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

DATE: June 2001

BUDGET ACTIVITY: 07 - Operational System Development

PE NUMBER AND TITLE: 0702207F Depot Maintenance (Non-IF)

PROJECT: 3326

COST ($ in Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
3326	Precision Measurement & Calibration	4,605	3,482	1,542	1,569	1,599	1,627	1,661	1,696	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

FY03-FY07 budget numbers do not reflect DoD's strategic review results.

(U) A. Mission Description

This program develops, tests, and evaluates national and Air Force measurement standards (hardware) and calibration equipment in support of all Air Force programs and activities, including 113 Precision Measurement Equipment Laboratories (PMELs) worldwide. Metrology research and development provides technology to support systems in all phases of development and acquisition, as well as Air Force R&D laboratories, test ranges, ground test facilities, and operational weapons systems support. Rapidly changing technology requires continuing research and development of measurement standards and calibration equipment to ensure modern weapon systems meet Air Force readiness objectives. This program addresses all metrology disciplines and includes the technology areas of laser, infrared, microwave, millimeter wave, optical, physical, mechanical, electrical, electronic, and ionizing radiation measurements. Metrology is a technical discipline devoted to the science of measurements and to the study and improvement of measurement technology. Measurements are the foundation of military system development, quality assurance, hardware conformance testing and system readiness tests. The integrity of these tests is assured through calibration and traceability assurance schemes. The capability to measure and calibrate must parallel the emergence of new technology, new ranges, and new capabilities of military systems. Lack of new measurement capability impedes or blocks the successful exploitation of new technologies, especially in the movement from development laboratory to production to deployment. R&D efforts are essential within the DoD to pace these requirements, otherwise, these same new systems will suffer time delays, excessive cost, and increased risk due to unreliable test results in all phases of development, production, deployment and operation.

(U) FY 2000 ($ in Thousands)

(U) $2,200 Complete the development of an improved blackbody calibrator; begin projects to develop a target simulator radiometer, an improved avalanche photodiode and a domain engineered pyroelectric detector; and continue development of national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.

(U) $1,095 Complete the development of the microwave high power system; begin projects to develop a full scale co-conical field generation system and a direct comparison power calibration system for 2.4mm, 2.92mm and 3.5mm connectors; and continue development of standards for radar support, RF communications systems, and radar cross-section range measurements.

(U) $720 Begin hydrazine detector cal support and low gas flow MAP; and continue the development of improved calibration support for coordinate measuring machines (CMMs), wind tunnel characterization and standards to support physical, mechanical and electro-mechanical support

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(U) A. Mission Description Continued

(U) FY 2000 ($ in Thousands) Continued

equipment.

(U) $455 Begin to develop methods to characterize enhanced wide band oscilloscopes and precision wide band measurement systems; and continue development of standards for electrical measurements to support high accuracy electronic test equipment.

(U) $135 Complete the large area alpha radiation source metrology project, begin the low level dosimetry traceability project and continue the development of national standards for calibration of ionizing radiation hazard instrumentation.

(U) $4,605 Total

(U) FY 2001 ($ in Thousands)

(U) $1,522 Complete the avalanche photodiode improvement and tunable laser projects; and continue development of national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.

(U) $350 Continue development of standards for radar support, RF communications systems, and radar cross-section range measurements.

(U) $175 Complete development of improved calibration support for coordinate measuring machines (CMMs), and wind tunnel characterization; and continue development of standards to support physical, mechanical and electro-mechanical support equipment.

(U) $595 Complete the frequency response characteristics of capacitors and the next generation sampling comparator probe projects; and continue development of standards for electrical measurements to support high accuracy electronic test equipment.

(U) $115 Complete the large area beta source project and continue the development of national standards for calibration of ionizing radiation hazard instrumentation.

(U) $725 Begin to develop methods to automate metrology processes.

(U) $3,482 Total

(U) FY 2002 ($ in Thousands)

(U) $692 Complete the target simulator radiometer; and continue development of national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.

(U) $200 Complete the full scale co-conical chamber; and continue development of standards for radar support, RF communications systems, and radar cross-section range measurements.

(U) $220 Complete hydrazine detector cal support and low gas flow MAP; and continue the development of improved calibration standards to support physical, mechanical and electro-mechanical support equipment.

(U) $200 Complete the Hall effect resistance standard project, and the improved thin film multi junction thermoconverter project; and continue development of standards for electrical measurements to support high accuracy electronic test equipment.

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(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

(U)	$50	Complete the low level dosimetry traceability project and continue the development of national standards for calibration of ionizing radiation hazard instrumentation.
(U)	$180	Continue to develop methods to automate metrology processes.
(U)	$1,542	Total

(U) B. Budget Activity Justification

This program is in budget activity 7 - Operational System Development because it supports operational systems.

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

		FY 2000	FY 2001	FY 2002	Total Cost
(U)	Previous President's Budget (FY 2001 PBR)	1,500	1,515	1,533	TBD
(U)	Appropriated Value	4,744	1,515		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions		1,975		
	b. Small Business Innovative Research				
	c. Omnibus or Other Above Threshold Reprogram	-26			
	d. Below Threshold Reprogram				
	e. Rescissions	-19	-8		
(U)	Adjustments to Budget Years Since FY 2001 PBR	-94		9	
(U)	Current Budget Submit/FY 2002 PBR	4,605	3,482	1,542	TBD

(U) Significant Program Changes:

The additional funding in FY00/01 is to expedite the completion of several metrology projects such as to: develop the microwave high power system; develop a full scale co-conical field generation capability; improve blackbody calibration; develop target simulator radiometer calibration capability; develop direct comparison power calibration system; and develop methods to characterize bench top wind tunnels. It will also be used to address requirements in areas such as automated metrology that could not be funded at previous levels.

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

	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
(U) AF RDT&E										
(U) Other APPN										

(U) E. Acquisition Strategy

Primarily accomplish through intergovernmental transfer between the Department of Defense and other Federal Departments. Secondarily, accomplish through various funding vehicles.

(U) F. Schedule Profile

	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) N/A												

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

DATE: June 2001

BUDGET ACTIVITY: 07 - Operational System Development

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(U) A. Project Cost Breakdown ($ in Thousands)

		FY 2000	FY 2001	FY 2002
(U)	Quality Assurance (Develop Measurement Standards & Calibration Support)	4,576	3,452	1,511
(U)	Travel	29	30	31
(U)	Total	4,605	3,482	1,542

(U) B. 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 2000	Budget FY 2000	Budget FY 2001	Budget FY 2002	Budget to Complete	Total Program
Product Development Organizations										
National Institute of Standards & Technology	MIPR (DD FORM 448)	Varies	TBD	TBD	14,980	4,266	2,647	1,211	Continuing	TBD
Department of Energy	MIPR (DD FORM 448)	Varies	TBD	TBD	59	310	80	120	Continuing	TBD
Technical Support Contracts	Various	Varies	TBD	TBD			725	180	Continuing	TBD
AFMC	In House	Varies	TBD	TBD	173	29	30	31	Continuing	TBD
Support and Management Organizations										
Test and Evaluation Organizations										

Subtotals	Total Prior to FY 2000	Budget FY 2000	Budget FY 2001	Budget FY 2002	Budget to Complete	Total Program
Subtotal Product Development	15,212	4,605	3,482	1,542	TBD	TBD
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project	15,212	4,605	3,482	1,542	TBD	TBD