

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603319F Airborne Laser Program	PROJECT 4269
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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
4269 Airborne Laser	153,539	265,679	308,634	241,057	214,661	176,297	171,326	0	0	1,630,738*
Quantity of RDT&E Articles	1**	0	0	0	1**	0	0	0	0	2**

* The Total Cost reflects cost for Concept Design and Program Definition and Risk Reduction (PDRR) only and contains \$99.545M in funds prior to FY 1998.

** This Qty is for the acquisition of commercial 747-400F freighter aircraft. These aircraft are incrementally funded beginning in the years identified.

(U) A. Mission Description:

The Airborne Laser (ABL) Program is an Acquisition Category 1D (ACAT 1D) program which will design, build and test a laser weapon system to acquire, track and kill Theater Ballistic Missiles (TBMs) in the boost phase. This weapon system integrates three major subsystems (Laser, Beam Control and Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747-400F aircraft. It also includes ABL-specific ground support. The program awarded the ABL PDRR contract to the Boeing/TRW/Lockheed-Martin team in November 1996, to design, fabricate, integrate, and test the half-power ABL system. An Authority-to-Proceed (ATP-1) decision point was successfully attained in FY98. The PDRR phase culminates in lethality (missile shoot-down) demonstrations against boosting TBM representative targets in FY 2003. The PDRR phase will integrate and test all key technologies needed for a fully operational system, allowing the Air Force to advance into EMD in FY 2004.

(U) FY 1998 (\$ in Thousands):

- (U) \$111,558 Continued Boeing/TRW/Lockheed-Martin PDRR contract effort for design, fabrication, integration, and test the ABL weapon system
- (U) \$26,000 PDRR commercial aircraft payments
- (U) \$4,581 Continued support for special studies, simulations and analyses, technical support, risk management, and an independent review team specializing in lasers, aircraft, and aircraft integration
- (U) \$11,400 Continued support for atmospheric characterization tests, labor, training, Integrated Product Team (IPT) participation, and other government agencies
- (U) \$153,539 Total

UNCLASSIFIED

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<u>(U) FY 1999 (\$ in Thousands):</u>		
– (U) \$197,727	Continue Boeing/TRW/Lockheed-Martin PDRR contract effort for design, fabrication, integration, and test the ABL weapon system, including mods to Birk facility at Edwards AFB, CA	
– (U) \$34,700	PDRR commercial aircraft payments	
– (U) \$4,310	Continue support for special studies, simulations and analyses, technical support, risk management, and an independent review team specializing in lasers, aircraft, and aircraft integration	
– (U) \$20,600	Continue support for atmospheric characterization tests (North Oscura Peak (NOP), star scintillometer) labor, training, Integrated Product Team (IPT) participation, and other government agencies; continue Government oversight of Contractor mods to Birk facility.	
– (U) 8,342	Identified as a source for SBIR	
– (U) \$265,679	Total	
<u>(U) FY 2000 (\$ in Thousands):</u>		
– (U) \$202,770	Continue Boeing/TRW/Lockheed-Martin PDRR contract effort for design, fabrication, integration, and test the ABL weapon system, including mods to Birk facility at Edwards AFB, CA	
– (U) \$83,800	Final PDRR commercial aircraft payment (aircraft delivery)	
– (U) \$3,465	Continue support for special studies, simulations and analyses, technical support, risk management, and an independent review team specializing in lasers, aircraft, and aircraft integration	
– (U) \$18,599	Continue support for labor, training, IPT participation, and other government agencies; continue Government oversight of Contractor mods to Birk facility, conduct overseas star scintillometer campaign	
– (U) \$308,634	Total	
<u>(U) FY 2001 (\$ in Thousands):</u>		
– (U) \$211,418	Continue Boeing/TRW/Lockheed-Martin PDRR contract effort for design, fabrication, integration, and test the ABL weapon system, including mods to Birk facility at Edwards AFB, CA	
– (U) \$3,505	Continue support for special studies, simulations and analyses, technical support, risk management, and an independent review team specializing in lasers, aircraft, and aircraft integration	
– (U) \$26,134	Continue support for labor, training, IPT participation, and other government agencies; continue Government oversight of Contractor mods to Birk facility.	
– (U) \$241,057	Total	
Project 4269	<i>Page 2 of 8 Pages</i>	Exhibit R-2 (PE 0603319F)

UNCLASSIFIED

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

BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603319F Airborne Laser Program	PROJECT 4269
------------------------------------------------------------	---------------------------------------------------------------	------------------------

(U) B. Budget Activity Justification

This program is in budget activity 4 (BAC-4) - Demonstration and Validation; ABL is a major defense acquisition program which was authorized to enter PDRR at the Milestone I, November 1996.

(U) C. Program Change Summary (\$ in Thousands)

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 1999 PB)	151,439	292,219	314,242	150,739	1,336,718
(U) Appropriated Value	157,136	267,219			
(U) Adjustments to Appropriated Value					
a. Congressional/General Reductions	-5,697	-1,540			
b. SBIR					
c. Omnibus or Other Above Threshold Reprogram					
d. Below Threshold Reprogramming	2,100				
(U) Adjustments to Budget Years Since FY 1999 PB			-5,608	90,318	
(U) Current Budget Submit/FY 2000 PB	153,539	265,679	308,634	241,057	1,630,738

(U) Significant Program Changes: FY 99 Congressional action reduced program funding by \$25M in FY 99 and induced AF to add content for risk mitigation. This required a major program restructure, including renegotiation of existing contract. Restructure is still in progress and on-track for completion in Apr 99. Most program milestones moved one year, with associated funding adjustments in both RDT&E and procurement. Lethality demonstration slipped from FY02 to FY03, IOC from FY06 to FY07, and FOC from FY08 to FY09. The resultant program includes additional risk reduction efforts, increases to the test program, and incorporates lessons learned from laser testing. \$8,342,000 in FY99 identified as a source for SBIR.

DATE
February 1999

BUDGET ACTIVITY
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603319F Airborne Laser Program

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

(U) **RELATED ACTIVITIES:**

	<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>
RDT&E:										
(U) PE 0604350F Airborne Laser EMD*	0	0	0	0	0	0	242,466	419,942	420,800	1,083,208
Aircraft Procurement, AF (PE 0207150F):										
- P-1 Line Item ABL Adv Proc	0	0	0	0	0	0	0	134,168	417,498	551,666
- P-1 Line Item ABL Procurement	0	0	0	0	0	0	0	0	3,036,202	3,036,202
MILCON:										
(U) PE 0207150F Airborne Laser	0	0	0	0	0	0	0	59,758	52,627	112,385
Quantity**	0	0	0	0	0	0	0	0	7	7

NOTE - PE 0603605F, Advanced Weapons - supports ABL by developing technologies for potential performance enhancements above current requirements identified in ABL Operational Requirements Document (ORD).

* Total Cost amount for EMD has decreased from the FY99 PB value by \$25.935M due to combined effects of revised OSD inflation indices and the one year slip to the program resulting from the restructure.

** Quantity refers to production representative articles and includes retrofit of PDRR and EMD prototype ABLs to operational configuration

(U) **E. Acquisition Strategy:**

Milestone (MS) I decision was November 1996 authorizing entry into PDRR; MS II for EMD in FY 2004; MS III decision for Production in FY 2006. The PDRR program is structured to demonstrate technical risk reduction achievements at key junctures throughout the PDRR phase. The Air Force established reviews of the program at two key points: Authority-to-Proceed I and II (ATP-1 and ATP-2, respectively) during PDRR to ensure planned progress is attained. ABL successfully completed ATP-1 on 26 Jun 98. ATP-2 is now scheduled for September 2002. PDRR culminates in lethality (missile shoot-down) demonstrations against boosting theater ballistic missiles in FY 2003. RDT&E test articles will be refurbished to production representative articles using Procurement funds beginning in FY06.

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

BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603319F Airborne Laser Program	PROJECT 4269
------------------------------------------------------------	---------------------------------------------------------------	------------------------

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

BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603319F Airborne Laser Program	PROJECT 4269
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(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) Milestone I (FY 1997)																
(U) Order PDRR "Green" Aircraft		*														
(U) Flight-weighted Laser Module Demo			*													
(U) Preliminary Design Review			*													
(U) Authority to Proceed (ATP) - 1			*													
(U) Beam Control Processor Demo				*												
(U) North Oscura Peak Tests						X				X						
(U) Star Scintillometer Tests						X										
(U) Star Scint Tests In Theater (FY 2000)									TBD							
(U) "Green" Aircraft Delivery										X						
(U) Critical Design Review											X					
(U) Laser Module Airworthiness Demo												X				
(U) Aircraft Modifications Complete															X	
(U) Turret Window Fabrication Complete															X	
(U) Systems Integration Lab Handover																X
(U) ATP-2 (FY 2002)																
(U) Lethality Demonstration (FY 2003)																
(U) Milestone II (FY 2004)																
(U) Milestone III (FY 2006)																
(U) IOC (FY 2007)																
(U) FOC (FY 2009)																

* = Completed event
X = Planned event

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE February 1999	
BUDGET ACTIVITY 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603319F Airborne Laser Program					PROJECT 4269	
(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) Major Contracts (PDRR contract and Concept Design)					137,558	232,427	286,570	211,418			
(U) Support Contracts (Technical Support, Analysis)					4,581	4,310	3,465	3,505			
(U) Test/Other Government/Misc Support/Salaries/IPTs					11,400	20,600	18,599	26,134			
(U) Identified as a source for SBIR						8,342					
(U) Total					153,539	265,679	308,634	241,057			
(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							8,342				
8,342											
<u>Product Development Organizations</u>											
Boeing Defense & Space Group Seattle, WA	CPAF	12 Nov 96	1,303,982*	1,373,046**	32,523	137,558	232,427	286,570	211,418	472,550	1,373,046
Concept Design Contract (Rockwell International, CA)	CPFF	9 May 94	22,071	22,071	22,071	0	0	0	0	0	22,071
Project 4269											
Page 6 of 8 Pages											
Exhibit R-3 (PE 0603319F)											

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE February 1999	
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT	
4 - Demonstration and Validation					0603319F Airborne Laser Program					4269	
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
Concept Design Contract (Boeing Defense & Space Group, WA)	CPFF	9 May 94	21,689	21,689	21,689	0	0	0	0	0	21,689
<u>Support and Management Organizations</u>											
Technical Support Contracts	Various	Varies	N/A	N/A	10,884	4,581	4,310	3,465	3,505	11,838	38,583
Government In-House and Other External Support	Various	Varies	N/A	N/A	12,234	10,465	18,004	14,306	20,887	64,430	140,326
<u>Test and Evaluation Organizations</u>											
Air Force Flight Test Center (AFFTC) ***	MIPR	Varies	N/A	N/A	144	935	2,596	4,293	5,247	13,466	26,681
<p>Government Furnished Property: The government is providing miscellaneous support equipment during the test phase of the PDRR program. In addition, the government is also providing hardware items to facilitate Infrared Search and Track (IRST) tests. The costs of these two categories of GFP fall below the \$1M reporting threshold. In addition, targets for the PDRR test program will be provided as GFP. These targets will be called out separately when they become part of the GFP list on contract.</p> <p>* The change to the Performing Activity EAC is the result of adding a year to the program in conjunction with the contract restructure.</p> <p>** Project Office EAC includes program funds budgeted for risk mitigation identified during source selection and the program restructure.</p> <p>***AFFTC is the single face to the customer for Test and Evaluation. AFFTC receives funding from the Program Office and controls the distribution of these funds within AFFTC, the White Sands Missile Range (WSMR) and the Western Test Range (WTR).</p>											
Project 4269				Page 7 of 8 Pages				Exhibit R-3 (PE 0603319F)			

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1999
---------------------------------------------------------------	------------------------------

BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603319F Airborne Laser Program	PROJECT 4269
------------------------------------------------------------	---------------------------------------------------------------	------------------------

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

<u>Item Description</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Delivery Date</u>	<u>Total Prior to FY 1998</u>	<u>Budget FY 1998</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
Identified as a source for SBIR						8,342				8,342
Subtotal Product Development				76,283	137,558	232,427	286,570	211,418	472,550	1,416,806
Subtotal Support and Management				23,118	15,046	22,314	17,771	24,392	76,268	178,909
Subtotal Test and Evaluation				144	935	2,596	4,293	5,247	13,466	26,681
Total Project				99,545	153,539	265,679	308,634	241,057	562,284	1,630,738