ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

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

COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
541 MATERIEL SYS ANALYSIS	16927	16971	19969

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 responsive and effective materiel systems analysis in support of senior Army decision making for equipping the U.S. Army. AMSAA conducts systems and engineering analyses to support Army decisions in technology; materiel acquisitions; and the design, development, fielding, and sustaining of Army weapon systems. As part of this mission, AMSAA develops and certifies systems performance data used in Army studies, and develops 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 support of its materiel systems analysis mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and fielded 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 generates performance and effectiveness measures and ensures their standard use across major Army and Joint studies. AMSAA conducts and supports various systems analyses, such as: Analyses of Alternatives, 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 the Army Research, Development and Engineering Command, Army Materiel Command, Program Executive Officers/Project Managers, DA staff/Assistant Secretary of the Army for Acquisition, Logistics, and Technology, 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 of proposed systems/technologies for Current and Future Force efforts. 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.

As the Army's Executive Agent for reliability and maintainability standardization improvement, AMSAA develops and implements reliability and maintainability acquisition reform initiatives. AMSAA develops and applies engineering approaches that assess the reliability of Army materiel and also provides recommendations on 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's reliability engineering and PoF tools/analyses have been used extensively to support the design improvement of developmental and fielded systems used in Current Operations resulting in improved reliability, reduced Operational and Support costs, and reduced logistics expenditures and footprint.

AMSAA's unique analytical capabilities are supporting the Army Evaluation Command to assess and determine the essential analytical requirements to enhance Army evaluations and reduce extensive testing. AMSAA's support in this area improves evaluation products and result in better materiel solutions to the Warfighter. AMSAA assists various ACAT systems' evaluations and provides quick response analyses in support of rapid initiatives for Current Operations.

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 in-house, consistent, integrated analytical capability is a critical asset that provides Army leadership with timely, unbiased, reliable, and high quality analysis to support complex decisions required for Army Transformation and Current Operations. AMSAA's integrated set of skills and tools are focused on its core mission to be responsive to the breadth and depth of systems analysis requirements critical in supporting Army decisions.

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May 2009

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6 - Management support	**0605706A - MATERIEL SYSTEMS ANALYSIS**

B. Program Change Summary	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	16423	17028	17375
Current BES/President's Budget (FY 2010)	16927	16971	19969
Total Adjustments	504	-57	2594
Congressional Program Reductions		-57	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	504		
SBIR/STTR Transfer			
Adjustments to Budget Years			2594

Change Summary Explanation: Funding - FY10: The adjustment to the budget year is two-fold. First, the majority of the increase/adjustments reflect increased funding for materiel systems performance, survivability/lethality and effectiveness data improvement efforts to support Army Regulation 5-5 level Army Studies. This is approved funding for a requirement that was submitted during the Fiscal Year 10-15 POM cycle to improve the quality of data used to support Army studies and other senior decision support needs. These funds will enable AMSAA to research, investigate, and develop quality baseline systems data that can be used for further surrogation purposes and development of methodologies that address/fill data voids for both non-traditional and emerging threats against Army systems. The remaining portion of the adjustment to the budget year (i.e., $.606 million) reflect the changes OSD issued in PBD 610 to account for changes to Civilian Pay raise assumptions for the outyears.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

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

COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
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Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
These funds will be used to conduct various materiel system analysis efforts in support of senior Army decision makers. AMSAA will conduct analyses, materiel systems performance data generation and certification, methodology development, and Modeling and Simulation (M&S) development, verification, validation, and accreditation. The planned accomplishments include performance and combat effectiveness analyses of materiel systems and technology base programs for the Department of Army, 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 form the basis for Analysis of Alternatives (AoAs), system cost/performance tradeoffs, early technology tradeoffs, weapons/systems mix analyses, requirements analyses, technology insertion studies, reliability growth studies, and Physics of Failure (PoF) analyses. Critical AMSAA analyses are planned to support the following programs: Future Combat Systems Brigade Combat Team, Experimental Brigade Combat Team, Mine Resistant Ambush Protected System assessment, Joint Light Tactical Vehicle, Joint Non-Lethal Weapons Program, Intelligent Munitions System, Stryker, and Future Force Warrior. AMSAA will also develop and modify system level methodologies, and M&S to be used in the conduct of analyses. Examples of efforts include the development and enhancements to: Infantry Warrior Simulation, One Semi-Automated Force Survivability Suite, suppression methodology, Network System of Systems modeling, power and energy (soldier and vehicle) methodology, Improvised Explosive Device modeling, target acquisition methodology, sensor fusion modeling, mechanical and electronic PoF modeling, vehicle performance methodology, Active Protection System performance, non-lethal weapons performance and effectiveness estimation methodology, and modeling operations in urban terrain.	16927	16971	19969
Total	16927	16971	19969