

UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) | | | | | | | | DATE February 2000 | | |
|--|----------------------------|-------------------|---------------------|--|---------------------|---------------------|---------------------------|--------------------------|---------------------|------------|
| BUDGET ACTIVITY 04 - Demonstration and Validation | | | | PE NUMBER AND TITLE 0603319F Airborne Laser Technology | | | | PROJECT 644269 | | |
| 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 |
| 644269 | Airborne Laser | 252,449 | 304,184 | 148,637 | 140,673 | 111,804 | 108,936 | 98,937 | 0 | 1,418,704 |
| | Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| <p>-- This funding profile reflects a Government Only estimate - contractor involvement precluded until after FY 2001 President's Budget is submitted to Congress</p> <p>-- The total cost reflects cost for Concept Design and Program Definition and Risk Reduction (PDRR) only and contains \$253.084M in funds prior to FY 1999</p> <p>-- Quantity of RDT&E Articles total includes purchase of a commercial 747-400F aircraft for PDRR phase. Purchase began in FY 1998 and was delivered in January, 2000</p> <p>(U) <u>A. Mission Description</u> 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 FY 1998. The PDRR phase culminates in lethality (missile shoot-down) demonstrations against boosting TBM representative targets in FY 2005. The PDRR phase will integrate and test key technologies. The EMD program is currently scheduled to begin in FY 2005.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u></p> <p>(U) \$192,319 Continued Boeing/TRW/Lockheed-Martin PDRR contract effort for design, fabrication, integration, and testing the ABL weapon system, including beginning design of the Systems Integration Lab (SIL) at Birk facility at Edwards AFB, CA</p> <p>(U) \$34,669 PDRR commercial aircraft payments</p> <p>(U) \$5,470 Continued support for special studies, simulations and analyses, technical support, risk management, and an independent review team specializing in lasers, aircraft, and aircraft integration</p> <p>(U) \$19,991 Continued support for atmospheric characterization tests (North Oscura Peak (NOP), star scintillometer), labor, training, Integrated Product Team (IPT) participation, and other government agencies.</p> <p>(U) \$252,449 Total</p> | | | | | | | | | | |
| Project 644269 | | | Page 1 of 6 Pages | | | | Exhibit R-2 (PE 0603319F) | | | |

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|---|---|------------------------------|----------------|-------------------|----------------|----------------|----------------|-------------------|---|---------|---------|---------|-----------|------------------------|---------|---------|--|--|---------------------------------------|--|--|--|--|-------------------------------------|------|-----|--|--|---------------------------------------|--------|--|--|--|---|--|--------|--|--|
| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 - Demonstration and Validation | 0603319F Airborne Laser Technology | 644269 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2000 (\$ in Thousands)</u></p> <p>(U) \$202,850 Continue Boeing/TRW/Lockheed-Martin PDRR contract effort for design, fabrication, integration, and testing the ABL weapon system, including design of SIL at Birk facility at Edwards AFB, CA</p> <p>(U) \$83,778 Final PDRR commercial aircraft payment (aircraft delivery)</p> <p>(U) \$4,327 Continue support for special studies, simulations and analyses, technical support, risk management, and an independent review team specializing in lasers, aircraft, and aircraft integration</p> <p>(U) \$13,229 Continue support for labor, training, IPT participation, and other government agencies; conducts overseas star scintillometer campaign</p> <p>(U) \$304,184 Total</p> <p>Note: ABL has gone through a restructure which was not completed until after the FY 2000 PB submission. This accounts for the variability of costs since the FY 2000 PB.</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <p>(U) \$138,000 Continue Boeing/TRW/Lockheed-Martin PDRR contract effort for design, fabrication, integration, and testing the ABL weapon system, including design of SIL at Birk facility at Edwards AFB, CA or to Wichita facility at Wichita, KS</p> <p>(U) \$3,874 Continue support for special studies, simulations and analyses, technical support, risk management, and an independent review team specializing in lasers, aircraft, and aircraft integration</p> <p>(U) \$6,763 Continue support for labor, training, IPT participation, and other government agencies</p> <p>(U) \$148,637 Total</p> <p>(U) <u>B. Budget Activity Justification</u></p> <p>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.</p> <p>(U) <u>C. Program Change Summary (\$ in Thousands)</u></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 10%; text-align: center;"><u>FY 1999</u></th> <th style="width: 10%; text-align: center;"><u>FY 2000</u></th> <th style="width: 10%; text-align: center;"><u>FY 2001</u></th> <th style="width: 10%; text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY 2000 PBR)</td> <td style="text-align: right;">265,679</td> <td style="text-align: right;">308,634</td> <td style="text-align: right;">241,057</td> <td style="text-align: right;">1,630,738</td> </tr> <tr> <td>(U) Appropriated Value</td> <td style="text-align: right;">267,219</td> <td style="text-align: right;">308,634</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> a. Congressional/General Reductions</td> <td style="text-align: right;">-785</td> <td style="text-align: right;">-62</td> <td></td> <td></td> </tr> <tr> <td> b. Small Business Innovative Research</td> <td style="text-align: right;">-8,342</td> <td></td> <td></td> <td></td> </tr> <tr> <td> c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td style="text-align: right;">-2,465</td> <td></td> <td></td> </tr> </tbody> </table> | | | | | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Total Cost</u> | (U) Previous President's Budget (FY 2000 PBR) | 265,679 | 308,634 | 241,057 | 1,630,738 | (U) Appropriated Value | 267,219 | 308,634 | | | (U) Adjustments to Appropriated Value | | | | | a. Congressional/General Reductions | -785 | -62 | | | b. Small Business Innovative Research | -8,342 | | | | c. Omnibus or Other Above Threshold Reprogram | | -2,465 | | |
| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Total Cost</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (U) Previous President's Budget (FY 2000 PBR) | 265,679 | 308,634 | 241,057 | 1,630,738 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (U) Appropriated Value | 267,219 | 308,634 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (U) Adjustments to Appropriated Value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. Congressional/General Reductions | -785 | -62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b. Small Business Innovative Research | -8,342 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c. Omnibus or Other Above Threshold Reprogram | | -2,465 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project 644269 | | Exhibit R-2 (PE 0603319F) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) | | | | | | | DATE February 2000 | | | |
|--|---|----------------|---|-----------------|-----------------|---------------------------|-----------------------|-------------------|-----------------|-------------------|
| BUDGET ACTIVITY | | | PE NUMBER AND TITLE | | | | PROJECT | | | |
| 04 - Demonstration and Validation | | | 0603319F Airborne Laser Technology | | | | 644269 | | | |
| (U) C. Program Change Summary (\$ in Thousands) Continued | | | | | | | | | | |
| | | | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>FY 2002</u> | <u>FY 2003</u> | <u>Total Cost</u> | | |
| | d. Below Threshold Reprogram | | -3,476 | | | | | | | |
| | e. Rescissions | | -2,167 | -1,923 | | | | | | |
| | f. Other | | | | | | | | | |
| (U) | Adjustments to Budget Years Since FY 2000 PBR | | | | | | -92,420 | | | |
| (U) | Current Budget Submit/FY 2001 PBR | | 252,449 | 304,184 | 148,637 | | | 1,418,704 | | |
| | Note: FY 1999 \$3.7M BTR into ABL for mandated overseas star scintillometer tests not reflected in table above. | | | | | | | | | |
| (U) Significant Program Changes: | | | | | | | | | | |
| | Significant Program Changes: The Department of Defense restructured the program to delay lethal demonstration of a boosting theater ballistic missile (TBM) from FY 2003 to FY 2005 and Initial Operational Capability (IOC)/Full Operational Capability (FOC) are TBD. | | | | | | | | | |
| (U) D. Other Program Funding Summary (\$ in Thousands) | | | | | | | | | | |
| | | <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>Cost to</u> | <u>Total Cost</u> |
| | | <u>Actual</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Complete</u> | |
| (U) | AF RDT&E | | | | | | | | | |
| (U) | PE 0604350F Airborne Laser EMD | 0 | 0 | 0 | 0 | 0 | 0 | 197,818 | 1,927,000 | 2,124,818 |
| (U) | Quantity* | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| (U) | Other APPN | | | | | | | | | |
| | Note 1 - PE 0603605F, Advanced Weapons - supports ABL by developing technologies for potential performance enhancements above current requirements identified in ABL Operational Requirements Document (ORD) | | | | | | | | | |
| | Note 2 - PE 0207150, ABL Procurement (including MILCON) has moved outside the FYDP. It is planned that this PE will procure 5 new ABL weapon systems and refurbish the 2 RDT&E test articles to production-representative configurations. | | | | | | | | | |
| | * Quantity refers to EMD RDT&E test article only (PE 0604350F). ABL purchased an RDT&E test article (the PDRR a/c) beginning in FY 1998 (PE 0603319F). | | | | | | | | | |
| Project 644269 | | | Page 3 of 6 Pages | | | Exhibit R-2 (PE 0603319F) | | | | |

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|--|------------------------------|
| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) | DATE February 2000 |
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| | | |
|---|--|--------------------------|
| BUDGET ACTIVITY 04 - Demonstration and Validation | PE NUMBER AND TITLE 0603319F Airborne Laser Technology | PROJECT 644269 |
|---|--|--------------------------|

(U) **E. Acquisition Strategy**
 Milestone (MS) I decision was November 1996 authorizing entry into PDRR. MS II for EMD is projected in FY 2005; MS III decision for Production is to be determined (TBD). 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 currently scheduled for FY 2004. PDRR culminates in lethality (missile shoot-down) demonstrations against boosting theater ballistic missiles in FY 2005. RDT&E test articles will be refurbished to production representative articles using Procurement funds.

(U) **F. Schedule Profile**

| | <u>FY 1999</u> | | | | <u>FY 2000</u> | | | | <u>FY 2001</u> | | | |
|---|----------------|---|---|---|----------------|---|---|---|----------------|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| (U) Milestone I (FY 1997) | | | | | | | | | | | | |
| (U) Authority to Proceed (ATP-1)(FY 1998) | | | | | | | | | | | | |
| (U) Beam Control Processor Demo | * | | | | | | | | | | | |
| (U) North Oscura Peak Integration and Tests | | | * | * | * | X | X | | | | | |
| (U) Star Scintillometer Tests (CONUS) | | | * | * | | | | | | | | |
| (U) Star Scintillometer Tests (Theater) | | | | | * | X | X | | | | | |
| (U) Green Aircraft delivered to Wichita | | | | | | X | | | | | | |
| (U) Critical Design Review | | | | | | | X | | | | | |
| (U) Turret Window Fabrication Complete | | | | | | | | | | | X | |
| (U) Laser Module Airworthiness Demo | | | | | | | | | | | | X |
| (U) Aircraft Modifications Complete (FY 2002) | | | | | | | | | | | | |
| (U) Systems Integration Lab Handover (FY 2003) | | | | | | | | | | | | |
| (U) ATP-2 (FY 2004) | | | | | | | | | | | | |
| (U) Lethality Demonstration (FY 2005 timeframe) | | | | | | | | | | | | |
| (U) Milestone II (FY 2005 timeframe) | | | | | | | | | | | | |
| (U) Milestone III (TBD) | | | | | | | | | | | | |
| (U) IOC (TBD) | | | | | | | | | | | | |
| (U) FOC (TBD) | | | | | | | | | | | | |

* = Completed Event
 X = Planned Event

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) | | | | | | | | DATE February 2000 | | |
|--|--|-------------------|-------------------|----------------|---|----------------|----------------|-----------------------|------------------|----------------|
| BUDGET ACTIVITY 04 - Demonstration and Validation | | | | | PE NUMBER AND TITLE 0603319F Airborne Laser Technology | | | PROJECT 644269 | | |
| (U) <u>A. Project Cost Breakdown (\$ in Thousands)</u> | | | | | | | | | | |
| | | | | | | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | | |
| (U) | Major Contracts (PDRR contract and Concept Design) | | | | | 226,988 | 286,628 | 138,000 | | |
| (U) | Support Contracts (Technical Support, Analysis) | | | | | 5,470 | 4,327 | 3,874 | | |
| (U) | Test/Other Government/Misc Support/Salaries/IPTs | | | | | 19,991 | 13,229 | 6,763 | | |
| (U) | Total | | | | | 252,449 | 304,184 | 148,637 | | |
| (U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> | | | | | | | | | | |
| (U) <u>Performing Organizations:</u> | | | | | | | | | | |
| <u>Contractor or</u> | <u>Contract</u> | | | | | | | | | |
| <u>Government</u> | <u>Method/Type</u> | <u>Award or</u> | <u>Performing</u> | <u>Project</u> | | | | | | |
| <u>Performing</u> | <u>or Funding</u> | <u>Obligation</u> | <u>Activity</u> | <u>Office</u> | <u>Total Prior</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget to</u> | <u>Total</u> |
| <u>Activity</u> | <u>Vehicle</u> | <u>Date</u> | <u>EAC</u> | <u>EAC</u> | <u>to FY 1999</u> | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u> | <u>Program</u> |
| <u>Product Development Organizations</u> | | | | | | | | | | |
| Boeing Defense & Space | CPAF | 12 Nov 96 | TBD | 1,249,697 | 170,081 | 226,988 | 286,628 | 138,000 | 428,000 | 1,249,697 |
| Group Seattle, WA | | | | | | | | | | |
| Concept Design Contract | CPFF | 9 May 94 | 22,071 | 22,071 | 22,071 | 0 | 0 | 0 | 0 | 22,071 |
| (Rockwell International, CA) | | | | | | | | | | |
| Concept Design Contract | CPFF | 9 May 94 | 21,689 | 21,689 | 21,689 | 0 | 0 | 0 | 0 | 21,689 |
| (Boeing Defense & Space | | | | | | | | | | |
| Group, WA) | | | | | | | | | | |
| Note - The revised program cannot be discussed with the contractor until after the FY 2001 PB is submitted to Congress. Therefore, we have no performing activity estimate at completion (EAC) at this time. | | | | | | | | | | |
| <u>Support and Management Organizations</u> | | | | | | | | | | |
| Technical Support Contracts | Various | Varies | N/A | N/A | 15,465 | 5,470 | 4,327 | 3,874 | 12,000 | 41,136 |
| Government In-House and | Various | Varies | N/A | N/A | 22,699 | 18,491 | 10,259 | 5,089 | 12,576 | 69,114 |
| Other External Support | | | | | | | | | | |
| <u>Test and Evaluation Organizations</u> | | | | | | | | | | |
| Air Force Flight Test Center | MIPR | Varies | N/A | N/A | 1,079 | 1,500 | 2,970 | 1,674 | 7,774 | 14,997 |
| (AFFTC) | | | | | | | | | | |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) | | | | | | | DATE February 2000 | | |
|---|--------------------|-------------------|-----------------|---|----------------|----------------|-----------------------|------------------|----------------|
| BUDGET ACTIVITY | | | | PE NUMBER AND TITLE | | | PROJECT | | |
| 04 - Demonstration and Validation | | | | 0603319F Airborne Laser Technology | | | 644269 | | |
| (U) Government Furnished Property: | | | | | | | | | |
| | <u>Contract</u> | | | | | | | | |
| | <u>Method/Type</u> | <u>Award or</u> | | | | | | | |
| <u>Item</u> | <u>or Funding</u> | <u>Obligation</u> | <u>Delivery</u> | <u>Total Prior</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget to</u> | <u>Total</u> |
| <u>Description</u> | <u>Vehicle</u> | <u>Date</u> | <u>Date</u> | <u>to FY 1999</u> | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u> | <u>Program</u> |
| <u>Product Development Property</u> | | | | | | | | | |
| 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 and will be listed separately when they become part of the contract. | | | | | | | | | |
| -- AFFTC is the sole representative 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). | | | | | | | | | |
| <u>Support and Management Property</u> | | | | | | | | | |
| <u>Test and Evaluation Property</u> | | | | | | | | | |
| | | | | <u>Total Prior</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget to</u> | <u>Total</u> |
| <u>Subtotals</u> | | | | <u>to FY 1999</u> | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u> | <u>Program</u> |
| Subtotal Product Development | | | | 213,841 | 226,988 | 286,628 | 138,000 | 428,000 | 1,293,457 |
| Subtotal Support and Management | | | | 38,164 | 23,961 | 14,586 | 8,963 | 24,576 | 110,250 |
| Subtotal Test and Evaluation | | | | 1,079 | 1,500 | 2,970 | 1,674 | 7,774 | 14,997 |
| Total Project | | | | 253,084 | 252,449 | 304,184 | 148,637 | 460,350 | 1,418,704 |