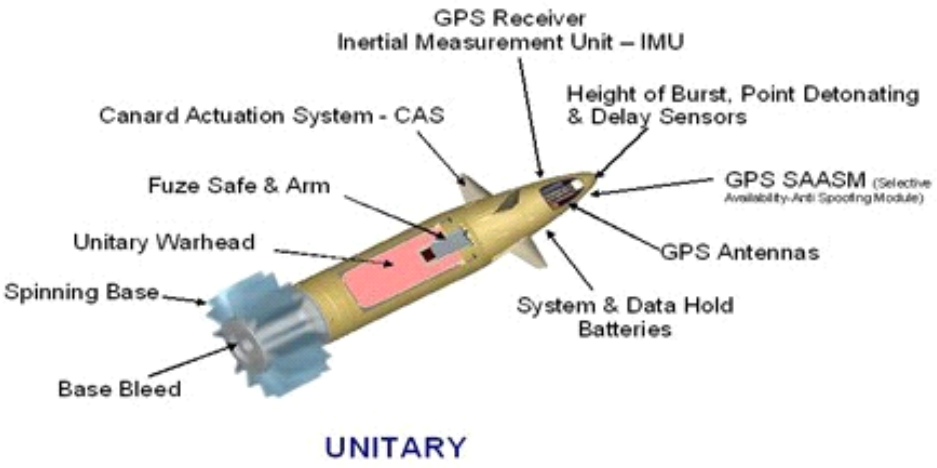
Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-366



EXCALIBUR

As of December 31, 2010

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Program Information

Designation And Nomenclature (Popular Name)

M982 155mm Precision Guided Extended Range Artillery Projectile (Excalibur)

DoD Component

Army

Responsible Office

Responsible Office

LTC Michael Milner
SFAE-AMO-CAS-EX
Bldg 172
Picatinny Arsenal, NJ 07806-5000
michael.w.milner@us.army.mil

Phone 973-724-3152
Fax 973-724-8786
DSN Phone 880-3152
DSN Fax 880-8786
Date Assigned June 1, 2009

References

SAR Baseline (Production Estimate)

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated July 27, 2007

Approved APB

AAE Approved Acquisition Program Baseline (APB) dated March 14, 2011

Mission and Description

Excalibur provides improved fire support through a Precision Guided Extended Range family of munitions with greatly increased accuracy and offers significant reduction in collateral damage. The Excalibur is interoperable with the M777A2 Lightweight 155mm howitzer (LW155), and the M109A6 (Paladin) howitzer. Excalibur will increase range over current Rocket Assisted Projectiles (from 30 kilometers (km) to 37.5 km), with a 10 meter accuracy (Circular Error Probable) at all ranges. Excalibur is an international program, teamed with the Kingdom of Sweden (KoS), who contributes resources towards the development and production in accordance with established Project Agreements.

The Excalibur program is using an incremental development approach to provide a combat capability to the Soldier as quickly as possible, and to deliver advanced capabilities at lower costs as technology matures. Increment Ia-1 has been fielded to units in Iraq and Afghanistan in response to urgent need requests in support of Operation Iraqi Freedom and Enduring Freedom (OIF/OEF). Production deliveries of Increment Ia-1 continue to support the Warfighters.

Increment Ia-2 provides improved Global Positioning System (GPS) anti-jam capability and will greatly increase range to LW155, and Paladin (from 24 km to 40 km).

Increment Ib is a follow-on Artillery Precision development effort which will provide further performance improvements over currently fielded Increment Ia-1 while significantly lowering unit costs and improving reliability.

Executive Summary

This is the first annual SAR submitted following program certification as a result of a Nunn-McCurdy (N-M) unit cost breach.

In January, 2010, the Vice Chief of Staff of the Army (VCSA) initiated a Precision Fires Capability Portfolio review to holistically examine, validate, or modify requirements across the precision fires portfolio. A recommendation to reduce the Excalibur procurement objective was provided to the Configuration Steering Board (CSB) chaired by the Under Secretary of the Army on April 22, 2010.

On May 12, 2010, the Under Secretary of the Army issued an Acquisition Decision Memorandum (ADM) directing the Product Manager (PM) for Excalibur to reduce the Block I (Increments Ia and Ib) Army Procurement Objective (APO) from 30,000 to 6,264 projectiles. This reduction resulted in a critical N-M unit cost breach to both the Average Procurement Unit Cost and the Program Acquisition Unit Cost against the current and original Acquisition Program Baselines. It also resulted in breaches to the threshold dates for a Full Rate Production (FRP) In Process Review and Initial Operating Capability. On July 6, 2010, the Office of the PM for Excalibur submitted a Program Deviation Report (PDR) to the Army Acquisition Executive.

A September 2010 quarterly exception SAR was submitted to document the critical N-M unit cost breach.

On January 10, 2011, The Principal Undersecretary of Defense, Acquisition, Technology & Logistics and Acting Defense Acquisition Executive signed the Excalibur N-M certification package. The Office of the Secretary of Defense delivered the certification letters to members of Congress on January 12, 2011. The proximate root cause of the critical breach was the reduction in quantity from 30,000 to 6,264 projectiles. This action ended the N-M review, retained acquisition authority with the Army, and allowed the program to enter the restructuring phase. This certification preserves the Army's decisions from both the 2010 Precision Fires Capabilities Portfolio Review and the associated CSB to deliver 6,264 Excalibur projectiles to the inventory necessary to meet both current and future war reserve and training requirements.

As a result of the program restructuring following N-M certification, $6.5 million of Research, Development, Test & Evaluation (RDT&E) funding (2040) was added to the Excalibur program. This was accommodated through a reduction in funding for the Precision Guidance Kit (PGK) program. Additionally, the program restructuring removed $893.5 million of Procurement funding (2034) from the Excalibur program.

Increment Ia

The Ia increments successfully achieved many significant events during this reporting period (October 1, 2010 through December 31, 2010).

On October 29, 2010, the Joint Munitions Command approved the M982 Excalibur precision guided munition for Full Material Release (FMR). FMR is used to ensure the projectile is safe, operationally suitable, and can be supported logistically. This approval is the last major step before the Excalibur program seeks a FRP decision in second quarter FY 2011.

As of December 31, 2010, PM Excalibur has produced 1,883 Increment Ia-1 rounds and shipped 1,026 to the Theater. Seventy-six of those rounds have been shipped to Operation Iraqi Freedom, 516 to Operation Enduring Freedom (OEF), nine to the United States Pacific Command and a total of 425 to the United States Marine Corps (USMC). The program has also delivered rounds to coalition forces from Canada and is executing a Foreign Military Sale (FMS) to Australia. Operational forces have expended a total of 294 projectiles since the first production deliveries were made to troops in 2007 with a proven field reliability better than 85%. During this period the USMC significantly increased the usage of Excalibur projectiles supporting OEF through the use of decentralized fire control measures. These rounds have been highly successful at proving the value of precision munitions in dense urban environments by virtually eliminating collateral damage while providing effects on the intended target.

There were no significant software issues with Increment Ia at this time.

Increment Ib

Increment Ib is an integral part of the strategy to field Excalibur capability to the DoD and the Kingdom of Sweden (KoS). Increment Ib consists of two phases: a competitive down selection phase followed by a qualification phase.

On September 26, 2008, after conducting a competitive procurement process, the Joint Munitions and Lethality Acquisition Center awarded two contracts for the Excalibur Increment Ib Demonstration Phase. Phase 1 contracts were awarded to Alliant Techsystems, Inc. (ATK) of Plymouth, Minnesota and Raytheon Missile Systems (RMS) of Tucson, Arizona. Both contractors performed detailed design and subsystem and system level testing during this effort.

In June 2010, each contractor provided 15 rounds to the Government for a shoot-off and competitive down selection. The shoot-off was completed at White Sands Missile Range, New Mexico in July 2010 and on August 25, 2010, the Government selected RMS and exercised a contract option to continue Engineering and Manufacturing Development (EMD). In October 2010 the Government conducted a successful Integrated Baseline Review for Part I of the qualification phase of EMD. This contract also contains follow-on options for production.

The Army plans to procure 3,455 rounds of Increment Ib out of the 6,930 to meet cost and performance goals. The total procurement quantity of 6,930 provides 6,264 rounds for operational use and 666 rounds for consumption in contract acceptance and reliability growth testing.

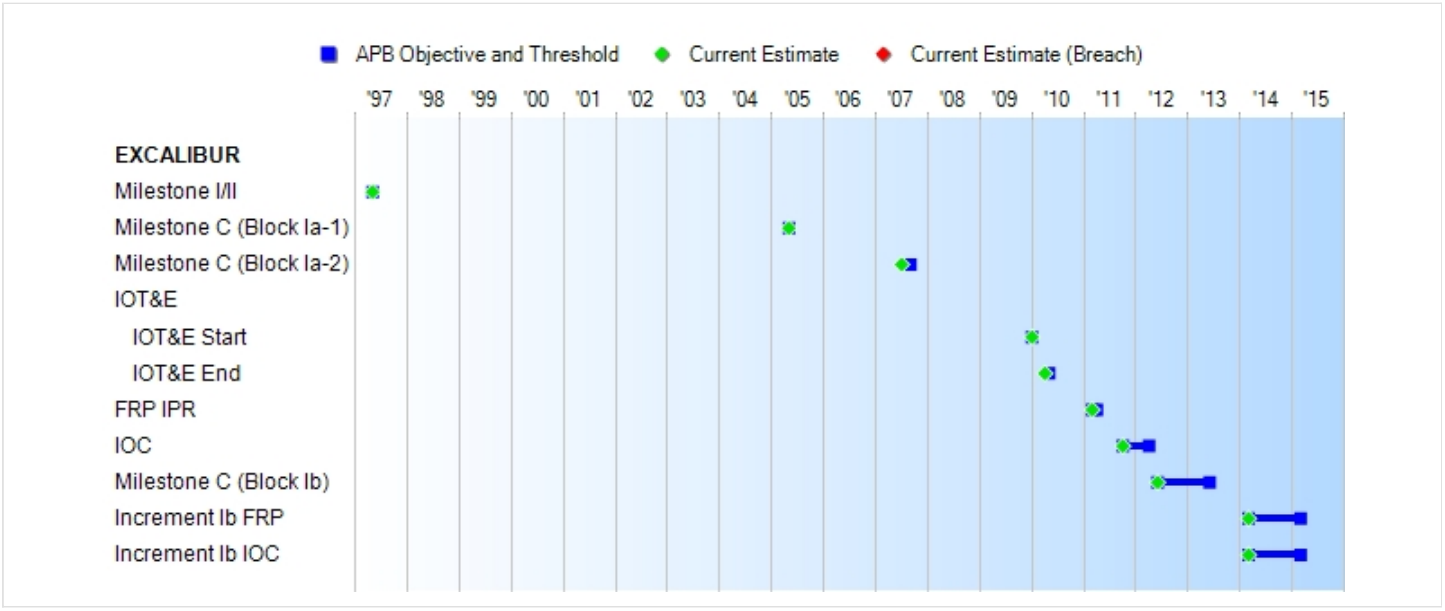
There were no significant software issues with Increment Ib at this time.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	
Milestone I/II	MAY 1997	MAY 1997	MAY 1997	MAY 1997	
Milestone C (Block Ia-1)	MAY 2005	MAY 2005	MAY 2005	MAY 2005	
Milestone C (Block Ia-2)	JUL 2007	SEP 2007	SEP 2007	JUL 2007	
IOT&E					
IOT&E Start	JUL 2008	JAN 2010	JAN 2010	JAN 2010	
IOT&E End	NOV 2008	MAY 2010	MAY 2010	APR 2010	
FRP IPR	MAR 2009	MAR 2011	APR 2011	MAR 2011	(Ch-1)
IOC	APR 2009	OCT 2011	APR 2012	OCT 2011	(Ch-1)
Milestone C (Block Ib)	N/A	JUN 2012	JUN 2013	JUN 2012	(Ch-2)
Increment Ib FRP	N/A	MAR 2014	MAR 2015	MAR 2014	(Ch-2)
Increment Ib IOC	N/A	MAR 2014	MAR 2015	MAR 2014	(Ch-2)

Acronyms And Abbreviations

FPR IPR - Full Rate Production In-Process Review
IOC - Initial Operational Capability for Block Ia
IOT&E - Initial Operational Test and Evaluation

Change Explanations

(Ch-1) As a result of the Excalibur program certification after a critical Nunn-McCurdy unit cost breach the date of the FRP IPR changed from February 2011 to March 2011 and the IOC changed from August 2011 to October 2011.

(Ch-2) The Schedule Milestones pertaining to Increment Ib were added with the March 2011 Acquisition Program Baseline.

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate	
Accuracy (CEP)(meters m)	<= 10 CEP	<= 10 CEP	<= 20 CEP	<= 10 CEP	<= 10 CEP	
Reliability (percent)	>= 96	>= 96	>= 85	>= 85 1,2	>= 85 1,2	
Effectiveness	>=M107 HE	>=M107 HE	>=M107 HE	>=M107 HE	>=M107 HE	
Net Ready	Approval To Operate (ATO)	Approval To Operate (ATO)	Interim Approval To Operate (IATO)	Approval To Operate (ATO)	Approval To Operate (ATO)	
Accuracy (CEP)(meters m) Increment Ib	N/A	<= 10m CEP	<= 10m CEP	TBD	<= 10m CEP	(Ch-1)
Range (Increment Ib)	N/A	>=40 km	>= 35 km	TBD	>=40 km	(Ch-1)
Effectiveness (Increment Ib)	N/A	>=M107 HE	>=M107 HE	TBD	>=M107 HE	(Ch-1)
Reliability (percent) (Increment Ib)	N/A	>=96%	>=90%	TBD	>=96%	(Ch-1)
Net Ready (Increment Ib)	N/A	Approval To Operate (ATO)	Interim Approval To Operate (IATO)	TBD	Approval To Operate (ATO)	(Ch-1)

Requirements Source: Capabilities Production Document (CPD), dated October 5, 2007.

Acronyms And Abbreviations

CEP - Circular Error Probable
HE - High Explosive(s)

Change Explanations

(Ch-1) The Performance Characteristics pertaining to Increment Ib were added in the March 2011 Acquisition Program Baseline.

Memo

1 - Reliability relates to Increment Ia.

2 - The Army Evaluation Center (AEC) provided an independent assessment of the official demonstrated Increment Ia-1 reliability at 85%, by combining First Article Testing and Limited User Testing.

3 - The Excalibur Increment Ia-2 Capabilities Production Document (CPD) requires interoperability with Future Combat Systems (FCS) Non-Line Of Sight Cannon (NLOS-C). On January 8, 2009, the Army Acquisition Executive (AAE) signed an Acquisition Decision Memorandum (ADM) documenting the results of the annual descoping Configuration Steering Board. This ADM reduced the NLOS-C requirement from a threshold to an objective. Subsequent cancellation of the NLOS-C program has removed this from the program altogether.

Track To Budget

RDT&E			
APPN 2040	BA 05	PE 0604814A	(Army)
	Project 708	M982 Projectile	(Shared)
APPN 9999			(DoD)

Excalibur's Research, Development, Test & Evaluation (RDT&E) funding line supports the Excalibur Unitary variant. This funding line is shared with all Excalibur Increments and was shared in prior years with the Spin Stabilized Sensor Fuzed Munition (SSSFM). Enhanced Portable Inductive Artillery Fuze Setter (EPIAFS) RDT&E funding is included.

Excalibur is an international program, with a Memorandum of Agreement for the cooperative development with the Kingdom of Sweden (KoS), which has contributed $57 million to the development program. An additional $10 million is being contributed for Increment Ib development. These funds are included in this SAR as Non-Treasury RDT&E (9999).

Procurement			
APPN 2034	BA 01	PE 41376600	(Army)
	ICN E80103	Excalibur Unitary	
APPN 0300			(DoD)

The parent Item Control Number (ICN) for Excalibur is E80100.

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY2007 $M			BY2007 $M	TY $M		
Appropriation	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	932.5	993.4	1142.4	993.5	910.2	972.7	972.7
Procurement	1332.1	661.2	727.3	691.1	1608.5	706.3	737.9
Flyaway	1326.1	--	--	686.4	1601.7	--	732.9
Recurring	1299.2	--	--	669.2	1570.0	--	714.9
Non Recurring	26.9	--	--	17.2	31.7	--	18.0
Support	6.0	--	--	4.7	6.8	--	5.0
Other Support	6.0	--	--	4.7	6.8	--	5.0
Initial Spares	0.0	--	--	0.0	0.0	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	2264.6	1654.6	N/A	1684.6	2518.7	1679.0	1710.6

The Office of the Secretary of Defense (OSD) conducted its evaluation of the program as part of the Nunn-McCurdy (N-M) process. The Current Estimate shown in this document reflects the OSD Cost Assessment and Program Evaluation (CAPE) estimate of costs for the remainder of the certified Excalibur program.

Per the N-M certification Acquisition Decision Memorandum issued by the Under Secretary of Defense for Acquisition, Technology & Logistics (USD(AT&L)), “The Army will fully fund the Excalibur program to the … Director, CAPE approved acquisition cost estimate and funding profile.” Like all CAPE life-cycle cost estimates, this acquisition cost estimate is not consistent with the 80% confidence level specified in Weapon System Acquisition Reform Act (WSARA) of 2009. The CAPE estimate is built upon a product-oriented work breakdown structure, based on historical actual cost information to the maximum extent possible, and most importantly, based on assumptions that are consistent with demonstrated contractor and government performance for a series of previous acquisition programs. The CAPE Office of Cost Assessment projects that it is about equally likely that the estimate will prove too low or too high for execution of the program.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	388	544	544
Procurement	30000	6930	6930
Total	30388	7474	7474

Excalibur's total procurement quantity of 6,930 includes 6,264 rounds to be delivered to the inventory and 666 rounds for contract acceptance and reliability growth testing.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2012 President's Budget / December 2010 SAR (TY$ M)

Appropriation	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
RDT&E	892.6	28.9	44.6	4.3	2.3	0.0	0.0	0.0	972.7
Procurement	430.8	62.1	69.1	108.9	67.0	0.0	0.0	0.0	737.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2012 Total	1323.4	91.0	113.7	113.2	69.3	0.0	0.0	0.0	1710.6
PB 2011 Total	1234.8	88.5	92.1	102.3	154.8	155.9	153.9	487.3	2469.6
Delta	88.6	2.5	21.6	10.9	-85.5	-155.9	-153.9	-487.3	-759.0

Excalibur is an international program, with a Memorandum of Agreement (MOA) for the cooperative development with the Kingdom of Sweden (KoS), which has contributed $57 million to the Increment Ia development program. The KoS has agreed to provide an additional $10 million towards Increment Ib development.

Following the Nunn-McCurdy certification, a combined quantity of 1,000 projectiles will be procured between FY 2010 and FY 2011. Funding in FY 2010 will procure 900 and FY 2011 will procure 100 projectiles.

Excalibur has reported a prior quantity of 2,475. The prior quantity shown below (3,375) includes the 900 rounds in FY 2010 that have not yet been procured.

Quantity	Undistributed	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
Development	544	0	0	0	0	0	0	0	0	544
Production	0	3375	100	881	2001	573	0	0	0	6930
PB 2012 Total	544	3375	100	881	2001	573	0	0	0	7474
PB 2011 Total	544	3141	719	833	1563	2437	3618	3945	13744	30544
Delta	0	234	-619	48	438	-1864	-3618	-3945	-13744	-23070

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
1997	--	--	--	--	--	--	4.7
1998	--	--	--	--	--	--	8.9
1999	--	--	--	--	--	--	7.5
2000	--	--	--	--	--	--	9.8
2001	--	--	--	--	--	--	28.6
2002	--	--	--	--	--	--	59.3
2003	--	--	--	--	--	--	102.1
2004	--	--	--	--	--	--	112.5
2005	--	--	--	--	--	--	129.0
2006	--	--	--	--	--	--	102.0
2007	--	--	--	--	--	--	95.1
2008	--	--	--	--	--	--	60.9
2009	--	--	--	--	--	--	68.8
2010	--	--	--	--	--	--	40.9
2011	--	--	--	--	--	--	26.4
2012	--	--	--	--	--	--	42.6
2013	--	--	--	--	--	--	4.3
2014	--	--	--	--	--	--	2.3
Subtotal	**544**	**--**	**--**	**--**	**--**	**--**	**905.7**

Annual Funding BY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2007 $M	Non End Item Recurring Flyaway BY 2007 $M	Non Recurring Flyaway BY 2007 $M	Total Flyaway BY 2007 $M	Total Support BY 2007 $M	Total Program BY 2007 $M
1997	--	--	--	--	--	--	5.5
1998	--	--	--	--	--	--	10.4
1999	--	--	--	--	--	--	8.7
2000	--	--	--	--	--	--	11.1
2001	--	--	--	--	--	--	32.1
2002	--	--	--	--	--	--	65.8
2003	--	--	--	--	--	--	111.2
2004	--	--	--	--	--	--	119.6
2005	--	--	--	--	--	--	133.3
2006	--	--	--	--	--	--	102.6
2007	--	--	--	--	--	--	93.4
2008	--	--	--	--	--	--	58.7
2009	--	--	--	--	--	--	65.6
2010	--	--	--	--	--	--	38.5
2011	--	--	--	--	--	--	24.5
2012	--	--	--	--	--	--	38.9
2013	--	--	--	--	--	--	3.9
2014	--	--	--	--	--	--	2.0
Subtotal	**544**	**--**	**--**	**--**	**--**	**--**	**925.8**

Excalibur is an international program, with a Memorandum of Agreement (MOA) for the cooperative development with the Kingdom of Sweden (KoS), which has contributed $57 million ($58.3 million Base Year 2007) to the Increment Ia development program. The KoS has agreed to provide an additional $10 million ($9.3 million Base Year 2007) towards Increment Ib development. These funds are included in this SAR as Non-Treasury RDT&E funds (9999).

Annual Funding TY$
9999 | RDT&E | Non Treasury Funds

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2003	--	--	--	--	--	--	9.5
2004	--	--	--	--	--	--	9.5
2005	--	--	--	--	--	--	9.5
2006	--	--	--	--	--	--	9.5
2007	--	--	--	--	--	--	9.5
2008	--	--	--	--	--	--	9.5
2009	--	--	--	--	--	--	3.0
2010	--	--	--	--	--	--	2.5
2011	--	--	--	--	--	--	2.5
2012	--	--	--	--	--	--	2.0
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**67.0**

Annual Funding BY$
9999 | RDT&E | Non Treasury Funds

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2007 $M	Non End Item Recurring Flyaway BY 2007 $M	Non Recurring Flyaway BY 2007 $M	Total Flyaway BY 2007 $M	Total Support BY 2007 $M	Total Program BY 2007 $M
2003	--	--	--	--	--	--	10.3
2004	--	--	--	--	--	--	10.1
2005	--	--	--	--	--	--	9.8
2006	--	--	--	--	--	--	9.6
2007	--	--	--	--	--	--	9.3
2008	--	--	--	--	--	--	9.2
2009	--	--	--	--	--	--	2.9
2010	--	--	--	--	--	--	2.4
2011	--	--	--	--	--	--	2.3
2012	--	--	--	--	--	--	1.8
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**67.7**

This appropriation is being used to account for the $67M of development funding provided by the Kingdom of Sweden for the Excalibur program.

Annual Funding TY$
2034 | Procurement | Procurement of Ammunition, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2005	127	35.1	--	1.8	36.9	--	36.9
2006	321	48.3	--	1.0	49.3	--	49.3
2007	793	84.5	--	1.7	86.2	--	86.2
2008	400	47.5	--	--	47.5	--	47.5
2009	435	57.9	--	10.1	68.0	0.8	68.8
2010	900	103.1	--	--	103.1	2.3	105.4
2011	100	62.1	--	--	62.1	--	62.1
2012	881	66.7	--	1.7	68.4	0.7	69.1
2013	2001	107.3	--	1.1	108.4	0.5	108.9
2014	573	65.7	--	0.6	66.3	0.7	67.0
Subtotal	**6531**	**678.2**	**--**	**18.0**	**696.2**	**5.0**	**701.2**

Annual Funding BY$
2034 | Procurement | Procurement of Ammunition, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2007 $M	Non End Item Recurring Flyaway BY 2007 $M	Non Recurring Flyaway BY 2007 $M	Total Flyaway BY 2007 $M	Total Support BY 2007 $M	Total Program BY 2007 $M
2005	127	35.9	--	1.9	37.8	--	37.8
2006	321	48.0	--	1.0	49.0	--	49.0
2007	793	82.1	--	1.6	83.7	--	83.7
2008	400	45.5	--	--	45.5	--	45.5
2009	435	54.9	--	9.6	64.5	0.8	65.3
2010	900	96.5	--	--	96.5	2.2	98.7
2011	100	57.2	--	--	57.2	--	57.2
2012	881	60.4	--	1.6	62.0	0.6	62.6
2013	2001	95.6	--	1.0	96.6	0.4	97.0
2014	573	57.5	--	0.5	58.0	0.7	58.7
Subtotal	**6531**	**633.6**	**--**	**17.2**	**650.8**	**4.7**	**655.5**

The FY 2011 quantity of 100 reflects the current program baseline. The FY 2011 funding does not account for a potential Senate Appropriations Committee (SAC) mark of $31.4 million ($28.9 million Base Year 2007). The Congressional decrement is expected, which will bring the total Current Estimate for Excalibur Procurement down to $669.8 million ($625.7 million Base Year 2007). Adding in the $36.7 million ($35.6 million Base Year 2007) of Foreign Military Sales (FMS) buy back funding brings Excalibur's total Procurement to $706.5 million ($661.3 million Base Year 2007). This FMS buy back funding is accounted for as Procurement, Defense-Wide (0300).

Annual Funding TY$
0300 | Procurement | Procurement, Defense-Wide

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2007	295	25.1	--	--	25.1	--	25.1
2008	75	6.2	--	--	6.2	--	6.2
2009	29	5.4	--	--	5.4	--	5.4
Subtotal	**399**	**36.7**	**--**	**--**	**36.7**	**--**	**36.7**

Annual Funding BY$
0300 | Procurement | Procurement, Defense-Wide

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2007 $M	Non End Item Recurring Flyaway BY 2007 $M	Non Recurring Flyaway BY 2007 $M	Total Flyaway BY 2007 $M	Total Support BY 2007 $M	Total Program BY 2007 $M
2007	295	24.5	--	--	24.5	--	24.5
2008	75	6.0	--	--	6.0	--	6.0
2009	29	5.1	--	--	5.1	--	5.1
Subtotal	**399**	**35.6**	**--**	**--**	**35.6**	**--**	**35.6**

This appropriation captures the procurement of Foreign Military Sales buy back rounds.

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	3/25/2005	7/31/2007
Approved Quantity	500	2500
Reference	* AAE ADM signed May 23, 2005.	** AAE ADM signed and AAE MS-C approved July 31, 2007.
Start Year	2005	2005
End Year	2006	2009

* The program received an Army Acquisition Executive (AAE) Acquisition Decision Memorandum (ADM) dated May 23, 2005 to authorize entry into Low Rate Initial Production (LRIP) and procurement of up to 500 Block Ia-1 projectiles in FY 2005-2006.

The AAE provided a revised ADM on March 26, 2007 to increase the authorized LRIP procurement quantity up to 1,500 Block Ia-1 projectiles.

** A revised ADM dated July 31, 2007 authorized entry into Increment (Block) Ia-2 LRIP with procurement authorization of up to 2,500 Block Ia projectiles in FY 2005-2009.

The significant decrease in Army Procurement Objective from 30,000 rounds to 6,264 resulted in more than 10% of Excalibur quantities already procured during LRIP. The Increment Ib LRIP quantity will be determined at Increment Ib Milestone C.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Memo
Sweden	9/23/2009	114	12.0	114 Increment Ia-2 projectiles were sold to the Kingdom of Sweden (KoS) under the Excalibur Production Project Agreement.
United Kingdom	3/6/2009	6	1.1	The United Kingdom has purchased six rounds.
Australia	5/8/2008	250	26.9	Australia has purchased 250 Excalibur Increment Ia-1 projectiles.
Sweden	10/15/2007	18	2.3	KoS Letter of Offer and Acceptance FMS Case was signed October 15, 2007.
Canada	10/7/2007	30	4.1	Canadian Defense Forces FMS contract for FY 2007 projectiles. Three projectiles were delivered on February 19, 2007 for acceptance testing and 27 were delivered on October 7, 2007.

Other countries have expressed interest in Excalibur and have begun development of FMS cases.

Nuclear Cost

None

Unit Cost

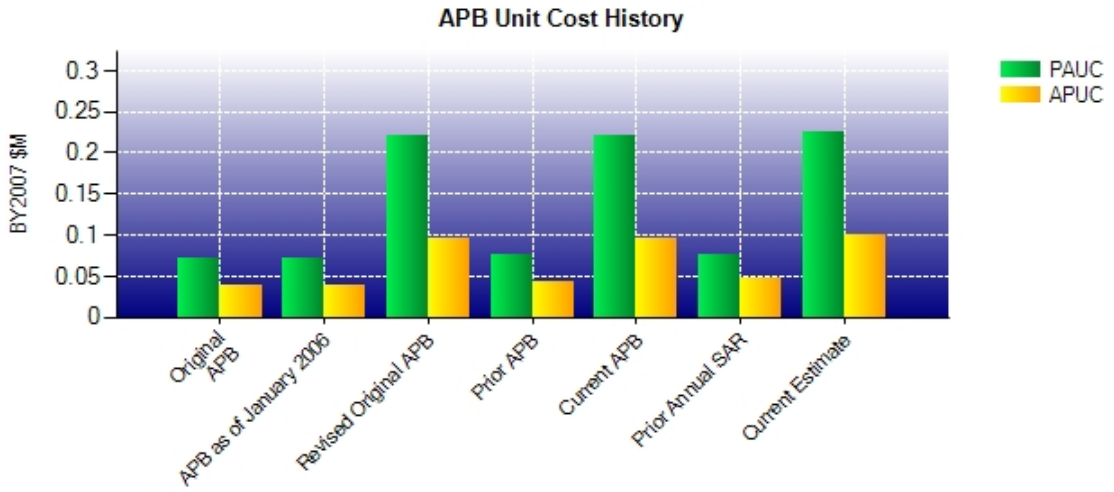
Unit Cost Report

Unit Cost	BY2007 $M Current UCR Baseline (MAR 2011 APB)	BY2007 $M Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	1654.6	1684.6	
Quantity	7474	7474	
Unit Cost	0.221	0.225	+1.81
Average Procurement Unit Cost (APUC)			
Cost	661.2	691.1	
Quantity	6930	6930	
Unit Cost	0.095	0.100	+5.26

Unit Cost	BY2007 $M Revised Original UCR Baseline (MAR 2011 APB)	BY2007 $M Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	1654.6	1684.6	
Quantity	7474	7474	
Unit Cost	0.221	0.225	+1.81
Average Procurement Unit Cost (APUC)			
Cost	661.2	691.1	
Quantity	6930	6930	
Unit Cost	0.095	0.100	+5.26

The percentage change depicted in the tables above is due to the SAR's inclusion of $31.414 million ($28.9 million in Base Year 2007) that are not required in FY 2011. The Senate Appropriations Committee, in their review of the FY 2011 President's Budget Request, appropriately marked the Excalibur program's procurement funding at $30.700 million, a decrement of $31.414 million from the requested $62.114 million, due to the Army's revised quantity requirements for Excalibur. The Acquisition Program Baseline approved in March 2011 accounted for this expected decrement.

Unit Cost History



		BY2007 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	OCT 2004	0.072	0.039	0.076	0.045
APB as of January 2006	OCT 2004	0.072	0.039	0.076	0.045
Revised Original APB	MAR 2011	0.221	0.095	0.225	0.102
Prior APB	JUL 2007	0.075	0.044	0.083	0.054
Current APB	MAR 2011	0.221	0.095	0.225	0.102
Prior Annual SAR	DEC 2009	0.075	0.047	0.081	0.053
Current Estimate	DEC 2010	0.225	0.100	0.229	0.106

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial PAUC Dev Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.063	0.005	-0.001	0.005	0.006	0.005	0.000	0.000	0.020	0.083

Current SAR Baseline to Current Estimate (TY $M)

PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.083	-0.011	0.145	0.006	0.000	0.006	0.000	0.000	0.146	0.229

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial APUC Dev Est	Changes								APUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.054	0.005	-0.014	0.005	0.000	0.004	0.000	0.000	0.000	0.054

Current SAR Baseline to Current Estimate (TY $M)

APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.054	-0.011	0.054	0.005	0.000	0.004	0.000	0.000	0.052	0.106

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	MAY 1997	N/A	N/A
Milestone II	N/A	MAY 1997	MAY 1997	MAY 1997
Milestone C	N/A	JUN 2006	MAY 2005	MAY 2005
IOC	N/A	SEP 2008	APR 2009	OCT 2011
Total Cost (TY $M)	N/A	4798.7	2518.7	1710.6
Total Quantity	N/A	76677	30388	7474
Prog. Acq. Unit Cost (PAUC)	N/A	0.063	0.083	0.229

Cost Variance

Cost Variance Summary

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	910.2	1608.5	--	2518.7
Previous Changes				
Economic	-4.6	-74.8	--	-79.4
Quantity	+39.7	-897.4	--	-857.7
Schedule	+11.3	+40.0	--	+51.3
Engineering	--	--	--	--
Estimating	-57.4	+28.4	--	-29.0
Other	--	--	--	--
Support	--	-1.4	--	-1.4
Subtotal	-11.0	-905.2	--	-916.2
Current Changes				
Economic	-0.2	-0.7	--	-0.9
Quantity	--	+38.5	--	+38.5
Schedule	--	-3.4	--	-3.4
Engineering	--	--	--	--
Estimating	+73.7	+0.2	--	+73.9
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+73.5	+34.6	--	+108.1
Total Changes	+62.5	-870.6	--	-808.1
CE - Cost Variance	972.7	737.9	--	1710.6
CE - Cost & Funding	972.7	737.9	--	1710.6

Summary Base Year 2007 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	932.5	1332.1	--	2264.6
Previous Changes				
Economic	--	--	--	--
Quantity	+36.6	-748.5	--	-711.9
Schedule	+10.1	+41.4	--	+51.5
Engineering	--	--	--	--
Estimating	-59.4	+32.7	--	-26.7
Other	--	--	--	--
Support	--	-1.4	--	-1.4
Subtotal	-12.7	-675.8	--	-688.5
Current Changes				
Economic	--	--	--	--
Quantity	--	+37.2	--	+37.2
Schedule	--	-2.6	--	-2.6
Engineering	--	--	--	--
Estimating	+73.7	+0.1	--	+73.8
Other	--	--	--	--
Support	--	+0.1	--	+0.1
Subtotal	+73.7	+34.8	--	+108.5
Total Changes	+61.0	-641.0	--	-580.0
CE - Cost Variance	993.5	691.1	--	1684.6
CE - Cost & Funding	993.5	691.1	--	1684.6

Previous Estimate: September 2010

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
Increased Block Ib estimate to align with costs experienced on Block Ia (Estimating)	+5.9	+6.6
Inclusion of Kingdom of Sweden development funding (Estimating)	+67.7	+67.0
RDT&E Subtotal	+73.7	+73.5

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-0.7
Quantity variance resulting from an increase of 25 projectiles from 6506 to 6531. (Quantity)	+1.6	+1.8
Inclusion of 399 previously unreported projectiles purchased from FY 2007 to FY 2009 with Foreign Military Sales buy back funds. (Quantity)	+35.6	+36.7
Procurement buy profile adjusted to align with certified program following critical Nunn-McCurdy unit cost breach. (Schedule)	-2.6	-3.4
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.2
Increase in Other Support costs. (Support)	+0.1	0.0
Procurement Subtotal	+34.8	+34.6

Contracts

Appropriation: RDT&E

Contract Name	**XM982 ER Projectile-Incr Ib RDT&E SDD-RMS**
Contractor	Raytheon Missile Systems
Contractor Location	Tucson, AZ 85706
Contract Number, Type	W15QKN-08-C-0530/1, FFP
Award Date	September 26, 2008
Definitization Date	February 01, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
27.0	N/A	N/A	30.4	N/A	N/A	30.4	30.4

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

On September 26, 2008, the Joint Munitions and Lethality Acquisition Center awarded two contracts (Raytheon Missile Systems & Alliant Techsystems, Inc.) for Increment Ib Phase 1 (Demonstration) of Engineering and Manufacturing Development (EMD). Phase 1 culminated with a competitive shoot-off and was down selected to Raytheon Missile Systems in Fourth Quarter FY 2010 for Phase 2 (Qualification) of EMD. The Phase 1 contracts were Firm Fixed Price and the Phase 2 contract is Cost Plus Incentive Fee. Increment Ib is the next Increment in the development of the fielded Excalibur Increment Ia munition that provides higher reliability at a lower unit production cost. The Phase 1 contract is complete with a final cost of $30.4M, and will no longer be reported after this SAR.

Appropriation: RDT&E

Contract Name	**XM982 ER Projectile-Incr Ib RDT&E SDD-RMS**
Contractor	Raytheon Missile Systems
Contractor Location	Tucson, AZ 85706
Contract Number, Type	W15QKN-08-C-0530/2, CPIF
Award Date	August 25, 2010
Definitization Date	August 25, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
22.8	N/A	N/A	22.8	N/A	N/A	22.8	22.8

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	+0.4	-0.6
Previous Cumulative Variances	0.0	0.0
Net Change	+0.4	-0.6

Cost And Schedule Variance Explanations

This is the first SAR to include Earned Value Management data for this contract.

The unfavorable net schedule variance is due to delays in contractor schedule that appear unlikely to be recovered.The Government Chief Engineer agrees that the contractor should be able to being Part II of Phase 2, even if the schedule for Part I is not recovered.

The favorable net cost variance indicates that the contractor has been careful in the use of its resources, although there remains a moderate risk that schedule delays could negatively impact cost going forward.

Contract Comments

This contract is for Phase 2 (Qualification) of Increment Ib Engineering and Manufacturing Development (EMD). The Phase 1 contracts were Firm Fixed Price and the Phase 2 contract is Cost Plus Incentive Fee. Increment Ib is the next Increment in the development of the fielded Excalibur Increment Ia munition that provides higher reliability at a lower unit production cost.

Appropriation: Procurement

Contract Name	**XM982 ER Projectile-Incr Ia Prod FY2007, FY2008, FY2009**
Contractor	Raytheon Missile Systems
Contractor Location	Tucson, AZ 85437
Contract Number, Type	W15QKN-07-C-0100/3, FFP
Award Date	April 05, 2007
Definitization Date	August 06, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
31.2	N/A	327	267.7	N/A	1628	267.7	267.7

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

The Initial FY 2007 contract target price award was $31.2 million and included 327 projectiles which were based on the initial Letter of Contract award (Undefinitized Contract Action). The total current definitized target contract price of $267.7 million with a total projectile quantity of 1,628 represents the awarded base contract for FY 2007 and awarded contract options for FY 2008 and FY 2009, with contract values of $97.7 million (793 projectiles), $95.1 million (400 projectiles), and $74.9 million (435 projectiles), respectively. This contract also includes requirements for the United States Army, United States Marine Corps, and Foreign Military Sales.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	319	319	544	58.64%
Production	1413	1413	6930	20.39%
Total Program Quantities Delivered	1732	1732	7474	23.17%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	1710.6	Years Appropriated	15
Expenditures To Date	1079.8	Percent Years Appropriated	83.33%
Percent Expended	63.12%	Appropriated to Date	1414.4
Total Funding Years	18	Percent Appropriated	82.68%

Plan and actual projectile quantities refer to projectiles delivered to the United States Army. Foreign Military Sales and United States Marine Corps (USMC) sales are not included.

Operating and Support Cost

Assumptions And Ground Rules

The Operating and Support (O&S) costs account for all life cycle requirements identified in establishing an updated Acquisition Program Baseline in March 2011. The following costs reflect the current projected acquisition schedule for 6,264 projectiles. Procurement contracts began in FY 2005 and are scheduled to end in FY 2014 (10 total years of production contracts). The projectile operational life is 20 years at which time the round is scheduled for demilitarization. Periodic stockpile surveillance is scheduled throughout its storage life. The last production contract option in FY 2014 is scheduled for demilitarization in FY 2036 (20 years after delivery); therefore, the total years of planned O&S costs for inventory, stockpile surveillance and demilitarization is 30 years (FY 2007 through FY 2036). The total O&S estimate of $26.1 million (Base Year 2007 dollars) was determined by multiplying 30 years times $870.8 K (per year estimate). The $870.8 K annual estimate was determined through the development of the Program Office Estimate for the reduced Army Procurement Objective of 6,264 projectiles. The table below reflects the average annual costs for all projectiles across this 30-year period of support (FY 2007 through FY 2036).

There is no antecedent system that the Excalibur replaced.

Costs BY2007 $K		
Cost Element	**EXCALIBUR (Average Annual Cost For All Projectiles)**	**Antecedent System N/A**
Unit-Level Manpower	--	--
Unit Operations	--	--
Maintenance	--	--
Sustaining Support	--	--
Continuing System Improvements	--	--
Indirect Support	--	--
Other	870.8	--
Total Unitized Cost (Base Year 2007 $)	870.8	--

Total O&S Costs $M	EXCALIBUR	Antecedent System
Base Year	26.1	--
Then Year	35.6	--