

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603876F Space Based Laser (SBL) (Space)	PROJECT 4779
---	--	------------------------

COST (\$ In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
4779 Space Based Laser	0*	34,884	63,840	63,779	63,674	63,565	64,244	64,938	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

* No FY98 Air Force funding, program funded by BMDO (PE0603173C).

(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. BMDO's directed energy program (PE0603173C, Project 1360) 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 FY99. 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 FY2000 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 demonstration. Potential 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 is an important part 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.

(U) FY 1998 (\$ in Thousands):
Not Applicable

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1999
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603876F Space Based Laser (SBL) (Space)	PROJECT 4779
(U) <u>FY 1999 (\$ in Thousands):</u>		
– (U) \$4,418	Alpha LAMP Integration (ALI) risk reduction efforts and system definition	
– (U) \$2,500	Concept Definition Study Extension (LMA)	
– (U) \$2,971	Alpha Laser Optimization (ALO) risk reduction efforts and system definition	
– (U) \$2,500	Concept Definition Study Extension (TRW)	
– (U) \$6,389	Advanced Phase-conjugation Experiment (APEX) risk reduction efforts	
– (U) \$1,500	Advanced Mirror System Development (NASA) and joint efforts	
– (U) \$3,550	Modeling, Simulation (XR), and SBL lethality studies (AFRL)	
– (U) \$4,257	AFSPC support efforts and AFRL technology investment	
– (U) \$4,020	FFRDC and SETA support	
– (U) \$1,648	Program Support	
– (U) \$1,131	Identified as a source for SBIR	
– (U) \$34,884	Total	
(U) <u>FY 2000 (\$ in Thousands):</u>		
– (U) \$55,415	Integrated Flight Experiment (IFX) Contract	
– (U) \$1,500	Advanced Mirror System Development (NASA) and joint efforts	
– (U) \$3,257	AFSPC support efforts and AFRL technology investment	
– (U) \$2,020	FFRDC and SETA support	
– (U) \$1,648	Program Support	
– (U) \$63,840	Total	
(U) <u>FY 2001 (\$ in Thousands):</u>		
– (U) \$56,624	Integrated Flight Experiment (IFX) Contract	
– (U) \$250	Advanced Mirror System Development (NASA) and joint efforts	
– (U) \$3,257	AFSPC support efforts and AFRL technology investment	
– (U) \$2,000	FFRDC and SETA support	
– (U) \$1,648	Program Support	
– (U) \$63,779	Total	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603876F Space Based Laser (SBL) (Space)	PROJECT 4779
---	--	------------------------

(U) D. Other Program Funding Summary (\$ in Thousands)

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
(U) RDT&E, BMDO, R-29, Support Technologies-Adv Tech Dev	118,323	126,388	75,000	75,000	75,000	75,000	75,000	75,000	Cont	Cont

(U) E. Acquisition Strategy: BMDO and the Air Force are jointly funding the SBL risk reduction activities. BMDO is the program lead, and the Air Force is the integrating executing agent for BMDO. The IFX contract award is planned to occur by 3QFY99. The IFX contract plans to bring together the three major contractors under a joint venture agreement to accomplish the IFX. The contract will be structured under a Total System Authority (TSA) arrangement allowing the contractor broad authority and responsibility for program success (planning, baselining, resource management, etc.).

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603876F Space Based Laser (SBL) (Space)	PROJECT 4779
---	--	------------------------

(U) F. Schedule Profile*

	<u>FY 1998</u>				<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(U) Concept Definition Studies Awarded		X														
(U) Integrated Flight Experiment (IFX) Contract Award							X									
(U) Component Development/Risk Reduction Efforts on laser and optics components (under IFX contract)							X									
(U) High Altitude Flight Test of Component Technology										X						

* Schedule profile reflects AF and BMDO funding.

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 1999				
BUDGET ACTIVITY 3 - Advanced Technology Development				PE NUMBER AND TITLE 0603876F Space Based Laser (SBL) (Space)				PROJECT 4779			
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>											
				<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>				
(U) Alpha LAMP Integration (ALI) risk reduction efforts				0	4,418						
(U) Concept Definition Study Extension (LMA)				0	2,500						
(U) Alpha Laser Optimization (ALO) risk reduction efforts				0	2,971						
(U) Concept Definition Study Extension (LMA)				0	2,500						
(U) Integrated Flight Experiment (IFX) Contract				0	0	55,415	56,624				
(U) Advanced Phase-conjugation Experiment (APEX) risk reduction efforts				0	6,389	0	0				
(U) Advanced Mirror System Development (AMSD) and joint efforts				0	1,500	1,500	250				
(U) Modeling, Simulation (XR), and Lethality (AFRL) studies				0	3,550	0	0				
(U) AFSPC support efforts and AFRL technology investment				0	4,257	3,257	3,257				
(U) FFRDC and SETA support				0	4,020	2,020	2,000				
(U) Program Support				0	1,648	1,648	1,648				
(U) Identified as a source for SBIR				0	1,131	0	0				
(U) Total				0	34,884	63,840	63,779				
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
Performing Organizations:											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1998	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Identified as a source for SBIR						1,131					

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	
3 - Advanced Technology Development										February 1999	
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT	
3 - Advanced Technology Development					0603876F Space Based Laser (SBL) (Space)					4779	
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1998	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
Lockheed Martin	C/CPFF	1Q89			0	0	4,418	0	0	0	4,418
Lockheed Martin	FFP	2Q98			0	0	2,500	0	0	0	2,500
TRW	C/CPFF	4Q92			0	0	2,971	0	0	0	2,971
TRW	FFP	2Q98			0	0	2,500	0	0	0	2,500
TRW	C/CPFF	4QFY89			0	0	6,389	0	0	0	6,389
NASA (AFRL)	MIPR	N/A			0	0	1,500	1,500	250	TBD	TBD
TBD	C/CPAF	3Q99			0	0	0	55,415	56,624	TBD	TBD
<u>Support and Management Organizations</u>											
Misc	Misc				0	0	13,475	6,925	6,905	TBD	TBD
<u>Test and Evaluation Organizations</u>											
N/A	N/A										
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)											
Government Furnished Property:											
None.											
Identified as a source for SBIR							1,131				
Subtotal Product Development					0	0	20,278	56,915	56,874	TBD	TBD
Subtotal Support and Management							13,475	6,925	6,905		
Subtotal Test and Evaluation											
Total Project					0	0	34,884	63,840	63,779	TBD	TBD