PE NUMBER: 0602805F PE TITLE: Dual Use Science & Technology

T ACTIVITY								February	2004
blied Research				E NUMBER AND 602805F Dua	I Use Science	e & Technolo	gy		
Cost (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to	Total
Cost (\$ III MIIIIOIIS)	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	
Total Program Element (PE) Cost	10.075	10.496	5.151	2.961	5.147	5.317	5.480	0.000	0.00
Dual Use Science and Technology (S&T)	10.075	10.496	5.151	2.961	5.147	5.317	5.480	0.000	0.00
his program seeks to leverage industry in bjective of this program is for the Air Fo nd to promote more affordable defense s nd specific Air Force programs. The co echnologies. Specific projects are detern	nvestments with rce to stimulate ystems that main operative fundin nined through ar	the development ntain battlespace g assures joint nual competiti	ent of dual use to ce superiority. commitment to ive solicitations	technologies so A critical composite transition the transition s. Technology	as to provide g ponent of this p and dual use de areas considere	reater access to rogram is the c velopment effo d may include	o commercially ost-sharing req orts of successf advanced mate	v developed tec uirement from ully demonstra	hnologies industry ted
. Program Change Summary (\$ in Mil	llions)								
nonious Drasidant's Dadast									<u>FY 2005</u>
•									8.864 5.151
•									5.151
5						-0.320	-0	.090	
•							-0	090	
6							0	.070	
6									
						-0.320			
	s President's Bu	dget are a resu	lt of higher Ai	Force prioritie	es.				
		R-1 St	iopping List - Iten	n No. 14-2 of 14-	7			Exhibit R-2 (I	PE 0602805E)
	Cost (\$ in Millions) Total Program Element (PE) Cost Dual Use Science and Technology (S&T) Mission Description and Budget Iten his program seeks to leverage industry in bjective of this program is for the Air Fo nd to promote more affordable defense s nd specific Air Force programs. The code echnologies. Specific projects are deternent ensors; advanced propulsion, power, and Program Change Summary (\$ in Mil revious President's Budget urrent PBR/President's Budget otal Adjustments ongressional Program Reductions ongressional Increases eprogrammings BIR/STTR Transfer ignificant Program Changes:	Cost (\$ in Millions)FY 2003 ActualTotal Program Element (PE) Cost10.075Dual Use Science and Technology (S&T)10.075Mission Description and Budget Item Justification his program seeks to leverage industry investments with bjective of this program is for the Air Force to stimulate nd to promote more affordable defense systems that main nd specific Air Force programs. The cooperative fundin echnologies. Specific projects are determined through ar ensors; advanced propulsion, power, and fuel efficiency;Program Change Summary (\$ in Millions)revious President's Budget orgressional Program Reductions ongressional Increases eprogrammingsBIR/STTR Transfer ignificant Program Changes:	Cost (\$ in Millions) FY 2003 Actual FY 2004 Estimate Total Program Element (PE) Cost 10.075 10.496 Dual Use Science and Technology 10.075 10.496 Mission Description and Budget Item Justification	Cost (\$ in Millions) FY 2003 Actual FY 2004 Estimate FY 2005 Estimate Total Program Element (PE) Cost 10.075 10.496 5.151 Dual Use Science and Technology 10.075 10.496 5.151 Mission Description and Budget Item Justification Mission Description and Budget Item Justification his program seeks to leverage industry investments with interests in advanced technol bjective of this program is for the Air Force to stimulate the development of dual use ind to promote more affordable defense systems that maintain battlespace superiority. ad specific Air Force programs. The cooperative funding assures joint commitment to echnologies. Specific projects are determined through annual competitive solicitations ensors; advanced propulsion, power, and fuel efficiency; information and communicat Program Change Summary (\$ in Millions) revious President's Budget urrent PBR/President's Budget otal Adjustments ongressional Increases eprogrammings BIR/STTR Transfer ignificant Program Changes: hanges to this program since the previous President's Budget are a result of higher Air	Cost (\$ in Millions) FY 2003 Actual FY 2004 Estimate FY 2005 Estimate FY 2006 Estimate Total Program Element (PE) Cost 10.075 10.496 5.151 2.961 Dual Use Science and Technology 10.075 10.496 5.151 2.961 Lual Use Science and Technology 10.075 10.496 5.151 2.961 Mission Description and Budget Item Justification 10.075 10.496 5.151 2.961 Mission Description and Budget Item Justification 10.075 10.496 5.151 2.961 Mission Description and Budget Item Justification 10.075 10.496 5.151 2.961 Mission Description and Budget Item Justification 10.075 10.496 5.151 2.961 Mission Description and Budget Item Justification 10.075 10.496 5.151 2.961 Mission Description and Budget Item Justification 10.075 10.496 5.151 2.961 Mission Description and Budget Item Justification 10.075 10.496 5.151 2.961 Mission Despecific Air Force Summary (\$ in Millions)	Cost (\$ in Millions)FY 2003 ActualFY 2004 EstimateFY 2005 EstimateFY 2006 EstimateTotal Program Element (PE) Cost10.07510.4965.1512.9615.147Dual Use Science and Technology (S&T)10.07510.4965.1512.9615.147 Mission Description and Budget Item Justification his program seeks to leverage industry investments with interests in advanced technologies of mutual advantage to tbjective of this program is for the Air Force to stimulate the development of dual use technologies so as to provide gnd to promote more affordable defense systems that maintain battlespace superiority. A critical component of this pnd specific Air Force programs. The cooperative funding assures joint commitment to the transition and dual use deexchnologies. Specific projects are determined through annual competitive solicitations. Technology areas considereensors; advanced propulsion, power, and fuel efficiency; information and communications technologies; and weapor. Program Change Summary (\$ in Millions)revious President's Budgetotal Adjustmentsongressional Program Reductionsongressional IncreaseseprogrammingsBIR/STTR Transfer	Cost (\$ in Millions)FY 2003 ActualFY 2004 EstimateFY 2005 EstimateFY 2006 EstimateFY 2007 EstimateFY 2008 EstimateTotal Program Element (PE) Cost10.07510.4965.1512.9615.1475.317Dual Use Science and Technology10.07510.4965.1512.9615.1475.317Mission Description and Budget Item Justificationhis program seeks to leverage industry investments with interests in advanced technologies of mutual advantage to the Air Force a bjective of this program is for the Air Force to stimulate the development of dual use technologies so as to provide greater access to al specific Air Force programs. The cooperative funding assures joint commitment to the transition and dual use development eff schologies. Specific projects are determined through annual competitive solicitations. Technology areas considered may include ensors; advanced propulsion, power, and fuel efficiency; information and communications technologies; and weapon systems susta a JO.395Torgram Change Summary (\$ in Millions)FY 2003 (10.395revious President's Budget ongressional Program Reductions ongressional Rescissions ongressional Rescissions hanges to this program s	Cost (\$ in Millions) FY 2003 Actual FY 2004 Estimate FY 2005 Estimate FY 2007 Estimate FY 2008 Estimate Total Program Element (PE) Cost 10.075 10.496 5.151 2.961 5.147 5.317 5.480 Dual Use Science and Technology 10.075 10.496 5.151 2.961 5.147 5.317 5.480 Mission Description and Budget Item Justification Mission Description and Budget Item Justification Mission description and Budget Item Justification Mission description and Budget Item Justification Mission Description and Budget Item Justification Mission description and Budget Item Justification Mission description and Budget Item Justification Mission Description and Budget Item Justification Mission description and Budget Item Justification Mission description and Budget Item Justification Mission Description and Budget Item Justification Mission description and Budget Item Justification Mission description and Budget Item Justification Display the program State Mission descriptitem State Mission descriptication s	Cost (\$ in Millions) FY 2003 Actual FY 2004 Estimate FY 2005 Estimate FY 2007 Estimate FY 2008 Estimate FY 2009 Estimate Cost to Estimate Total Program Element (PE) Cost 10.075 10.496 5.151 2.961 5.147 5.317 5.480 0.000 Use Science and Technology 10.075 10.496 5.151 2.961 5.147 5.317 5.480 0.000 Mision Description and Budget Item Justification 10.075 10.496 5.151 2.961 5.147 5.317 5.480 0.000 Mision Description and Budget Item Justification 10.075 10.496 5.151 2.961 5.147 5.317 5.480 0.000 Mision Description and Budget Item Justification 10.075 10.496 5.151 2.961 5.147 5.317 5.480 0.000 Mision Description and Budget Item Justification the development of dual use technologies so as to provide greater access to commercially developed technologies for programs is the cost-sharing requirement from ad specific Air Force programs. The cooperative funding assures joint commitment to the transition and dual use development efforts of successfully demonstra technologies fop

	ExI	hibit R-2a, I	RDT&E Pro	ject Justif	ication			DATE	February	2004
	ET ACTIVITY pplied Research			0	e NUMBER AND 602805F Dua echnology		e &	PROJECT NUME 4770 Dual Us Technology (se Science an	d
	Cost (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to	Total
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	
4770	(\$&T)	10.075	10.496	5.151	2.961	5.147	5.317	5.480	0.000	0.000
	Quantity of RDT&E Articles	0	0	0	0	0	0	0		
	This program seeks to leverage industry is objective of this program is for the Air For and to promote more affordable defenses and specific Air Force programs. The con- technologies. Specific projects are determ sensors; advanced propulsion, power, and	orce to stimulate systems that main operative fundir nined through a	the development ntain battlespa ng assures joint nnual competit	ent of dual use ce superiority. commitment to ive solicitation	technologies so A critical com o the transition s. Technology	as to provide ponent of this p and dual use do areas considered	greater access program is the evelopment ef ed may include	to commercially cost-sharing rec forts of successf e advanced mate	y developed tech quirement from fully demonstra	hnologies industry ted
(U) 1 (U) 1	B. Accomplishments/Planned Program (MAJOR THRUST: Advance materials and In FY 2003: Explored processes and techn launch systems. Technology areas of inter and adaptive skins; corrosion resistant coat space launch; and agile materials for use ir In FY 2004: Enhance the capability, perfo space systems. Technology areas of intere designed coatings; evaluation techniques; n materials for use in force protection. In FY 2005: Continue to enhance the capa commercial air and space systems. Technology resistant and genetically designed coatings space launch; and agile materials for use ir	d manufacturing nologies relative rest included: not tings; micro- an n force protectio ormance, durabil st include: sma nano-scale elect ability, perform plogy areas of in ; evaluation tect	to Air Force a on-destructive/ d nano-scale el n. ity, and afford rt and adaptive ronics; special: ance, durability nterest include: hniques; nano-	non-intrusive e ectronics; dura ability of Air F e skins; corrosic ized materials f y, and affordab smart and ada	evaluation techn ble, lightweigh force and comm on resistant and for space launch ility of Air Force uptive skins; con	hiques; smart t materials for hercial air and genetically h; and agile ce and rrosion	E	<u>¥ 2003</u> 2.015	<u>FY 2004</u> 2.663	<u>FY 2005</u> 1.306
(U)] 	MAJOR THRUST: Design and develop as In FY 2003: Enabled affordable advanced platforms. Technology areas of interest in (i.e., infrared) detection; and high-speed, p In FY 2004: Expand the design and develo	sensors and tec cluded: timely recision tempor	hnologies tied , high quality, _j al, spatial, and	to commercial precision imagi attitude sensor	and military air ing; sensitive el s and controller	lectromagnetic rs.		2.015	1.728	0.848
Proje	ect 4770		R-1 Sł	nopping List - Iter	m No. 14-3 of 14-	7			Exhibit R-2a (F	PE 0602805F)

Exhibit R-2a, RDT&E Project Justification DATE February 2004						
BUDGET ACTIVITY PE NUMBER AND TITLE 02 Applied Research 0602805F Dual Use Science Technology		MBER AND TITLE Use Science an y (S&T)	d			
 the capabilities of military and commercial air and space platforms. Technology areas of interest include real-time, high-resolution, precision imaging; sensitive ambient electromagnetic (e.g., infrared) detection; and high-speed, precision temporal, spatial, and attitude sensors and controllers. (U) In FY 2005: Continue to expand the design, efficiency, and affordability of advanced sensors and associated technologies for military and commercial air and space platforms. Technology areas of interest include real-time, high-resolution, precision imaging and tracking devices; sensitive, multi- and cross-environmental electromagnetic sensors; and high-speed, high-precision spatial and attitude sensors and multi-component controllers. 						
 (U) (U) MAJOR THRUST: Develop propulsion, power, energy, and fuel efficiencies and affordability. (U) In FY 2003: Improved the performance, increased the life, and reduced the cost of military and commercial air and space operations. Technology areas of interest included: performance and emissions of airbreathing and rocket propulsion systems; advanced gas turbine combustion and blades; electric propulsion alternatives; energy processing, storage, and conversion; lasers; and smart engine health monitoring techniques. (U) In FY 2004: Continue to enhance the operational capability, expand the life, and reduce the cost of military and 	2.015	2.614	1.283			
 commercial air and space operations. Technology areas of interest include: airbreathing and rocket propulsion systems; gas turbine engines and blades; electric propulsion alternatives; energy processing, storage, and conversion; lasers; and smart engine health monitoring techniques. (U) In FY 2005: Continue to enhance the operational capability, expand the life, and reduce the cost of military and commercial air and space operations. Technology areas of interest include: engine and motor performance and emissions; turbine and hypersonic engine combustion and dynamics; power processing, storage, and conversion; and smart engine health monitoring techniques. 						
 (U) (U) MAJOR THRUST: Advance information and communication technologies. (U) In FY 2003: Enhanced the collection, processing, dissemination, security, accuracy, and presentation of information to U.S. and coalition military decision-makers and corresponding commercial industry sectors. Technology areas of interest include: collecting, synthesizing, and encoding pertinent information; securing the high-speed and reliable fusion, accuracy, security, and transmission of information; and presenting the appropriate information in an efficient, timely, consistent, and easily understood manner. 	2.015	1.762	0.865			
(U) In FY 2004: Further enhance the collection, processing, dissemination, security, accuracy, and presentation capabilities of military and commercial information systems. Technology areas of interest include collecting, synthesizing, and encoding pertinent information; securing high-speed and reliable fusion, accuracy, security, and transmission of information; and presenting relevant information in an efficient, timely, consistent, and easily understood manner.						
(U) In FY 2005: Promote new technologies to collect, collate, process, distribute, recall, and secure high-accuracy data Project 4770 R-1 Shopping List - Item No. 14-4 of 14-7		Exhibit R-2a (F				

Exhibit R-2a, RDT&E Project Justification							DATE February 2004		
BUDGET ACTIVITY 02 Applied Research				PE NUMBER A 0602805F D Technology	ual Use Scien	ice &	4770 Du	T NUMBER AND TITL ual Use Science a logy (S&T)	
on and across military and commerc									
synthesizing, and encoding; process (U)	ing, rusion, and	security; as wel	l as timeliness, a	ccuracy, and pre	c1510n.				
 (U) MAJOR THRUST: Enhance weapon (U) In FY 2003: Extended the life and in Force and commercial air and space fracture; corrosion; cost-effective te 	mproved performers systems. Techn	mance, efficience nology areas of i	y, reliability, an interest include a	d maintainability vionics; materia	y of both Air Is fatigue and		2.015	1.729	0.849
 and associated environmental impact (U) In FY 2004: Prolong and enhance the life of both Air Force and commercing fatigue and fracture; corrosion; cost- 	ets. he performance ial air and space -effective techni	capabilities, reli systems. Techr ques for non-inv	ability, and main pology areas of in	ntainability while nterest include a	e extending the vionics; materia	ls			
 health/performance; and associated In FY 2005: Enhance sustainability and commercial air and space propu corrosion; real-time health monitorin Total Cost 	, reliability, ma Ilsion. Technolo	intainability, op ogy areas of inte	rest include mate	erials fatigue, fra	• •	,	10.075	10.496	5.151
	/ # • • • • • ••••						10.075	10.490	5.151
(U) <u>C. Other Program Funding Sumr</u>	<u>nary (\$ in Milli</u> <u>FY 2003</u>	<u>ons)</u> <u>FY 2004</u>	FY 2005	FY 2006	FY 2007	EV 2009	<u>FY 2</u>	000 Cost to	
	<u>FT 2005</u> <u>Actual</u>	<u>F1 2004</u> Estimate	<u>Estimate</u>	<u>F1 2000</u> Estimate	<u>F1 2007</u> Estimate	<u>FY 2008</u> <u>Estimate</u>	$\frac{FT2}{Estir}$		
U) Related Activities:	<u> </u>						<u></u>		
U) PE 0601102F, Defense Research Sciences.									
U) PE 0602102F, Materials.									
U) PE 0602201F, Aerospace Flight Dynamics.									
U) PE 0602202F, Human Effectiveness.									
U) PE 0602203F, Aerospace Propulsion.									
U) PE 0602204F, Aerospace Sensors.									
PE 0602500E									
(U) Multi-Disciplinary Space									

Exhibit R-2a, RDT&E F	DATE February 2004		
BUDGET ACTIVITY 02 Applied Research	PE NUMBER AND TITLE 0602805F Dual Use Science & Technology	4770 D	T NUMBER AND TITLE Oual Use Science and ology (S&T)
(U) <u>C. Other Program Funding Summary (\$ in Millions)</u>			
Technology.			
(U) PE 0602601F, Space			
Technology.			
U) PE 0602602F, Conventional			
Munitions.			
(U) PE 0602605F, Directed Energy			
Technology.			
U) PE 0602702F, Command			
Control and Communications.			
U) PE 0603112F, Advanced			
Materials for Weapon Systems.			
U) PE 0603203F, Advanced			
Aerospace Sensors.			
U) PE 0603211F, Aerospace			
Structures.			
PE 0603216F, Aerospace			
U) Propulsion and Power			
Technology.			
PE 0603231F, Crew Systems			
U) and Personnel Protection			
Technology.			
DPE 0603270F, Electronic			
Combat Technology.			
U) PE 0603401F, Advanced			
Spacecraft Technology.			
PE 0603500F,			
U) Multi-Disciplinary Advanced			
Development Space			
Technology.			
DE 0603601F, Conventional			
Weapons Technology.			
U) PE 0603605F, Advanced			
Project 4770 R-	1 Shopping List - Item No. 14-6 of 14-7		Exhibit R-2a (PE 0602805F

Exhibit R-2a, RDT&E Project Justification DATE February 2004					
BUDGET ACTIVITY D2 Applied Research	PE NUMBER AND TITLE 0602805F Dual Use Science & Technology	PROJECT NUMBER AND TITLE 4770 Dual Use Science and Technology (S&T)			
 U) <u>C. Other Program Funding Summary (\$ in Millions)</u> Weapons Technology. PE 0603789F, C3I Advanced Development. This program has been coordinated through the U) Reliance process to harmonize efforts and eliminate duplication. 					
U) D. Acquisition Strategy Not Applicable.					
Project 4770	R-1 Shopping List - Item No. 14-7 of 14-7	Exhibit R-2a (PE 060280			