

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2000	
BUDGET ACTIVITY 03 - Advanced Technology Development				PE NUMBER AND TITLE 0603876F Space Based Laser					
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	32,610	72,864	63,216	63,141	63,005	63,628	64,248	Continuing	TBD
634779 Space Based Laser	0	72,864	63,216	63,141	63,005	63,628	64,248	Continuing	TBD
644779 Space-Based Laser	32,610	0	0	0	0	0	0	0	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description**
 The Space Based Laser (SBL) program was created to provide the nation with a highly effective, continuous, global boost phase intercept option for both theater and national missile defense. An SBL system could defend against missiles without putting the lives of US military personnel at risk. The possible speed of light defense allows for boost phase intercept at the earliest possible moment, offering the highest probability that intercepted missile fragments (possibly containing active chemical/biological or nuclear materials) will fall within the attacker's territory, rather than defended territory. The SBL system could also provide many ancillary mission capabilities, including air defense, global surveillance, and target detection and designation.

The SBL program is structured to research the feasibility and operational contribution of performing boost phase missile defense from space. The Ballistic Missile Defense Organization (BMDO) directed energy program (Project 1360, PE0603173C in FY 2000, PE0603174C in FY 2001 and out) has been addressing several key critical technology issues, such as the Hydrogen Fluoride laser performance and modeling; optics experiments; laser and optics integration; and Acquisition, Tracking, Pointing, and Fire Control (ATP/FC) tests. The Air Force began contributing to the SBL program in FY 1999. The combined AF/BMDO budget funds further technology development and risk reduction efforts leading to an Integrated Flight Experiment (IFX) that will provide opportunities for more complete ground and space flight testing. The IFX is a critical step in proving the feasibility of destroying ballistic missiles in their boost phase from space.

The Air Force program funding increase in FY 2000 and beyond will aid the intense efforts planned for technology risk reduction, integrated system testing, and development of an IFX. The technology risk reduction activities include uncooled laser resonator optics, phase conjugation beam clean-up, and ATP. Ground experiments will demonstrate major risk area engineering design units (gain generator, resonator, beam control). Technology risk reduction and component demonstration prior to flight hardware development are important parts of the IFX program. The IFX will culminate in integration, performance of a series of on-orbit experiments, and demonstration of SBL boost phase intercept feasibility.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	
BUDGET ACTIVITY		PE NUMBER AND TITLE			
03 - Advanced Technology Development		0603876F Space Based Laser			
(U) <u>B. Budget Activity Justification</u>					
This PE is in Budget Activity 3 (Advanced Technology Development) because it is performing technology development and risk reduction activities on the path to an Integrated Flight Experiment (IFX).					
(U) <u>C. Program Change Summary (\$ in Thousands)</u>					
		<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
(U)	Previous President's Budget (FY 2000 PBR)	34,884	63,840	63,779	
(U)	Appropriated Value	35,000	73,840		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-116			
	b. Small Business Innovative Research	-1,131			
	c. Omnibus or Other Above Threshold Reprogram		-400		
	d. Below Threshold Reprogram	-961			
	e. Rescissions	-182	-576		
	f. Other				
(U)	Adjustments to Budget Years Since FY 2000 PBR			-563	
(U)	Current Budget Submit/FY 2001 PBR	32,610	72,864	63,216	TBD
(U) <u>Significant Program Changes:</u>					
\$10M congressional add in FY 2000 for planning, engineering, and design of SBL test facility.					

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)								DATE February 2000		
BUDGET ACTIVITY 03 - Advanced Technology Development				PE NUMBER AND TITLE 0603876F Space Based Laser				PROJECT 634779		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
634779	Space Based Laser	0	72,864	63,216	63,141	63,005	63,628	64,248	Continuing	TBD
<p>(U) <u>A. Mission Description</u> The Air Force started contributing funds to the Space Based Laser (SBL) program in FY 1999. The funds were classified as Budget Activity 4. In FY 2000, the Air Force reclassified the funds to Budget Activity 3 to better align the Integrated Flight Experiment (IFX) project with other technology experiments.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u> (U) \$0 Activity shown under BPAC 644779 (U) \$0 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u> (U) \$65,701 IFX Development (U) \$581 Architecture & Affordability Study (U) \$750 Advanced Mirror System Development (U) \$457 Lethality, Analysis & Architecture (AFSPC and AFRL efforts) (U) \$5,375 IFX Program Support (U) \$72,864 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u> (U) \$52,466 IFX Development (U) \$1,000 Architecture & Affordability Study (U) \$500 Advanced Mirror System Development (U) \$2,900 Lethality, Analysis & Architecture (AFSPC and AFRL efforts) (U) \$6,350 IFX Program Support (U) \$63,216 Total</p> <p>(U) <u>B. Project Change Summary</u> \$10M congressional add in FY 2000 for planning, engineering, and design of SBL test facility (included under IFX development).</p> <p>(U) <u>C. Other Program Funding Summary (\$ in Thousands)</u> (U) RDT&E, BMDO, R-29, Support Technologies-Adv Tech Dev</p>										
Project 634779			Page 3 of 6 Pages				Exhibit R-2A (PE 0603876F)			

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE February 2000
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603876F Space Based Laser	PROJECT 634779
<p>(U) <u>D. Acquisition Strategy</u> BMDO and the Air Force are jointly funding the SBL IFX risk reduction activities. The SBL IFX contract award was made in Feb 1999. The SBL IFX contract brings together three major contractors under a Joint Venture (JV) agreement to accomplish the SBL IFX. The JV is structured under a Total System Authority (TSA) arrangement allowing the contractor broad authority and responsibility for program success (planning, baselining, resource management, etc.).</p> <p>(U) <u>E. Schedule Profile</u> (U) Integrated Flight Experiment (IFX) Contract Award 2Q99 (U) IFX Contract Definitization 1Q00 (U) Requirements Review-1 1Q00 (U) Architecture & Affordability Study Final Report 3Q00 (U) Requirements Review-2 3Q00 (U) SBL IFX System Requirements Review (SRR) 1Q01 NOTE: Schedule profile reflects both AF and BMDO funding.</p>		
Project 634779	Page 4 of 6 Pages	Exhibit R-2A (PE 0603876F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)								DATE February 2000	
BUDGET ACTIVITY 03 - Advanced Technology Development				PE NUMBER AND TITLE 0603876F Space Based Laser				PROJECT 644779	
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
644779 Space-Based Laser	32,610	0	0	0	0	0	0	0	TBD
<p>(U) <u>A. Mission Description</u> The Air Force started contributing funds to the Space Based Laser (SBL) program in FY 1999. The funds were classified as Budget Activity 4. In FY 2000, the Air Force reclassified the funds to Budget Activity 3 to better align the Integrated Flight Experiment (IFX) project with other technology experiments.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u> (U) \$1,150 Awarded Integrated Flight Experiment (IFX) Contract (U) \$3,482 Conducted Alpha Laser Optimization (ALO) Beam Control and Flow Conditions (U) \$8,600 Completed Concept Definition Studies and Completed Affordability & Architecture Study Phase I (U) \$5,425 Conducted Advanced Phase-conjugation Experiment (APEX) risk reduction efforts (U) \$1,250 Advanced Mirror System Development (joint effort with NASA, AFRL, and NRO) (U) \$6,300 AFSPC support efforts and AFRL technology investment (U) \$6,403 Program, FFRDC, and SETA support (U) \$32,610 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u> (U) \$0 Activity shown under BPAC 634779 (U) \$0 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u> (U) \$0 Activity shown under BPAC 634779 (U) \$0 Total</p> <p>(U) <u>B. Project Change Summary</u> None.</p> <p>(U) <u>C. Other Program Funding Summary (\$ in Thousands)</u> (U) RDT&E, BMDO, R-29, Support Technologies-Adv Tech Dev</p>									
Project 644779			Page 5 of 6 Pages				Exhibit R-2A (PE 0603876F)		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE February 2000
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603876F Space Based Laser	PROJECT 644779
<p>(U) <u>D. Acquisition Strategy</u> BMDO and the Air Force are jointly funding the SBL IFX risk reduction activities. The SBL IFX contract award was made in Feb 1999. The SBL IFX contract brings together three major contractors under a joint venture agreement to accomplish the SBL IFX. The JV is structured under a Total System Authority (TSA) arrangement allowing the contractor broad authority and responsibility for program success (planning, baselining, resource management, etc.).</p> <p>(U) <u>E. Schedule Profile</u> (U) Integrated Flight Experiment (IFX) Contract Award 2Q99 (U) IFX Contract Definitization 1Q00 (U) Requirements Review-1 1Q00 (U) Architecture & Affordability Study Final Report 3Q00 (U) Requirements Review-2 3Q00 (U) SBL IFX System Requirements Review (SRR) 1Q01 NOTE: Schedule profile reflects both AF and BMDO funding.</p>		
Project 644779	Page 6 of 6 Pages	Exhibit R-2A (PE 0603876F)