

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)							June 2001				
BUDGET ACTIVITY 4 - DEM/VAL				PE NUMBER AND TITLE 0603639A - Tank and Medium Caliber Ammunition							
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
Total Program Element (PE) Cost		47754	49635	32986	0	0	0	0	0	0	0
643	120MM CONVENTIONAL TANK AMMUNITION	28660	29819	32986	0	0	0	0	0	0	0
64A	TRAJECTORY CORRECTABLE MUNITION	0	2972	0	0	0	0	0	0	0	0
656	TANK EXTENDED RANGE MUNITION (TERM)	19094	16844	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification:
PLEASE NOTE: This administration has not addressed FY2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.

The Tank and Medium-caliber Ammunition (TMA) program is a comprehensive program to develop, rapidly transition to production, and field advanced tank, medium caliber and other direct fire ammunition for the Legacy, Interim and Objective forces in support of the Army Transformation Campaign Plan (TCP). This program will ensure continued battlefield overmatch lethality of the U.S. maneuver force despite worldwide proliferation of enhanced armored vehicle protection technologies. To do this, TMA will identify promising technology efforts and use competitive developments along with streamlined acquisition procedures.

The current development areas are in kinetic energy ammunition, training ammunition, and smart extended range munitions for Objective, Interim and Legacy weapon platforms. To date, five rounds of tank ammunition (M829A1, M829A2, M830A1, M865 and M831) have completed development under this program and entered production. All ammunition development funds within this program element (PE) are managed to facilitate transitions between phases, avoid administrative delays, and to focus resources on the most promising areas.

The Trajectory Correctable Munition (TCM) is a joint U.S./Swedish program designed to meet or exceed all US requirements for a 155mm precision guided range projectile. It will be compatible with all current and future 155mm artillery systems in the U. S. inventory. The TCM will extend the range of the M198, 155mm Paladin (M109A6), and the Joint Lightweight Howitzer to approximately 37 kilometers. The TCM with the Modular Artillery Charge System (MACS) extends the Crusader range to 50 kilometers. The TCM will allow greater stand-off from threats and faster defeat of potential threats, increasing soldier survivability. The TCM project is not a new start. FY99 funds were received in the USMC PE 63635M and FY 2000 funds were a result of an Army reprogramming action in PE 64802/D695.

The X-ROD program, now known as the Tank Extended Range Munition - Kinetic Energy (TERM-KE), is a 120mm tank ammunition development effort which will use a standard kinetic energy penetrator, a rocket motor (to boost the penetrator just prior to impact), and dual mode semi-active laser/millimeter wave radar fire-and-forget guidance. TERM-KE will provide greater hit probability at extended ranges, both line of sight and beyond line of sight, increasing survivability and lethality, and expanding the Maneuver Task Force Commander's battle space.

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<u>B. Program Change Summary</u>	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	56286	30139	24056	0
Appropriated Value	56937	50139	0	
Adjustments to Appropriated Value			0	
a. Congressional General Reductions			0	
b. SBIR / STTR	-1480		0	
c. Omnibus or Other Above Threshold Reductions	-228		0	
d. Below Threshold Reprogramming	-7052		0	
e. Rescissions	-423	-504	0	
Adjustments to Budget Years Since FY2001 PB		0	8930	
Current Budget Submit (FY 2002/2003 PB)	47754	49635	32986	0

Change Summary Explanation:

Funding: FY2000 - Funds reprogrammed (\$7.1M) to higher priority Digitization/IOTE requirements.

Funding: FY2001 - D656 Congressional plus ups for Tank Extended Range Munitions-Kinetic Energy (TERM-KE)(\$17M) and Trajectory Correctible Munitions (TCM) (\$3M).

Funding/Schedule: FY2002 - Increase provides additional funding for XM1002, the completion of M829E3 development and initial funds for TERM development.

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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
643	120MM CONVENTIONAL TANK AMMUNITION	28660	29819	32986	0	0	0	0	0	0	0
<p><u>A. Mission Description and Budget Item Justification:</u> This project develops tank ammunition for the Legacy force, direct fire ammunition for the Brigade Combat Team (BCT) and Future Combat System (FCS). Development of the M829E3 cartridge under this project works to maintain the battlefield overmatch and lethality of the Abrams Main Battle Tank. The M829E3 will defeat the new generation of Explosive Reactive Armor (ERA). Additionally, production of the M829E3 is critical in maintaining the Depleted Uranium (DU) industrial base.</p> <p>The Tank Extended Range Munitions (TERM) will be a smart munition capable of engaging targets at extended ranges and in beyond line of site modes, with a high degree of accuracy and lethality. TERM allows U.S. forces to stay outside the lethal range of all threat based direct fire weapons, expanding the commander's battlespace. TERM supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP). The key TERM technologies will be leveraged by FCS and BCT development efforts to improve their lethality.</p> <p>This project develops, but does not implement, the necessary changes to platform weapons and fire control systems brought about by ever more capable ammunition. Additionally, this project will leverage ongoing and projected International Cooperative developments such as Future Tank Main Armament (FTMA) and a multitude of other Program Arrangements (PA) and agreements. Contribution of the U.S. National share to these efforts will ensure a share of the output.</p> <p><u>FY 2000 Accomplishments</u></p> <ul style="list-style-type: none"> • 14202 Selected of cartridge configuration for M829E3 • 5680 Test optimized design for M829E3 • 6878 Conducted producibility improvements for M829E3 • 1000 XM1002 Target Practice-Tracer (TP-T) Cartridge projectile and propellant proof of principle studies, current award Phase I EMD • 900 Continued risk reduction alternative propellant for M829E3 <p>Total 28660</p>											

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<p><u>FY 2001 Planned Program</u></p> <ul style="list-style-type: none"> • 4800 Finalize M829E3 Cartridge Configuration • 10578 Procure 1163 M829E3s for Production Qualification Test (PQT) and provide government engineering support • 4705 Initiate testing of PQT hardware for M829E3 • 4785 Finalize Producibility Improvements for M829E3 • 900 Complete risk reduction alternative propellant for M829E3 • 3198 XM1002 TP-T Cartridge projectile design, propellant and tracer development and producibility completion • 853 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) <p>Total 29819</p> <p><u>FY 2002 Planned Program</u></p> <ul style="list-style-type: none"> • 15000 Complete M829E3 Cartridge Development and Milestone II Preparation • 3000 Live Fire Testing M829E3 Cartridge • 900 Vehicle Integration M829E3 • 3086 PQT Testing for M829E3 • 1500 Initial Operational Test and Evaluation for M829E3 • 4000 XM1002 TP-T Cartridge Engineering and Manufacturing Development (EMD) Phase 2, EMD contract award, conduct firing table tests; procure propulsion PQT components (640 cartridges @ \$2500/ctg plus government engineering support) • 3500 System studies/documentation in preparation for Milestone B (TERM) • 2000 Initial Cartridge/System Investigation (TERM) <p>Total 32986</p>		

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B. Other Program Funding Summary	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
E73300-M831/M831A1 120mm Heat Tank Trainer	35208	48033	46200	0	0	0	0	0	0	0
E73400-M865 120mm KE Tank Trainer	80613	100580	97487	0	0	0	0	0	0	0
E78001-M829A2/E3 120mm Tank KE	31387	0	35596	0	0	0	0	0	0	0
E78007-M830A1 120mm Tank MPAT	17241	0	0	0	0	0	0	0	0	0
E08210-M919 25mm KE (Bradley)	30692	31954	6000	0	0	0	0	0	0	0
E24300-CTG, 105mm, HEP-T, w/Fuze f/Tank M393A3	0	0	6036	0	0	0	0	0	0	0

C. Acquisition Strategy: M829E3 APFSDS-T, XM1002 TP-T Ctg, and TERM. These projects have used a streamlined acquisition strategy since inception. Keeping costs low is paramount while meeting schedule requirements. Integrated Product Teams (IPTs) are being used. A development system contractor, Alliant Techsystems, was selected to develop the M829E3 using a performance specification. Operational Requirements Documents (ORDs) have been approved for M829E3 APFSDS-T, XM1002 TP-T Ctg, and TERM.

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
M829E3				0	0	0	0	0
Optimize propellant configuration	1-2Q			0	0	0	0	0
Optimize Cartridge Integration	1-4Q	1Q		0	0	0	0	0
Test Penetrator vs. Target Suite	1-4Q	1Q		0	0	0	0	0
Design Freeze		1Q		0	0	0	0	0
Build Production Qualification Hardware		1-4Q		0	0	0	0	0
Begin Production Qualification Test (PQT)		3Q		0	0	0	0	0
Low Rate Production Decision			1Q	0	0	0	0	0
Complete PQT			3Q	0	0	0	0	0
Live Fire Test			1-4Q	0	0	0	0	0
Conduct Initial Operational Test and Evaluation (IOT&E)			2-4Q	0	0	0	0	0
Type Classification - Standard				0	0	0	0	0
Initial Operational Capability				0	0	0	0	0

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<u>D. Schedule Profile (continued)</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
XM1002 TP-T Cartridge				0	0	0	0	0
Projectile Optimization	1-3Q			0	0	0	0	0
Propellant Development	1-4Q	1-2Q		0	0	0	0	0
Contractor projectile producibility/cost reduction		1-3Q		0	0	0	0	0
Cartridge Design Freeze			3Q	0	0	0	0	0
Procure PQT propellant/propulsion components		3-4Q	1-4Q	0	0	0	0	0
Procure other PQT components/LAP			1-4Q	0	0	0	0	0
Test PQT				0	0	0	0	0
Type Classify				0	0	0	0	0
TERM				0	0	0	0	0
Award PDRR Contracts			3Q	0	0	0	0	0
Preliminary Design Review				0	0	0	0	0
Component Testing				0	0	0	0	0
System Integration Design				0	0	0	0	0
System Testing				0	0	0	0	0
Producibility Program				0	0	0	0	0
XM1028 Canister Ctg				0	0	0	0	0
Award System Contract				0	0	0	0	0
System Development and Demonstration				0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)									June 2001			
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Alliant Techsystems (M829E3)	C-CPIF	ATK Hopkins, MN	30800	10471	1Q	10700		0	0	0	0	0
b . ARDEC (M829E3)	MIPR	Picatinny Arsenal, NJ	43247	2289	1Q	2100		0	0	0	0	0
c . Army Research Lab (M829E3)	MIPR	Aberdeen PG, MD	17299	1696	1Q	500		0	0	0	0	0
d . Rheinmettal(M829E3)	SS-FFP	Germany	2100	900	2Q	0		0	0	0	0	0
e . Batelle Northwest Lab (M829E3)	MIPR	Richmond, WA	4110	300	1Q	0		0	0	0	0	0
f . Miscellaneous (M829E3)	MIPR	Multiple	1105	2345	1-2Q	200		0	0	0	0	0
g . TERM (Integration Contract)	Unknown	Unknown	0	0		3700	1Q	0	0	0	0	0
h . TERM (Oversight Contract)	Unknown	Unknown	0	0		0		0	0	0	0	0
i . TERM (System Contract)	Unknown	Unknown	0	0		0		0	0	0	0	0
j . ARDEC (TERM)	MIPR	Picatinny Arsenal, NJ	0	0		200		0	0	0	0	0
k . Army Research Lab (TERM)	MIPR	Aberdeen PG, MD	0	0		100		0	0	0	0	0

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I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
l . Batelle Northwest Lab (TERM)	MIPR	Richmond, WA	0	0		0		0	0	0	0	0
m . Miscellaneous (TERM)	MIPR	Multiple	0	0		100		0	0	0	0	0
n . XM1002 TP-T Ctg	FFP	ATK New Brighton, MN	600	2400	1Q	2615		0	0	0	0	0
o . ARDEC (XM1002)	MIPR	Picatinny Arsenal, NJ	370	460	1Q	470		0	0	0	0	0
p . Miscellaneous (XM1002)	MIPR	Multiple	30	390	1-2Q	100		0	0	0	0	0
q . XM1028 Cannister	Unknown	Unknown	0	0		0		0	0	0	0	0
r . ARDEC (XM1028)	MIPR	Picatinny Arsenal, NJ	0	0		0		0	0	0	0	0
s . Army Research Lab (XM1028)	MIPR	Unknown	0	0		0		0	0	0	0	0
t . Miscellaneous (XM1028)	MIPR	Multiple	0	0		0		0	0	0	0	0
Subtotal:			99661	21251		20785		0		0	0	0

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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Remarks: Not Applicable												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . YPG, APG (M829E3)	MIPR	Yuma AZ/APG, MD	10987	4500	1-2Q	8000		0	0	0	0	0
b . Army Research Lab (M829E3)	MIPR	Aberdeen PG, MD	6315	1520	1-3Q	500		0	0	0	0	0
c . Miscellaneous (M829E3)	MIPR	Multiple	11795	278	1-3Q	286		0	0	0	0	0
d . Army Research Lab (TERM)	MIPR	Aberdeen PG, MD	0	0		0		0	0	0	0	0
e . Miscellaneous (TERM)	MIPR	Multiple	0	0		500		0	0	0	0	0
f . Aberdeen Test Center (XM1002)	MIPR	Aberdeen PG, MD	0	0	1-3Q	375		0	0	0	0	0
g . Miscellaneous (XM1002)	MIPR	Multiple	0	100	1-4Q	100		0	0	0	0	0
h . Army Research Lab (XM1028)	MIPR	Aberdeen PG, MD	0	0		0		0	0	0	0	0

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III. Test and Evaluation (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
			29097	6398		9761		0		0	0	0
Subtotal:												
Remarks: Testing included all testing needed to support M829E3, TERM, XM1002 and XM1028 Cartridges.												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . PM-TMAS (M829E3)	MIPR	Picatinny Arsenal, NJ	8784	1500	1-4Q	1200		0	0	0	0	0
b . Miscellaneous (M829E3)	MIPR	Multiple	230	400	1-4Q	400		0	0	0	0	0
c . PM-TMAS (TERM)	MIPR	Picatinny Arsenal, NJ	0	0		500		0	0	0	0	0
d . PM-TMAS (XM1002)	MIPR	Picatinny Arsenal, NJ	0	270	1-4Q	340		0	0	0	0	0
e . PM-TMAS (XM1028)	MIPR	Picatinny Arsenal, NJ	0	0		0		0	0	0	0	0
Subtotal:			9014	2170		2440		0		0	0	0
Remarks: Management Services also includes data line/contract costs to support Contractor Integrated Technical Information Services (CITIS) for M829E3.												
Project Total Cost:			137772	29819		32986		0		0	0	0