

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2002

BUDGET ACTIVITY
5 - Engineering and manufacturing development

PE NUMBER AND TITLE
0604814A - Sense and Destroy Armament Missile - Eng Dev

COST (In Thousands)	FY 2001 Actual	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	28596	61300	70888	53067	29833	6328	515	48000	298527
708 XM982 PROJECTILE	28596	61300	70888	53067	29833	6328	515	48000	298527

A. Mission Description and Budget Item Justification: Excalibur (XM982) and Trajectory Correctable Munition (TCM) programs are precision guided, extended range 155mm artillery projectiles with the capability for multiple payloads to include Unitary, Sensor-Fuzed Munition (SFM), and Dual Purpose Improved Conventional Munition (DPICM). Provides improved fire support through a Precision Guided Extended Range family of 155mm projectiles with greatly increased accuracy and reduced collateral damage in support of Legacy, Interim and Objective Forces. It also includes the development of the Platform Integration Kit and Enhanced Portable Inductive Fuze Setter (EPIAFS). This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).

<u>B. Program Change Summary</u>	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002PB)	31513	67258	66676
Appropriated Value	31805	61822	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-522	0
b. SBIR/STTR	-917	0	0
c. Omnibus and Other Above Threshold Reductions	0	0	0
d. Below Threshold Reprogramming	-2000	0	0
e. Rescissions	-292	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	4212
Current Budget Submit (FY 2003 PB)	28596	61300	70888

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FY01: Reprogrammed funds (-2000) for high priority Army requirements.

FY02: Congressional adjustment(-5.436) to reduce Excalibur program growth (-8.936) and support Trajectory Correctable Munition (TCM) development (+3.500).

FY03: Transfer from procurement to fund restructured program (+4.1).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2002

BUDGET ACTIVITY 5 - Engineering and manufacturing development		PE NUMBER AND TITLE 0604814A - Sense and Destroy Armament Missile - Eng Dev					PROJECT 708			
COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost	
708 XM982 PROJECTILE	28596	61300	70888	53067	29833	6328	515	48000	298527	

A. Mission Description and Budget Item Justification: The Excalibur (XM982) provides improved fire support through a Precision Guided Extended Range family of 155mm projectiles with greatly increased accuracy and reduced collateral damage in support of Legacy, Interim and Objective Forces. Funding provides for the development of the Excalibur projectile and integration of the Unitary warhead. It also fully funds the development of all platform integration requirements to include the Enhanced Portable Inductive Fuze Setter (EPIAFS). The Excalibur will be compatible with all current and future digitized 155mm cannon artillery systems in the U. S. inventory. The Excalibur will re-establish range parity with the threat by extending the range of the 155mm Paladin (M109A6), and the Joint Lightweight Howitzer to approximately 37 kilometers. Excalibur will establish range overmatch by extending the Crusader range to 47 kilometers with the Modular Artillery Charge System (MACS). The Excalibur will allow greater standoff from threats and faster defeat of potential threats, increasing soldier survivability while reducing the logistics footprint. The Product Management Office (PMO) is in the process of merging the Trajectory Correctable Munitions (TCM) and Excalibur programs to satisfy Congressional risk reduction requirement. This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).

FY 2001 Accomplishments:

- 5371 Continued design of projectile assembly including structural and aeroballistic analyses, subsystem laboratory tests and airframe flight tests. Built prototypes for test and evaluation.
- 490 Conducted assessment of potential merger of Excalibur and TCM programs.
- 7371 Continued design of guidance, navigation, control and instrumentation systems. Built prototype subsystems and conducted high-G guidance testing and evaluation.
- 4192 Continued Systems Integration activities to include development of Interface Control Documents (ICD) at subsystem and system level and evaluation/verification of external interfaces with prototype hardware.
- 1847 Initiated development of Platform Integration Kit and EPIAFS
- 4149 Performed structural analysis of payload and internal interfaces in a gun fired environment.
- 2900 Initiated Unitary warhead development.
- 2276 Procured 30 test articles for Contractor Developmental Testing

Total 28596

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Eng Dev**

PROJECT

708**FY 2002 Planned Program**

- 9235 Continue airframe tactical structure, conduct 39 and 56 caliber contractor development testing, and continue technical assessment of merging Excalibur and TCM designs.
- 21536 Continue guidance unit integration, gun hardening, systems software development, and programmed maneuver flight demonstration.
- 7694 Continue to execute Systems Engineering and Specialty Engineering activity including Cost As An Independent Variable (CAIV), development and tracking of program metrics and effectiveness/aeroballistic simulations.
- 4553 Continue Platform Integration effort including design and build of prototype hardware for Platform Integration Kit and Fuze Setter, conduct Preliminary Design Review (PDR) and initiate development of requirements for Advanced Field Artillery Tactical Direction System (AFATDS).
- 3119 Initiate projectile system level testing, and continue analysis.
- 8832 Continue Unitary warhead development.
- 2831 Procures 30 test projectiles and 18 guidance test projectiles for Contractor Development Testing.
- 3500 Support TCM development, to include merger assessment of technology with Excalibur program.

Total 61300

FY 2003 Planned Program

- 10832 Complete airframe tactical structure and conduct 39 and 56 caliber contractor development testing with merged Excalibur-TCM design.
- 9486 Continue Unitary warhead development.
- 11818 Continue Systems and Specialty Engineering program to include reliability and maintainability, quality assurance, integrated logistics support and human factors engineering.
- 7119 Continue Platform Integration effort including test and evaluation of prototype hardware for Platform Integration Kit and Fuze Setter, and conduct Critical Design Review (CDR)).
- 6449 Continue projectile system level testing and analysis to evaluate system effectiveness.
- 20735 Continue guidance unit integration, gun hardening, systems software development, and programmed maneuver.
- 4449 Procures 18 structural test projectiles and 34 guidance test projectiles for Contractor Development Testing.

Total 70888

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February 2002

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and manufacturing development

**0604814A - Sense and Destroy Armament Missile -
Eng Dev**

708

<u>B. Other Program Funding Summary</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Trajectory Correctable Munitions 603639 D64A	2884	0	0	0	0	0	0	0	2884
Procurement Ammunition Army: E80103	0	0	0	31147	26238	22047	28510	Continuing	Continuing
OPA2: Enhanced Portable Inductive Fuze Setter (E-PIAFS): AD3260	0	0	0	6926	7301	0	0	0	19356

C. Acquisition Strategy: The Product Management Office (PMO) is in the process of merging the Trajectory Correctable Munitions (TCM) and Excalibur programs to satisfy the common guided extended range requirement. This merger will support Congressional intent of reducing the risk of the Excalibur program through TCM technology. The PMO plans to award a single, merged contract for the balance of SDD with options for LRIP.

<u>D. Schedule Profile</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Initiate Platform Integration & EPIAFS Systems Development	2Q						
Complete Initial Merger Assessment Study	4Q						
Initiate Guidance System Test Firings		3Q					
Initiate Unitary Warhead Contract Development Test Firing		1Q					
Extended Range Demonstration			2Q				
In Process Review (IPR)		4Q					
Contractor Pre-Qualification Tests			4Q				
EPIAFS Product Development Review (PDR)		3Q					
EPIAFS Critical Design Review (CDR)			4Q				
Excalibur Critical Design Review (CDR)				1Q			
Start Developmental Technical (DT) Test ,Evaluation and Qualification			4Q				
Independent Program Review (IPR) for LRIP Initiation				1-2Q			
Award LRIP 1 Contract				2Q			
Complete Developmental Technical Test and Evaluation					2Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2002

BUDGET ACTIVITY
5 - Engineering and manufacturing development

PE NUMBER AND TITLE
0604814A - Sense and Destroy Armament Missile - Eng Dev

PROJECT
708

D. Schedule Profile (continued)	<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>
Award LRIP II Contract					2Q		
First Article and Live Fire Test and Evaluation						4Q	

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and manufacturing development

0604814A - Sense and Destroy Armament Missile - Eng

708

Dev

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 . Excalibur-XM982 Development	C/CPIF	Raytheon Systems,Tucson, AZ	0	17536	1Q	32327	1Q	40523	1Q	35589	125975	125975
b . Award Fee on Excalibur Development Contract	C/CPIF	Raytheon Systems, Tucson, AZ	0	14	4Q	1627	2-4Q	2742	2-4Q	2494	6877	0
c . Competitive Design Development Efforts and TCM Merger Assessment	C/CPIF	TBD	0	490	2-3Q	2940	2-3Q	0		0	3430	0
d . Unitary Block II Technology Refresh	TBD	TBD	0	0		0		0		48000	48000	0
e . Platform Integration Paladin	C/CPIF	PM Paladin Support Contract, TRW, Carson, CA	0	150	4Q	500	3Q	0		0	650	0
f . Misc Contracts	SS/FP	TBD	0	125	3Q	242	1-4Q	0		50	417	0
g . E-PIAFS Systems Contractor	C/CPAF	TBD	0	0		0		1000	2Q	1500	2500	0
h . Platform Integration Systems Contractor	C/CPAF	TBD	0	0		0		1800	1Q	500	2300	0
i . Crusader Handling System	C/CPAF	United Defense, MN	0	0		2000	3Q	0		0	2000	0

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February 2002

BUDGET ACTIVITY
5 - Engineering and manufacturing development

PE NUMBER AND TITLE
0604814A - Sense and Destroy Armament Missile - Eng
Dev

PROJECT
708

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
Subtotal:			0	18315		39636		46065		88133	192149	125975

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
a . Product Manager's Office	In House	Excalibur PM, Picatinny Arsenal, NJ	0	1185	1-4Q	3184	1-4Q	3387	1-4Q	7228	14984	0
b . Govt IPT Support - Excalibur XM982	MIPR	ARDEC, Picatinny Arsenal, NJ	0	5308	1-3Q	5705	1Q	5899	1Q	10221	27133	0
c . ARDEC TCM Support	MIPR	ARDEC, Picatinny Arsenal, NJ	0	0		560	1-4Q	0		0	560	0
d . Govt Support - Ft Sill	MIPR	Ft. Sill, OK	0	340	1Q	214	1Q	300	1Q	230	1084	0
e . Paladin Platform Integration	MIPR	PM Paladin, Picatinny Arsenal, NJ	0	50	2Q	400	2-4Q	0		0	450	0
f . Modeling and Structural Development	MIPR	Army Research Labs, Adelphi, MD	0	857	1-2Q	544	1-4Q	800	1-2Q	438	2639	0
g . Govt IPT Support - Excalibur Platform Integration	MIPR	ARDEC, Picatinny Arsenal, NJ	0	1170	1-3Q	1781	1Q	2600	1Q	3000	8551	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and manufacturing development

0604814A - Sense and Destroy Armament Missile - Eng

708

Dev

II. Support Cost (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
h . Milestone Support	SS/FP	Camber, Alexandria, VA	0	117	3Q	182	1-2Q	182	1Q	0	481	0
i . Technical Spt Contract for Platform Integration	SS/FP	Camber, Dallas, TX	0	82	1Q	97	1Q	70	1Q	0	249	0
j . Miscellaneous Support	MIPR	VAR	0	77	1-4Q	175	1-4Q	395	1-4Q	97	744	0
k . NAVY Platform Integration Software Support	MIPR	Navy Surface Warfare Center, MD	0	0		80	2Q	0		0	80	0
l . AFATDS	MIPR	PM EFECTS (AFATDS), FT Monmouth, NJ	0	0		68	2Q	0		0	68	0
Subtotal:			0	9186		12990		13633		21214	57023	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and manufacturing development

0604814A - Sense and Destroy Armament Missile - Eng

708

Dev

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 . TECOM Testing	MIPR	YPG, Yuma, AZ	0	560	1Q	3840	1-4Q	7590	1-4Q	7200	19190	0
b . Test Analysis and instrumentation	MIPR	Army Research Labs, Adelphi, MD	0	280	1-3Q	260	1Q	0		0	540	0
c . Telemetry Support	SS/FF	Physical Science Laboratories (PSL), Las Cruces, NM	0	116	3Q	560	1Q	400	1Q	400	1476	0
d . Telemetry Support	MIPR	ARDEC, Picatinny Arsenal, NJ	0	0		1389	1Q	600	1Q	800	2789	0
e . Telemetry Cryptographic Hardware	MIPR	Ft. Huachuca, AZ	0	78	2-4Q	0		0		0	78	0
f . Tri-Service Software Assessment	MIPR	OSD, Wash, DC	0	61	1Q	0		0		0	61	0
g . Operational Test Support	MIPR	ATEC, Alexandria, VA	0	0		0		0		14296	14296	0
h . Target Replacement Definition, Maintenance and Repair	MIPR	Ft Sill, OK	0	0		100	3-4Q	2600	2-4Q	5700	8400	0
i . ARDEC Testing	MIPR	ARDEC, Picatinny Arsenal, NJ	0	0		475	1-4Q	0		0	475	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
5 - Engineering and manufacturing development

PE NUMBER AND TITLE
0604814A - Sense and Destroy Armament Missile - Eng
Dev

PROJECT
708

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
j . Test Gun Equipment	MIPR	Watervliet Arsenal, MA	0	0		2050	2Q	0		0	2050	0
Subtotal:			0	1095		8674		11190		28396	49355	0

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
Subtotal:			0	0		0		0		0	0	0

Remarks: Not Applicable

Project Total Cost:			0	28596		61300		70888		137743	298527	125975
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