ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

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

COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
541 MATERIEL SYS ANALYSIS	16464	16423	17028	17375	15563	15907	16298

A. Mission Description and Budget Item Justification: This program element funds Department of the Army (DA) civilians at the Army Materiel Systems Analysis Activity (AMSAA) to conduct its mission of materiel systems analysis, the development and certification of systems performance data, and the development of systems performance methodology and Modeling and Simulation (M&S).

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 science and technology tradeoffs, weapons mix analyses, system risk assessments, analytical support for Test and Evaluation, and requirements analyses. These analyses are used by Army (Research, Development and Engineering Command (RDECOM)/Army Materiel Command (AMC), Program Executive Officers (PEO)/Project Managers (PM), Department of Army (DA) staff/Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT))) and Department of Defense (DoD) leadership in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the Soldier.

AMSAA's 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 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 of item/system level performance models. In this role, AMSAA assists model developers with the development and execution of verification and validation plans to ensure new models and simulations provide credible information/results for decision making.

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 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. AMSAA reliability engineering and PoF tools/analyses have been used extensively to support the design improvement of developmental systems and fielded systems used in Current Operations resulting in improved reliability, reduced Operational and Support costs, and reduced logistics expenditures and foot print.

As the Army's center for materiel systems analysis, AMSAA provides the technical capability to support Army and DoD decision makers throughout the entire acquisition process in responding to analytical requirements across the full spectrum of materiel. AMSAA's unique, integrated analytical capability is a critical asset that provides Army leadership with timely, reliable, and high quality analysis to support complex decisions required for Army Transformation and Current Operations. AMSAA has developed an integrated set

of skills and tools focused on its core mission to be responsive to the breadth and depth of systems analysis requirements critical in supporting Army decisions.

AMSAA is providing assistance to the Army Evaluation Command to assess and determine the essential analytical requirements to enhance Army evaluations. AMSAA's support in this area will improve evaluation products and result in better materiel solutions to the Warfighter. AMSAA is providing this assistance to various ACAT systems and quick response analysis in support of rapid initiatives for Current Operations.

Accomplishments/Planned Program:	FY 2007	FY 2008	FY 2009
This project funds the salaries of civilian employees assigned to the materiel systems analysis mission.			
Pays DA civilians at AMSAA who are responsible for developing and certifying weapon/materiel system performance and effectiveness data for U.S. and foreign systems to be used during Army and Joint AoAs, force structure studies, and theater level studies. Performance and combat effectiveness analyses of materiel systems and technology base programs are conducted in support of DA, the Army Materiel Command, the Research, Development and Engineering Command, Program Executive Officers/Program Managers, the Training and Doctrine Command and the Army Test and Evaluation Command. These analyses include the conduct of and support to: AoAs, system cost/performance tradeoffs, early technology tradeoffs, weapons/systems mix analyses, requirements analyses, technology insertion studies, reliability growth studies, and PoF analyses. Examples of programs to be supported with critical analyses: Future Combat Systems Brigade Combat Team (FBCT), Experimental Brigade Combat Team (EBCT), Mine Resistant Ambush Protected (MRAP) System assessment, Joint Light Tactical Vehicle (JLTV), Joint Non-Lethal Weapons Program (JNLWP), Intelligent Munitions System (IMS), Stryker, and Future Force Warrior. AMSAA develops and modifies system level methodologies, models, and simulations to be used in the conduct of analyses. Examples of efforts include the Infantry Warrior Simulation (IWARS), OneSAF Survivability Suite (OS2), suppression methodology development, Geographical Information Systems (GIS) modeling, Network System of Systems (SoS) modeling, power and energy (soldier/vehicle) methodology development. Improvised Explosive Device (IED) modeling enhancements, search and target acquisition methodology improvements, sensor fusion modeling, mechanical and electronic Physics of Failure (PoF) modeling, vehicle performance methodology, Active Protection System performance, non-lethal weapons performance and effectiveness estimation methodology, and modeling operations in urban terrain.	16464	16423	17028
Total	16464	16423	17028

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

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

B. Program Change Summary	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2008/2009)	16344	16526	16987
Current BES/President's Budget (FY 2009)	16464	16423	17028
Total Adjustments	120	-103	41
Congressional Program Reductions		-103	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	120		
SBIR/STTR Transfer			
Adjustments to Budget Years			41