ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE
1 - Basic research	**0601103A - University Research Sciences (H)**

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total Program Element (PE) Cost		82721	83959	67201	67510	69097	70300	71701	73127
D55	UNIVERSITY RESEARCH INITIATIVE	62258	71976	67201	67510	69097	70300	71701	73127
D58	URI ACTIVITIES (CA)	20463	9108	0	0	0	0	0	0
D62	BIOINFORMATICS RESEARCH (CA)	0	1917	0	0	0	0	0	0
D63	INST OF BIOENGINEERING AND NANOSCIENCE IN ADV MED	0	958	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: In FY03 and prior years, the Office of the Secretary of Defense University Research Initiative (URI) PE 601103D8Z contained funds for several university research, education and infrastructure programs. Starting in FY04, a portion of these OSD funds were transferred to the Army in Project D55 in support of the Multidisciplinary University Research Initiative (MURI), the Defense University Research Instrumentation Program (DURIP) and the Presidential Early Career Awards for Scientists and Engineers (PECASE) program. The MURI program supports basic research in a wide range of scientific and engineering disciplines pertinent to maintaining the U.S. land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g. Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers. Project D58 includes funding for specific Congressional Interest URIs. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Department of Defense Basic Research Plan (BRP). Work on this project is performed extramurally by the Army Research Laboratory (ARL).

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	75133	70413	66450
Current Budget (FY 2006/2007 PB)	83959	67201	67510
Total Adjustments	8826	-3212	1060
Net of Program/Database Changes			
Congressional Program Reductions	-1260		
Congressional Rescissions			
Congressional Increases	12500		
Reprogrammings			
SBIR/STTR Transfer	-2414		
Adjustments to Budget Years		-3212	1060

Change Summary Explanation:

Nine FY05 Congressional Adds totaling $12500 were added to this PE.

FY05 Congressional Adds with no R-2As:

($1438) Army Force Protection, Project D58: The purpose of this one year Congressional add is to fund basic research in Army force protection. No additional funding is required to complete this project.

($1918) Bioinformatics Research, Project D62: The purpose of this one year Congressional add is to fund basic research in bioinformatics. No additional funds are required to complete this project.

($959) Cognitive Wireless Networks, Project D58: The purpose of this one year Congressional add is to fund basic research in cognitive wireless networks.

($959) Desert Environmental Research, Project D58: The purpose of this one year Congressional add is to fund desert environmental research at the University of Redlands, Redlands, CA. No additional funds are required to complete this project.

($958) Institute of Bioengineering and Nanoscience in Advanced Medicine, Project D63: The purpose of this one year Congressional add is to fund research at the Institute for Bioengineering and Nanoscience in Advanced Medicine at Northwestern University, Chicago, IL. No additional funds are required to complete this project.

($959) Laboratory for Engineered Human Protection (LEHP), Project D58: The purpose of this one year Congressional add is to fund research at Philadelphia University on the development and evaluation of comfort-driven protective systems for the military and the civilian sectors. No additional funds are required to complete this project.

($1918) Low temperature Research Center, Project D58: The purpose of this one year Congressional add is to fund research at Wayne State University to provide an understanding of the effects of low temperatures on ground vehicle systems to enhance soldier mobility. No additional funding is required to complete this project

($959) MEMS Sensor for Rolling Element Bearing, Project D58: The purpose of this one year Congressional add is to fund research in micro-electro-mechanical systems sensors in rolling element bearings. No additional funds are required to complete this project.

($1918) Smart Responsive Nanocomposite Systems, Project D58: The purpose of this one year Congressional add is to fund research in nanocomposites. No additional funding is required to complete this project.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
1 - Basic research	**0601103A - University Research Sciences (H)**	**D55**

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
D55	UNIVERSITY RESEARCH INITIATIVE	62258	71976	67201	67510	69097	70300	71701	73127

A. Mission Description and Budget Item Justification: This Project supports the Multidisciplinary University Research Initiative (MURI) and the Defense University Research Instrumentation Program (DURIP). The MURI program funds university basic research in a wide range of scientific and engineering disciplines pertinent to maintaining the U.S. land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g. Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. This PE also supports Presidential Early Career Awards for Scientists and Engineers (PECASE). The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Department of Defense Basic Research Plan (BRP). Work on this project is performed extramurally by the Army Research Laboratory (ARL).

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
1 - Basic research	**0601103A - University Research Sciences (H)**	**D55**

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
In FY04, made 9 new awards and continued supporting the 54 MURI awards made in prior years. A few key continuing MURI research topics include: National Nanoscience Initiative, Critical Infrastructure Protection, Fundamental Issues Underlying Infrared Detection; Ultrawide-band Communications; New Adaptive, Reconfigurable RF Radio/Sensor Concepts; Biological and Chemical Sensing at Terahertz Frequency. In FY05, continue supporting MURI awards made in prior years and make 8 new awards. Topic areas for the FY05 MURI research competition will be in Wireless Communications Networks, Autonomous and Semi-Autonomous Vehicle Swarms, Electronic Systems, Quantum Imaging, Network Battlefield Training, Materials Engineering, and Future Force Insensitive Munitions. In FY06 and FY07 support MURI awards made in prior years and initiate new awards in research critical to the Army's Future Operating Capabilities with an emphasis on biomolecular electronics, bio-electrochemical sensors, and human engineering research for humans-in-automation systems.	50501	57223	50097	52364
In FY04 continued supporting those PECASE investigators started in prior years. In FY05, FY06, FY07 competitively select two new young investigators each year under the PECASE program.	899	1053	954	1016
In FY04, awarded 63 competitive grants for the acquisition of research instrumentation under the Defense University Research Instrumentation Program (DURIP). Emphasis is on instrumentation vital to the discovery of new scientific knowledge and the advancement of Army transformational technologies. Research instrumentation awards are generally over $150K each. In FY05, award competitive grants for the acquisition of research instrumentation. Continue to emphasize instrumentation that enhances the research infrastructure and provides new research capabilities to enable scientific exploration and discovery in burgeoning areas vital to Army transformational technologies. In FY05, FY06, FY07 award additional competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research critical to Army Transformation.	10858	13700	16150	14130
Totals	62258	71976	67201	67510