ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2004

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0605706A - MATERIEL SYSTEMS ANALYSIS**	**541**

COST (In Thousands)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
541	MATERIEL SYS ANALYSIS	8978	15642	18000	18489	18486	18396	18393

A. Mission Description and Budget Item Justification: This program element funds Department of the Army civilians at the Army Materiel Systems Analysis Activity (AMSAA) to conduct its mission of materiel systems analysis.

The increase in funding from FY2004 to FY2005 is due to Army Leadership's high priority requirement of AMSAA's weapons systems performance and effectiveness analyses. The increase in funding from FY2003 to FY2004 provides funding reprogrammed from PE 0605803A to pay civilian authorizations.

AMSAA is the Army's center for item/system level performance analysis and certified data. In accomplishing its materiel systems analysis mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and existing systems. Unique models and methodologies have been developed to predict critical performance variables, such as, weapon accuracy, target acquisition, rate of fire, probability of inflicting catastrophic damage, and system reliability. AMSAA is responsible for the generation of these performance and effectiveness measures and for ensuring their standard use across major Army and Joint studies. AMSAA conducts and supports various systems analyses, such as: Analyses of Alternatives (AoAs), system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, and requirements analyses. These analyses are used by Army and Department of Defense (DoD) leadership in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the soldiers.

AMSAA's modeling and simulation (M&S) capabilities support the development, linkage, and accreditation of live, virtual, and constructive simulations, and provide unique tools that support systems analysis of individual systems and the combined-arms environment. AMSAA has resident and maintains a significant number of models and simulations, most of which were developed in-house to address specific analytical voids. This M&S infrastructure provides a hierarchical modeling process that is unique to AMSAA and allows for a comprehensive performance and effectiveness prediction capability that can be utilized to make trade-off and investment decisions prior to extensive and expensive hardware testing. AMSAA is the Army's executive agent for the verification, validation, and accreditation (VV&A) of item/system level performance models. In this role, AMSAA assists model developers with the development and execution of verification and validation (V&V) plans to ensure new models and simulations faithfully represent actual systems.

AMSAA serves as the Army's Executive Agent for reliability and maintainability standardization improvement by developing and implementing reliability and maintainability acquisition reform initiatives. AMSAA develops and applies reliability-engineering approaches that assess the reliability of Army materiel and recommends ways to improve reliability, thereby, reducing the logistics footprint, reducing life cycle costs, and extending

failure free periods for deployed equipment. AMSAA's electronic and mechanical Physics of Failure (PoF) program pioneered the Army's involvement in utilizing computer-aided engineering tools in the analysis of root-cause failure mechanisms at the component level during the system design process.

As the Army's center for materiel systems analysis, AMSAA provides the technical capability to support Army and DoD decision-makers throughout the entire materiel acquisition process in responding to analytic requirements across the full spectrum of materiel. It is critical that the Army have access to AMSAA's integrated analytical capability that provides timely, reliable, and high quality analysis on which Army leadership can base the complex decisions required to shape the future Army. AMSAA has developed an integrated set of skills and tools focused on its core competencies to be responsive to the breadth and depth of systems analysis requirements critical in supporting Army Transformation decisions.

The capabilities of AMSAA in the RDT&E area are critical to the success of the Transformation Campaign Plan specifically:

Line of Operation 2: Modernization and Re-capitalization
Line of Operation 8: Operational Force Design
Line of Operation 9: Deploying and Sustaining
Line of Operation 10: Develop and Acquire Advanced Technology

This Project funds the salaries of civilian employees assigned to the materiel systems analysis mission. This system supports the salaries of civilian employees assigned to the materiel systems analysis mission.

Accomplishments/Planned Program	FY 2003	FY 2004	FY 2005
Funding directly pays DA civilians at U.S. Army Materiel Systems Analysis Activity (AMSAA) who are responsible for developing & certifying system performance & effectiveness data (e.g., delivery accuracy, target acquisition, probability of inflicting catastrophic damage, etc.) for U.S. & foreign systems to be used during Army & Joint Analyses of Alternatives (AoA), force structure studies, & theater level studies. Analyses of performance & combat effectiveness of materiel systems & technology base programs are conducted in support of DA, AMC, RDECOM, PEOs/PMs, TRADOC, & ATEC. Included in these analyses are conduct of & support to: AoAs, system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion studies, reliability growth studies, & physics of failure analyses. Examples of programs supported with critical analyses: Future Combat System (FCS), Comanche, Stryker, Objective Individual Combat Weapon (OICW), Objective Crew Served Weapon (OCSW), WIN-T, UAVs, Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), Joint Tactical Radio System (JTRS), Digitization Brigade & Below (DB2), APKWS, and PGMM. AMSAA develops & modifies system level methodologies, models & simulations to be used in the conduct of analyses. Examples of efforts include modeling of military operations in urban terrain (MOUT), several aviation modeling improvements, search & target acquisition methodology improvements, sensor fusion modeling, expansion of mechanical & electronic physics of failure modeling, individual combat evaluation model, synthetic aperture radar methodology, vehicle performance methodology, active protection system performance, & non-lethal weapons performance & effectiveness estimation methodology. AMSAA also performs verification, validation, & accreditation of item/system level performance models which ensures new models & simulations faithfully represent actual systems.	8978	15521	18000
Small Business Innovative Research/Small Business Technology Transfer Programs.	0	121	0
Totals	8978	15642	18000

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004)	8982	15832	16209
Current Budget (FY 2005 PB)	8978	15642	18000
Total Adjustments	-4	-190	1791
Congressional program reductions		-135	
Congressional rescissions			
Congressional increases			
Reprogrammings	-4	-55	
SBIR/STTR Transfer			
Adjustments to Budget Years			1791

Change Summary Explanation: Funding - FY 2005: Funds realigned due to Army Leadership's high priority requirement of weapons systems performance and effectiveness analyses (+1791).