.

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

- (U) MAJOR THRUST: Conduct fundamental research in solid state lasers focused on breaching the cost, power, and efficiency barriers to achieving the promise of simplified logistics, platform integration, and man-machine interface.
- (U) In FY 2004: Conducted research in areas of interest including laser materials with large fluorescence lifetime and cross-section, laser materials with the ability to operate at high temperatures, athermal laser gain media, modular and scalable architectures for laser power scaling, means of increasing efficiency in excess of 20%, materials that can operate in harsh environments, and corrections for thermally induced distortions in gain media. Pursuant to the nature of the university-led multidisciplinary research initiative program, all of the efforts to address the above research areas begun during FY 2002 continued to receive funding.
- (U) In FY 2005: Conduct research in areas of interest including laser materials with large fluorescence lifetime and cross-section, laser materials with the ability to operate at high temperatures, athermal laser gain media, modular and scalable architectures for laser power scaling, means of increasing efficiency in excess of 20%, materials that can operate in harsh environments, and corrections for thermally induced distortions in gain media. Pursuant to the nature of the university-led multidisciplinary research initiative program, all of the efforts to address the above research areas begun during FY 2002 will continue to

<u>FY 2004</u> <u>FY 2005</u> <u>FY 2006</u> <u>FY 2007</u> 3.038 2.713 2.743 2.773

Project 5097 R-1 Shopping List - Item No. 3-3 of 3-11

	Exhibit R-2a, RDT&E Project Ju	stification		DATE	DATE February 2005		
i	GET ACTIVITY Basic Research	PE NUMBER AND TITLE 0601108F High Energy L Research Initiatives	aser	PROJECT NUME 5097 High En Initiatves			
(U)	receive funding. Conduct FY 2005 proposal call for multidisciplinary research pro In FY 2006: Conduct research in areas of interest including laser materials with la lifetime and cross-section, laser materials with the ability to operate at high temper gain media, modular and scalable architectures for laser power scaling, means of it excess of 30%, materials that can operate in harsh environments, and corrections for distortions in gain media. Research focuses on ceramic gain material fabrication in absorption laser gain media, laser-diode pump sources, fiber lasers, and vertical exbrightness and power extraction through advancements in cooling and fabrication to the nature of the university-led multidisciplinary research initiative program, are 2002 will continue to receive funding along with FY 2005 awards.	rge fluorescence ratures, athermal laser ncreasing efficiency in or thermally induced nethods, low ternal cavity laser techniques. Pursuant eas begun during FY					
(U)	In FY 2007: Conduct research in areas of interest including laser materials with la lifetime and cross-section, laser materials with the ability to operate at high temper gain media, modular and scalable architectures for laser power scaling, means of it excess of 30%, materials that can operate in harsh environments, and corrections for distortions in gain media. Research focuses on ceramic gain material fabrication in absorption laser gain media, laser-diode pump sources, fiber lasers, and vertical exbrightness and power extraction through advancements in cooling and fabrication to the nature of the university-led multidisciplinary research initiative program, are 2002 will be completed. FY 2005 awards will continue to receive funding. Conduction of the university of the un	ratures, athermal laser nacreasing efficiency in or thermally induced nethods, low ternal cavity laser techniques. Pursuant eas begun during FY					
(U) (U) (U)	MAJOR THRUST: Conduct fundamental research in high-power, lightweight opt In FY 2004: Conducted research in areas of interest including basic materials and large optics lightweight structure and deployment concepts, high energy laser (HE multipurpose materials. (e.g., wave front correction combined with aperture adjust mechanisms. Pursuant to the nature of the university-led multidisciplinary research all of the efforts to address the above research areas begun during FY 2002 continuous EN EV 2005. Conduct research in group of interest including basic metarials and for	fabrication techniques, L) optical coatings, ment), and control h initiative program, ued to receive funding.	1.606	1.795	1.584	1.719	
	In FY 2005: Conduct research in areas of interest including basic materials and fa large optics lightweight structure and deployment concepts, HEL optical coatings, materials. (e.g., wave front correction combined with aperture adjustment), and concepts to the nature of the university-led multidisciplinary research initiative proto address the above research areas begun during FY 2002 will continue to receive 2005 proposal call for multidisciplinary research program. In FY 2006: Conduct research in areas of interest including basic materials and fairlighted 5097 R-1 Shopping Lis	multipurpose ntrol mechanisms. ogram, all of the efforts funding. Conduct FY			Exhibit R-2a (PE	= 06011095)	

Exhibit R-2a, RDT&E	Project Justification		DATE			
BUDGET ACTIVITY 01 Basic Research	PE NUMBER AND TITLE 0601108F High Energy L Research Initiatives	aser	PROJECT NUMBER AND TITLE 5097 High Energy Laser Resea			
large optics lightweight structure and deployment concepts, high enmultipurpose materials (e.g., wave front correction combined with a mechanisms. Develop negative thermal expansion optical coating materials and measure thermal and strain responses of these coating micromachined adaptive mirrors. Develop methods to fabricate, measpherical optics. Pursuant to the nature of the university-led multide program, areas begun during FY 2002 will continue to receive funding large optics lightweight structure and deployment concepts, HEL optice.g., wave front correction combined with aperture adjustment), and negative thermal expansion optical coating materials to match zero thermal and strain responses of these coatings. Investigate heat train mirrors. Develop methods to fabricate, measure, align, and coat large Pursuant to the nature of the university-led multidisciplinary research during FY 2002 will be completed. FY 2005 awards will continue to call for FY 2007 new starts.	aperture adjustment), and control materials to match zero expansion gs. Investigate heat transfer in easure, align, and coat large off axis disciplinary research initiative ing along with FY 2005 awards. materials and fabrication techniques, otical coatings, multipurpose materials d control mechanisms. Develop expansion substrates and measure asfer in micromachined adaptive ge off axis aspherical optics.					
 (U) (U) MAJOR THRUST: Conduct research focused on the scientific conduct beam control including atmospheric characterization in aerial, battle environments. These efforts could lead to substantial increases in the need for significantly increased power levels. 	efield, and maritime-like	0.680	1.110	1.122	1.135	
(U) In FY 2004: Conducted research in areas of interest including impranalysis of propagation effects, advanced wave front sensing and represence of thermal blooming), and the effects of extended reference correction. Pursuant to the nature of the university-led multidisciplinareas that were begun during FY 2002 continued to receive funding	construction (especially in the e sources used for wave front inary research initiative program,					
 (U) In FY 2005: Conduct research in areas of interest including improvant analysis of propagation effects, advanced wave front sensing and represence of thermal blooming), and the effects of extended reference correction. Pursuant to the nature of the university-led multidisciplinareas that were begun during FY 2002 will continue to receive fund for multidisciplinary research program. (U) In FY 2006: Conduct research in areas of interest including improvant 	red theoretical and computer-based construction (especially in the esources used for wave front inary research initiative program, ing. Conduct FY 2005 proposal call red theoretical and computer-based					
analysis of propagation effects, advanced wave front sensing and re- Project 5097	R-1 Shopping List - Item No. 3-5 of 3-11			Exhibit R-2a (PE	E 0601108F)	

UNCLASSIFIED										
Exhibit R-2a, RDT&E P	roject Justification			February 2005						
BUDGET ACTIVITY 01 Basic Research	PE NUMBER AND TITLE 0601108F High Energy Research Initiatives	/ Laser		PROJECT NUMBER AND TITLE 5097 High Energy Laser Researc Initiatves						
presence of thermal blooming), and the effects of extended reference of correction. Research focuses on new methods for wave front control, turbulence, and modeling and simulation of beam propagation. Pursuantiversity-led multidisciplinary research initiative program, areas that continue to receive funding along with FY 2005 awards. (U) In FY 2007: Conduct research in areas of interest including improved analysis of propagation effects, advanced wave front sensing and recorrection. Research focuses on new methods for wave front control, turbulence, and modeling and simulation of beam propagation. Pursuantiversity-led multidisciplinary research initiative program, areas that be completed. FY 2005 awards will continue to receive funding. Cornew starts.	imaging and tracking through ant to the nature of the were begun during FY 2002 I theoretical and computer-based instruction (especially in the sources used for wave front imaging and tracking through ant to the nature of the were begun during FY 2002 will									
(U)										
 (U) MAJOR THRUST: Conduct fundamental research in chemical lasers the processes necessary for the realization of truly closed cycle, lightwo perating chemical lasers. (U) In FY 2004: Conducted research in areas of interest including studies 	of chemical processes and	0.792	1.426	1.209	1.341					
reactions for a closed-cycle chemical laser system, new sources of the needed to produce the lasing event, and electrically driven oxygen iod chemical kinetics for an all gas phase chemical laser and studied plasm oxygen iodine laser system. Pursuant to the nature of the university-le initiative program, areas that were begun during FY 2002 continued to (U) In FY 2005: Conduct research in areas of interest including studies of	ine laser architectures. Measured na physics of an electrically driven ed multidisciplinary research preceive funding.									
for a closed-cycle chemical laser system, new sources of the high-ener produce the lasing event, and electrically driven oxygen iodine laser a kinetics for an all gas phase chemical laser and study plasma physics of iodine laser system. Pursuant to the nature of the university-led multiperogram, areas that were begun during FY 2002 will continue to receip proposal call for multidisciplinary research program.	of an electrically driven oxygen disciplinary research initiative ve funding. Conduct FY 2005									
(U) In FY 2006: Conduct research in areas of interest including studies of for a closed-cycle chemical laser system, new sources of the high-ener produce the lasing event, and electrically driven oxygen iodine laser s university-led multidisciplinary research initiative program, all of the	rgy chemical species needed to ystem. Pursuant to the nature of the									
Project 5097 R-	1 Shopping List - Item No. 3-6 of 3-11			Exhibit R-2a (Pl	E 0601108F)					

	Exhibit R-2a, RDT&E Project Justification DATE February 2005						
	T ACTIVITY sic Research	PE NUMBER AND TITLE 0601108F High Energ Research Initiatives	y Laser	PROJECT NUMBER AND TITLE 5097 High Energy Laser Resea			
av (U) In fo pr	esearch areas that were begun during FY 2002 will continue to receive funding wards. In FY 2007: Conduct research in areas of interest including studies of chemical or a closed-cycle chemical laser system, new sources of the high-energy chem roduce the lasing event, and electrically driven oxygen iodine laser system. Priversity-led multidisciplinary research initiative program, areas that were beg	Il processes and reactions ical species needed to ursuant to the nature of the					
	e completed. FY 2005 awards will continue to receive funding. Conduct propew starts.	posal call for FY 2007					
(U) M	MAJOR THRUST: Conduct fundamental research in high-average-power ultrasers to significantly increase the average power obtainable by ultra-short-pulse thile decreasing relative size and cost.	-	2.655	1.480	1.496	1.513	
(U) In hi sp le	in FY 2004: Conducted research in areas of interest including high-current devigher damage threshold resonator optics, advanced optical cavity designs for braces, and design methods for scaling free electron lasers to reach multi-mega evels. Pursuant to the nature of the university-led multidisciplinary research in the efforts to address the above research areas begun during FY 2002 continued	nigh power and compact watt class average power nitiative program, all of					
hi sp le th C	in FY 2005: Conduct research in areas of interest including high-current device igher damage threshold resonator optics, advanced optical cavity designs for hoaces, and design methods for scaling free electron lasers to reach multi-megativels. Pursuant to the nature of the university-led multidisciplinary research in the efforts to address the above research areas begun during FY 2002 will contidend to formultidisciplinary research program.	nigh power and compact watt class average power nitiative program, all of inue to receive funding.					
fo pı ki io	in FY 2006: Conduct research in areas of interest including studies of chemical or a closed-cycle chemical laser system, new sources of the high-energy chemical roduce the lasing event, and electrically driven oxygen iodine laser architecturinetics for an all gas phase chemical laser and study plasma physics of an electrical laser system. Pursuant to the nature of the university-led multidisciplina rogram, areas that were begun during FY 2002 continue to receive funding alo	ical species needed to res. Measure chemical trically driven oxygen ary research initiative					
(U) In fo pr ki	in FY 2007: Conduct research in areas of interest including studies of chemical or a closed-cycle chemical laser system, new sources of the high-energy chemical roduce the lasing event, and electrically driven oxygen iodine laser architecturinetics for an all gas phase chemical laser and study plasma physics of an electrical laser system. Pursuant to the nature of the university-led multidisciplination.	Il processes and reactions ical species needed to res. Measure chemical trically driven oxygen					
Project	t 5097 R-1 Shopping	g List - Item No. 3-7 of 3-11			Exhibit R-2a (PE	E 0601108F)	

	Exhibit R-2a, RDT&E Project Jus	DATE	February 2005			
	GET ACTIVITY Basic Research	PE NUMBER AND TITLE 0601108F High Energiese Research Initiatives	gy Laser	PROJECT NUMBER AND TITLE 5097 High Energy Laser Researd Initiatives		
	program, areas that were begun during FY 2002 will be completed. FY 2005 awards	s will continue to				
(U)	receive funding. Conduct proposal call for FY 2007 new starts.					
(U)	MAJOR THRUST: Conduct fundamental research in modeling and simulation for h	nigh energy lasers	1.140	1.479	1.496	1.513
(II)	(HEL).	1 1 1				
(U)	In FY 2004: Continued development of models and simulation techniques to achiev high-fidelity technical analyses, engineering trade studies that allow analyses of a wind analyses of high energy laser systems' military utility in a broad range of mission nature of the university-led multidisciplinary research initiative program, all of the e	ide range of systems, ns. Pursuant to the				
	above research areas begun during FY 2002 continued to receive funding.	mores to address the				
α	In FY 2005: Continue development of models and simulation techniques to achieve	a halance hetween				
(0)	high-fidelity technical analyses, engineering trade studies that allow analyses of a wi					
	and analyses of HEL systems' military utility in a broad range of missions. Pursuant					
	university-led multidisciplinary research initiative program, all of the efforts to address					
	research areas begun during FY 2002 will continue to receive funding. Conduct FY					
	for multidisciplinary research program.	1 1				
(U)	In FY 2006: Continue development of models and simulation techniques to achieve	a balance between				
	high-fidelity technical analyses, engineering trade studies that allow analyses of a wi	ide range of systems,				
	and analyses of HEL systems' military utility in a broad range of missions. Pursuant					
	university-led multidisciplinary research initiative program, areas that were begun de	uring FY 2002				
	continue to receive funding along with FY 2005 awards.					
(U)	In FY 2007: Conduct research in areas of modeling and simulation to achieve a bala					
	high-fidelity technical analyses, engineering trade that allow analyses of a wide rang					
	analyses of HEL system's military utility in a broad range of missions. Pursuant to t					
	university-led multidisciplinary research initiative program, areas that were begun de	•				
(T.T)	continue to receive funding along with FY 2005 awards. Conduct proposal call for l	FY 2007 new starts.				
(U)	MAJOR TURIST: Conduct fundamental received in beam control or war and to the	nology to improve	1.700	2 220	2 244	2 260
(U)	MAJOR THRUST: Conduct fundamental research in beam control component technigh energy laser (HEL) systems.	nology to improve	1.700	2.220	2.244	2.269
(Π)	In FY 2004: Continued to develop beam control technology to improve HEL system	n nerformance				
	Provide critical technology options for use in tactical scenarios on tactical platforms	-				
	ground vehicles, and technology to fabricate conformal HEL windows for tactical ai					
	Developed wavefront sensors that are insensitive to high scintillation environments a benchmark performance in a simulated high scintillation environment. Established	and prepare to				
D					Evhibit D. 20 (DI	E 0601100E\
Pro	ject 5097 R-1 Shopping List	- Item No. 3-8 of 3-11			Exhibit R-2a (Pl	= 0001108F)

Exhibit R-2a, RDT	DATE Februar	v 2005		
BUDGET ACTIVITY 01 Basic Research	PE NUMBER AND TITLE 0601108F High Energy Laser Research Initiatives		ECT NUMBER AND TITL High Energy Lase	.E
metrology capability to precisely measure adsorption and reflect methods for discrimination, pointing, and tracking in high clutted Continued to develop characterizations that concentrate on understand low-altitude tactical scenarios in order to increase the lethal rare university-led multidisciplinary research initiative program, are continued to receive funding. (U) In FY 2005: Continue to develop beam control technology to Provide critical technology options for use in tactical scenarios ground vehicles, and technology to fabricate conformal HEL wavefront sensors that are insensitive to high scintillation environment. Estandard in a simulated high scintillation environment.	ter using three-dimensional imaging. derstanding atmospheric limitations in nge. Pursuant to the nature of the eas that were begun during FY 2002 improve HEL system performance. s on tactical platforms such as aircraft, vindows for tactical air vehicles. Develop ronments and prepare to benchmark			
capability to precisely measure adsorption and reflectivity of o discrimination, pointing, and tracking in high clutter using thre develop characterizations that concentrate on understanding attractical scenarios in order to increase the lethal range. Pursuan multidisciplinary research initiative program, areas that were b receive funding. Conduct FY 2005 proposal call for multidisciplinary research in tactical scenarios ground critical technology options for use in tactical scenarios ground vehicles. Develop technology to fabricate conformal Fursuant to the nature of the university-led multidisciplinary rebegun during FY 2002 continue to receive funding along with	optical coatings. Develop methods for ee-dimensional imaging. Continue to mospheric limitations in low-altitude at to the nature of the university-led begun during FY 2002 will continue to iplinary research program. improve HEL system performance. Is on tactical platforms such as aircraft, HEL windows for tactical air vehicles. It is seearch initiative program, areas that were			
(U) In FY 2007: Continue to develop beam control technology to a Provide critical technology options for use in tactical scenarios ground vehicles. Develop technology to fabricate conformal H Pursuant to the nature of the university-led multidisciplinary rebegun during FY 2002 continue to receive funding along with for FY 2007 new starts.	improve HEL system performance. s on tactical platforms such as aircraft, HEL windows for tactical air vehicles. esearch initiative program, areas that were			
(U) Total Cost	11.0	611 12.	223 11.894	12.263
Project 5097	R-1 Shopping List - Item No. 3-9 of 3-11		Exhibit R-2	a (PE 0601108F)

	Exhibit R-2a, RDT&E Project Justification February 2005									
	BUDGET ACTIVITY 01 Basic Research			PE NUMBER AND TITLE 0601108F High Energy Laser Research Initiatives			50	PROJECT NUMBER AND TITLE 5097 High Energy Laser Research Initiatves		
(U)	C. Other Program Funding Su	mmary (\$ in N	Millions)							
		FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Total Cost
		<u>Actual</u>	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete Total Cost
	PE 0602500F,									
(U)	Multi-Disciplinary Space									
	Technology.									
(U)	PE 0602890F, High Energy									
	Laser Research.									
(U)	PE 0603444F, Maui Space									
(-)	Surveillance System.									
	PE 0603500F,									
(U)	Multi-Disciplinary Advanced									
	Development Space									
	Technology.									
(U)	PE 0603605F, Advanced									
	Weapons Technology.									
	PE 0603924F, High Energy									
(U)	Laser Advanced Technology									
	Program.									
	PE 0603883C, Ballistic									
(0)	Missile Defense Boost Phase									
	Segment. PE 0602605F, Directed									
(U)	Energy Technology.									
	PE 0602307A, Advanced									
(U)	Weapons Technology.									
	PE 0602114N, Power									
(U)	Projection Applied Research.									
	This project has been									
1	coordinated through the									
α	Reliance process to									
	harmonize efforts and									
1	eliminate duplication.									
	_									
Pro	oject 5097			R-1 Shopp	oing List - Item No	o. 3-10 of 3-11	1			Exhibit R-2a (PE 0601108F)

	February 2005				
BUDGET ACTIVITY 01 Basic Research		PE NUMBER AND TITLE 0601108F High Energy Laser Research Initiatives	PROJECT NUMBER AND TITLE 5097 High Energy Laser Research Initiatves		
(U) D. Acquisition Strategy Not Applicable.					
Project 5097	R-1 Shopping List -	Item No. 3-11 of 3-11		Exhibit R-2a (PE 0601108F)	