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RCS: DD-A&T(Q&A)823-260



Guided Multiple Launch Rocket System/ Guided Multiple Launch Rocket System Alternative Warhead (GMLRS/GMLRS AW)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

UNCLASSIFIED

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Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget

PE - Program Element

PEO - Program Executive Officer

PM - Program Manager

POE - Program Office Estimate

RDT&E - Research, Development, Test, and Evaluation

SAR - Selected Acquisition Report

SCP - Service Cost Position

TBD - To Be Determined

TY - Then Year

UCR - Unit Cost Reporting

U.S. - United States

USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Guided Multiple Launch Rocket System/Guided Multiple Launch Rocket System Alternative Warhead (GMLRS/GMLRS AW)

DoD Component

Army

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References

SAR Baseline (Production Estimate)

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated May 30, 2003

Approved APB

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated May 20, 2015

Mission and Description

The mission of the Guided Multiple Launch Rocket System/Guided Multiple Launch Rocket System Alternative Warhead (GMLRS/GMLRS AW) is to attack/neutralize/suppress/destroy targets using indirect precision fires. GMLRS/GMLRS AW provides Field Artillery units with medium- and long-range (70+ kilometers (Km)) fires while supporting brigade, division, corps, Army, theater, Joint/Coalition Forces and Marine Air-Ground Task Forces in full, limited or expeditionary operations. The GMLRS/GMLRS AW rocket is a solid propellant artillery rocket deployed from the M270A1 and the High Mobility Artillery Rocket System mobile launch vehicles. GMLRS/GMLRS AW uses an Inertial Measuring Unit with Global Positioning System assistance to guide the rocket to a specific point to deliver effects on target. GMLRS/GMLRS AW is transported and fired in a Launch Pod Container that consists of six rockets. The current GMLRS family of munitions consists of three fielded variants: Dual-Purpose Improved Conventional Munition (DPICM), Unitary and Alternative Warhead (AW). A modification to the existing system, Extended Range (ER) GMLRS, is currently in development and will carry both the Unitary and AW payloads to a maximum objective range of 200 Km.

GMLRS DPICM:

The GMLRS DPICM has a range of 70+ Km and contains 404 M101 grenades to engage area or imprecisely located targets. The GMLRS DPICM was an international cooperative development program with five nations (U.S., United Kingdom, France, Germany, and Italy). GMLRS DPICM no longer meets the threshold reliability requirement and has been transferred to Condition Code N (For Emergency Combat Use Only). Combatant Commanders (COCOM) have been briefed and accept GMLRS DPICM degraded reliability. Production was terminated to comply with the July 9, 2008 Department of Defense Policy on Cluster Munitions and Unintended Harm to Civilians.

GMLRS Unitary:

The GMLRS Unitary is equipped with a single 200-pound unitary high explosive warhead with a range of 70+ Km to engage point targets with reduced collateral damage. Current production model, M31A1, will be superseded in 2020 by the M31A2 configuration with Insensitive Munition Propulsion System (IMPS).

GMLRS AW:

The GMLRS AW is a non-cluster munition with a range of 70+ km developed to engage area or imprecisely located targets. GMLRS AW eliminates the probability of Unexploded Ordnance (UXO) and satisfies UXO requirements as defined in the November 30, 2017, Department of Defense Policy on Cluster Munitions. The latest configuration, the M30A2 began production in 2019, with the IMPS.

Extended Range (ER) GMLRS:

ER GMLRS development began in FY 2018 to extend the maximum range capability. Development and production of ER GMLRS is being executed as an engineering change proposal (ECP) modification to the existing rocket.

Executive Summary

Program Highlights Since Last Report

The GMLRS/GMLRS AW requirements are stable and funding is adequate to meet cost, schedule, and performance objectives established in the current approved APB. Since the last SAR, FY 2020 Congressional reductions of \$21.3M (RDT&E) and \$52.4M (Procurement) increase schedule risk for Extended Range (ER) GMLRS development and reduce procurement quantities, respectively.

FRP XIV Procurement contract was executed March 27, 2019 as a modification to the FRP XIII instrument for procurement of 9,558 tactical rockets and 2,082 Low Cost Reduced Range Practice Rockets (LCRRPR). The total contract quantity of 11,640 rockets included the LCRRPR in support of the Army, U.S. Marine Corps, and Romania. The contract was awarded for \$1,167.4M.

The ER GMLRS modification began development in FY 2018. The Phase II development contract was awarded on August 23, 2018 to finalize performance requirements definition and complete the system's preliminary design review (PDR). The Phase III development and qualification contract was awarded on March 29, 2019. Negotiations with Lockheed Martin are currently on hold to address affordability issues with their proposal.

The GMLRS Reliability Working Group conducted a GMLRS Reliability Scoring Conference on May 28, 2019. The GMLRS Unitary Reliability was assessed at 0.93 (177 Flight Success / 190 Flight Attempts). This exceeds the Threshold requirement for the GMLRS Unitary Reliability KPP of 0.92; Objective requirement is 0.95. The GMLRS AW Reliability was assessed at 0.99 (90 Flight Success / 91 Flight Attempts). This exceeds the Threshold requirement for the GMLRS AW Reliability KPP of 0.92, as well as the Objective requirement of 0.95.

On July 31, 2019, Missile Supplemental Notice 19-08 was issued to reclassify the remaining 1,062 serviceable GMLRS DPICM rockets to Condition Code N (for emergency combat use only). This GMLRS variant did not meet performance threshold requirements during the GMLRS Reliability Scoring Conference on May 28, 2019, but is not coded as a performance breach since it has been out of production since 2005. The ten-year shelf life has been extended to 15 years. COCOMs have been briefed and accept risk associated with these rockets.

In November 2018, Department of the Army G-8 rescinded the program's Army Procurement Objective and provided instruction to procure based on the annually published Total Munitions Requirement (TMR). At the time of the December 2018 SAR, the TMR was 94,579. The current FY 2025 TMR was approved on July 8, 2019 and is reduced to 76,610. Support of the July 2019 TMR drives the program to prioritize the more expensive Alternative Warhead variant over the Unitary variant.

There are no significant software-related issues with this program at this time.

History of Significant Developments Since Program Initiation	
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History of Significant Developments Since Program Initiation	
Date	Significant Development Description
June 1998	Milestone II Decision Review was executed in June 1998 approving GMLRS Dual Purpose Improved Conventional Munition (DPICM) entry into EMD.
September 1998	A Memorandum of Understanding was finalized in September 1998 with the U.S., United Kingdom, Ireland, Germany, France and Italy, which resulted in a November 1998 EMD contract award for the international development program to produce a common product with sharing and minimizing costs and risks.
October 2000	The GMLRS program was restructured in October 2000 due to development problems experienced by the previous guidance set subcontractor.
December 2001	A special Army Systems Acquisition Review Council (ASARC) was held on December 6, 2001, during which the Acting Army Acquisition Executive (AAE) and the Vice Chief of Staff of the Army reviewed the Nunn-McCurdy Unit Cost breach and initiated Secretary of Defense certification procedures.
December 2002	The GMLRS program was redesignated ACAT IC.
February 2003	A February 2003 Production Readiness Statement concluded that the GMLRS DPICM program was ready for production. The Chief Information Officer certified that both GMLRS DPICM and GMLRS Unitary met all interoperability requirements.
March 2003	A combined ASARC for the GMLRS DPICM and GMLRS Unitary systems was successfully conducted in March 2003. The ASARC approved entry into LRIP for GMLRS DPICM and entry into System Development and Demonstration for GMLRS Unitary. The ADMs were signed on March 24, 2003.
March 2003	The GMLRS DPICM Test and Evaluation Master Plan (TEMP) was signed by the Director, Under Secretary of the Army for Operational Requirements in March 2003. The Test and Evaluation Strategy was approved in May 2003.
November 2003	A paper JROC was completed on November 14, 2003. The JROC Memorandum was published on November 14, 2003, and accepted the Army's proposed change to the threshold average hazardous dud rate for submunitions. The change amends performance requirements for ranges between 20-60 kilometers (Km) to less than 2 percent with an objective of 0 percent. The threshold average hazardous dud rate must be less than 4 percent with an objective of 0 percent for ranges between 15-20 kilometers (Km) and 60-70 Km.
March 2004	The GMLRS Unitary TEMP was approved on March 17, 2004.
November 2004	The Initial Operational Testing and Evaluation (IOT&E) was completed on November 10, 2004, and the Army Test and Evaluation Command's Initial Operational Test System Evaluation Report was signed January 26, 2005. All reliability and maintainability requirements in the CDD (formerly ORD) and the performance specification were met or exceeded.
June 2005	The GMLRS DPICM IOC was approved by the AAE on June 22, 2005.
June 2005	The TEMP, supporting the GMLRS DPICM FRP Decision, was signed by the Director of Operational Test and Evaluation on June 8, 2005.
September 2005	In September 2005 the first ever combat fire mission was conducted using GMLRS Unitary rockets against enemy positions in Iraq. At a distance of greater than 50 Km, eight rockets were fired, destroying insurgent strongholds and killing enemy insurgents. Collateral damage to adjacent structures was minimal.
December 2005	The GMLRS DPICM IOC was achieved on or before the Objective APB schedule date.

September 2006	Deliveries of GMLRS Urgent Materiel Release (UMR) Unitary rockets began in September 2006 and continue to date. These deliveries are in response to a second request received from U.S. Central Command for additional UMR Unitary rockets to be used in theater.
January 2007	Title 10, U.S. Code, requires that munitions be Insensitive Munition (IM) compliant. To approach this objective the GMLRS program incorporated the development and procurement of an IM Warhead for Unitary and is investigating other IM related improvements. The GMLRS program submitted an IM Plan of Action and Milestones and a request for IM waiver as part of the PEO Missiles and Space IM Strategic Plan. The IM waiver for FY 2007 through FY 2008 was approved by the JROC on January 4, 2007.
February 2007	The PEO Missiles and Space submitted a Program Deviation Report (PDR) to the MDA on February 9, 2007, which provided notification that the GMLRS program anticipates a critical Nunn-McCurdy unit cost breach. Consequently, the GMLRS program completed an intense review by a certification team composed of five separate Integrated Product Teams.
April 2007	The GMLRS program successfully obtained Nunn-McCurdy Certification on April 26, 2007, when the DAE signed an ADM approving the continuation of the restructured GMLRS program as ACAT IC. The DAE directed GMLRS to restructure the program to "buy-to-budget" additional rocket quantities as can be afforded in each year, FY 2008 through FY 2013. The DAE further instructed the PM to actively pursue the potential for a multi-year procurement strategy beginning with Full Rate Production.
May 2007	The May 2, 2007 GMLRS Unitary Milestone C and LRIP Decision ADM approved the Acquisition Strategy and APB.
June 2008	A GMLRS AW Directed Requirement Memorandum signed by the Army Deputy Chief of Staff for Operations, Plans and Training on June 25, 2008, validated the requirement for GMLRS AW.
December 2008	GMLRS Unitary FRP Decision was approved on December 23, 2008, and IOC was achieved in December 2008.
July 2009	The GMLRS AW project received validation of the current GMLRS Analysis of Alternatives on July 31, 2009.
September 2009	On September 11, 2009, the AAE granted GMLRS approval to enter into the Technology Development at Milestone A.
November 2009	The GMLRS DPICM program completed its last production on November 5, 2009.
February 2010	The GMLRS class Justification & Approval (J&A) was approved on February 18, 2010, for the procurement of continued FRP of the GMLRS Unitary for FY 2010 through FY 2012.
February 2011	In the FY 2012 PB, a GMLRS RDT&E funding increase caused a Total RDT&E cost breach. The increase funded technological enhancements to the GMLRS Unitary based on emerging requirements currently in the Joint Capabilities Integration Development System process. Future increments of GMLRS will utilize these enhancements to further reduce collateral damage and expand target options for the Warfighter.
April 2011	The GMLRS AW Sole Source J&A for the EMD Contract to Lockheed Martin Missiles and Fire Control-Dallas (LMMFC-D) was approved by the AAE on April 29, 2011.
July 2011	The Aviation and Missile Command Source Selection Authority completed evaluation of the three competing AW designs on July 25, 2011, and selected the Alliant Techsystems, Inc (ATK) warhead for the GMLRS AW rocket. ATK was designated as the Government-directed subcontractor to LMMFC-D for EMD.
February 2012	Milestone B Decision Review was executed on February 19, 2012, approving entry into EMD.
July 2013	The GMLRS AW program successfully completed the Critical Design Review at the system level. All Engineering Development Test flight tests were successfully completed (seven rockets fired over three tests), placing the program on track to meet the reliability growth curve.
September 2013	The Precision Fires Rocket and Missile Systems Project Office took delivery of the 20,000th

	GMLRS rocket.
September 2014	The GMLRS AW warhead production line was assessed at Manufacturing Readiness Level (MRL) 9 in September 2014. The rocket integration production line at Lockheed Martin-Camden, Arkansas, was assessed at MRL 9 in October 2014.
November 2014	The GMLRS AW program successfully completed all testing for the EMD phase. IOT&E completed in November 2014. The reliability was assessed at 0.97 for IOT&E and an overall reliability of 0.99 for EMD. This exceeds the CDD requirement of 0.95.
April 2015	The GMLRS AW program successfully completed the combined Milestone C and FRP Decision Review on April 8, 2015. The GMLRS AW Cost Position was approved on April 15, 2015. The ADM to enter into Production and Deployment and begin FRP and the revised APB were approved by the AAE on May 20, 2015.
September 2015	GMLRS AW completed IOT&E with an assessed reliability of 0.97 (29 Flight Success of 30 attempts). GMLRS AW test program achieved an overall reliability of 0.99 (98 Flight Success of 99 Attempts). The JROC was briefed in September 2015.
March 2016	IM rocket motor contracts were awarded to Orbital ATK and Aerojet Rocketdyne on March 4, 2016, for \$17.8M and \$13.8M, respectively. The two 22-month contracts result in qualified IM rocket motor for GMLRS.
July 2016	The first six GMLRS AW rocket pods were delivered to Letterkenny Munitions Center on July 7, 2016.
September 2016	The GMLRS AW program successfully completed IOC in November 2016. The IOC quantity of 54 GMLRS AW pods was delivered in September 2016. Type Classification was approved on October 13, 2016. Full Materiel Release was approved on November 7, 2016.
October 2016	The Deputy Secretary of Defense directed the Army to conduct a 140-Km range, multi-domain, GMLRS improvement program. The AAE approved and signed the Extended Range (ER) GMLRS modification memorandum on June 26, 2017.
May 2017	The Precision Fires Rocket and Missile Systems Project Office executed a GMLRS Unitary Reliability Scoring Conference on May 25, 2017, and assessed the continuous reliability of the GMLRS Unitary at 0.94 (172 Flight Successes of 182 Attempts).
June 2017	The GMLRS/GMLRS AW program experienced breaches in RDT&E costs and PAUC as the result of additional Army funding in FY 2018 through FY 2022 to support modification and testing of the ER GMLRS. A PDR was submitted to the MDA.
June 2017	The Army Acquisition Executive approved management of the ER GMLRS as a modification program by memorandum on June 26, 2017.
June 2018	The JROC approved an updated GMLRS AW CDD in lieu of CPD which changed the GMLRS Maximum Range (Objective) KPP to 200-Km.
June 2018	GMLRS FRP XII contract was definitized the NTE price was increased to include purchase of M31 parts to send to Software Engineering Directorate to build a test bed, and extend Period of Performance to December 31, 2019 for the M31 Iron Bird effort.
August 2018	ER GMLRS Phase II development contract was awarded to finalize performance requirements definition and complete the system's PDR.
September 2018	GMLRS FRP XIII contract was definitized for \$793.2M.
March 2019	ER GMLRS Modification Phase III development and qualification contract was awarded on March 29, 2019 to complete the system's CDR.
July 2019	Missile Supplemental Notice 19-08 Issued July 2019 GMLRS DPICM Declassify to Code N (for emergency combat use only).

Threshold Breaches

APB Breaches

Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input checked="" type="checkbox"/>
	Procurement	<input checked="" type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input checked="" type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

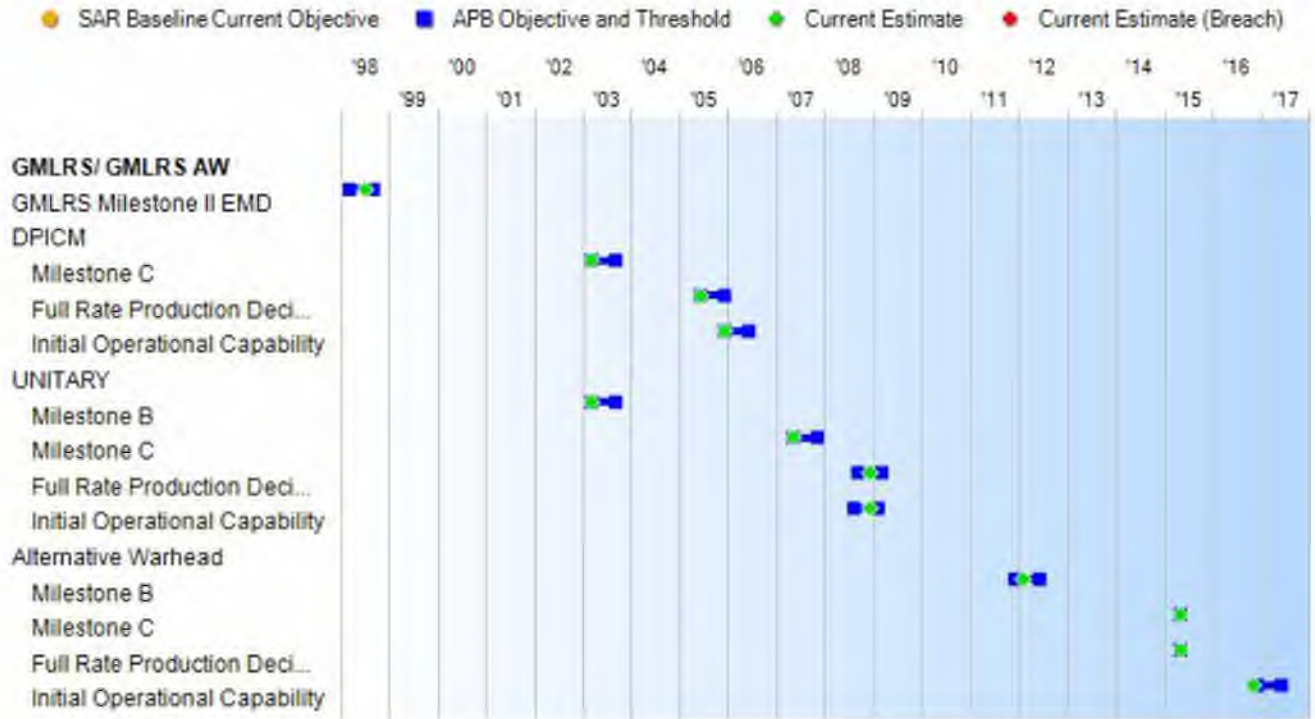
Explanation of Breach

The RDT&E, Procurement, and O&S Cost deviations were previously reported in the December 2018 SAR. A Program Deviation Report dated February 12, 2018 was acknowledged by the Army Acquisition Executive on April 13, 2018.

Nunn-McCurdy Breaches

Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
GMLRS Milestone II EMD	Mar 1998	Mar 1998	Sep 1998	Jul 1998
DPICM				
Milestone C	Mar 2003	Mar 2003	Sep 2003	Mar 2003
Full Rate Production Decision	Mar 2005	Jun 2005	Dec 2005	Jun 2005
Initial Operational Capability	Nov 2006	Dec 2005	Jun 2006	Dec 2005
UNITARY				
Milestone B	Mar 2003	Mar 2003	Sep 2003	Mar 2003
Milestone C	Sep 2006	May 2007	Nov 2007	May 2007
Full Rate Production Decision	Sep 2008	Sep 2008	Mar 2009	Dec 2008
Initial Operational Capability	Mar 2008	Aug 2008	Feb 2009	Dec 2008
Alternative Warhead				
Milestone B	N/A	Dec 2011	Jun 2012	Feb 2012
Milestone C	N/A	May 2015	May 2015	May 2015
Full Rate Production Decision	N/A	May 2015	May 2015	May 2015
Initial Operational Capability	N/A	Dec 2016	Jun 2017	Nov 2016

Change Explanations

None

Acronyms and Abbreviations

DPICM - Dual Purpose Improved Conventional Munition

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
DPICM				
Range				
Max (Km)				
70	70	60	73	70
Min (Km)				
10	10	15	15	10
Effectiveness				
(Expected Fractional Damage [EFD])				
30%	30%	30%	30%	30%
Reliability				
.95	.95	.92	0.89	0.89
Hazardous Dud Rate				
0	0%	2%/4%	1.71%/3.75%	1.71%/3.75%
UNITARY				
Range				
Max (Km)				
70	70	60	84	70
Min (Km)				
10	10	15	15	15
Effectiveness				
30%	30%	Functional Kill	Meets Threshold	30%
Reliability				
.95	.95	.92	0.93	0.94
Alternative Warhead				
Range				
Max (Km)				
N/A	70	60	70	70
Min (Km)				
N/A	10	15	15	15
Effectiveness				
N/A	30%	Functional Kill	Meets Threshold	Meets Threshold

(Ch-1)

Reliability				
N/A	.95	.92	0.99	0.99
Hazardous Dud Rate				
N/A	0%	<1%	0%	0%

Requirements Reference

ORD dated November 14, 2003 (includes Dual Purpose Improved Conventional Munitions), Multiple Launch Rocket System Guided Unitary Rocket ORD dated May 16, 2007 (in lieu of CPD), and GMLRS System Alternative Warhead Increment III CDD dated November 8, 2011

Change Explanations

(Ch-1) Current estimate for DPICM Reliability changed from .92 to .89. However GMLRS DPICM is NOT coded as a breach since it has been out of production since 2005. The ten year shelf-life has been extended to 15 years. GMLRS DPICM is coded N (emergency combat use only). Congressional guidance not to expend any funds on cluster munitions eliminates fixing GMLRS DPICM reliability issues. COCOM Commanders have been briefed and accept GMLRS DPICM degraded reliability.

Notes

The GMLRS DPICM Demonstrated Performance in Reliability is 0.89. The GMLRS Reliability Working Group conducted a GMLRS DPICM Reliability Scoring Conference on May 28, 2019. The GMLRS DPICM Reliability was assessed at 0.89 (138 Flight Success / 155 Flight Attempts).

The GMLRS Unitary Demonstrated Performance in Reliability is 0.93. The GMLRS Reliability Working Group conducted a GMLRS Unitary Reliability Scoring Conference on May 28, 2019. The GMLRS Unitary Reliability was assessed at 0.93 (177 Flight Success / 190 Flight Attempts).

The GMLRS AW Demonstrated Performance in Reliability is 0.99. The GMLRS Reliability Working Group conducted a GMLRS AW Reliability Scoring Conference on May 28, 2019. The GMLRS AW Reliability was assessed at 0.99 (90 Flight Success / 91 Flight Attempts).

GMLRS AW CDD in lieu of CPD update approved June 27, 2018 (JROCM 068-18), to increase Maximum (Objective) Range KPP from 70Km to 200Km in support of GMLRS Family of Munitions.

Acronyms and Abbreviations

DPICM - Dual Purpose Improved Conventional Munitions
 Max (Km) - Maximum Kilometers
 Min (Km) - Minimum Kilometers

Track to Budget

RDT&E

Appn	BA	PE	
Army	2040	07	0205778A
	Project	Name	
	EG2	GMLRS AW	
	EG3	GMLRS	
Army	2040	07	0603778A
	Project	Name	
	784	GMLRS	(Sunk)
	78G	GMLRS AW	(Sunk)

Procurement

Appn	BA	PE	
Army	2032	02	0210602A
	Line Item	Name	
	C65404	GMLRS (Army)	
	C65406	GMLRS (Army)	

Notes

Line Item C64400 is the parent line for Line Items C65404 and C65406.

Acq O&M

Appn	BA	PE	
Army	2020	04	0702806A
	Subactivity Group	Name	
	435	Acquisition and Management Support: Precision Fires Rocket and Missile Systems Project Office	(Shared)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2003 \$M			BY 2003 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	485.4	826.7	909.4	1114.0 ¹	500.5	957.1	1360.0
Procurement	9294.8	4367.1	4803.8	8204.6 ¹	11348.4	5796.3	11367.3
Flyaway	--	--	--	8175.3	--	--	11333.8
Recurring	--	--	--	7766.5	--	--	10758.8
Non Recurring	--	--	--	408.8	--	--	575.0
Support	--	--	--	29.3	--	--	33.5
Other Support	--	--	--	27.0	--	--	30.6
Initial Spares	--	--	--	2.3	--	--	2.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	16.3	0.0	0.0	24.1
Total	9780.2	5193.8	N/A	9334.9	11848.9	6753.4	12751.4

¹ APB Breach

Current APB Cost Estimate Reference

GMLRS Alternative Warhead (AW) Army Cost Position dated April 14, 2015

Cost Notes

The RDT&E and Procurement cost deviations were reported in the December 2018 SAR. The RDT&E cost deviation is due to additional RDT&E funding in FY 2018 to FY 2022 to support the modification and testing of Extended Range (ER) GMLRS. The Procurement cost deviation is due to an increase in procurement quantities to support the Total Munitions Requirement.

CAPE Cost Risks: Operational risk increased due to Congressional Marks that reduce GMLRS quantities and increase risk to complete the ER GMLRS development in support of an Urgent Materiel Release fielding. The unit cost will be highly sensitive to the final negotiated prices for the new build Mod Pod and ER GMLRS rocket, as well as the final quantity requirements for ER GMLRS and total GMLRS.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	235	376	399
Procurement	140004	43560	79082
Total	140239	43936	79481

Quantity Notes

The Current Estimate for Procurement quantity changed from 97,051 to 79,082 to reflect the current combined Total Munitions Requirement (TMR) for Unitary and AW variants of 76,610 plus the historical Dual-Purpose Improved Conventional Munition procurement quantity of 2,472. This change coincides with Army direction provided in the Rescission of the Army Procurement Objective for the Guided Multiple Launch Rocket System memorandum dated November 16, 2018.

The Current Estimate for RDT&E Quantities changed from 420 to 399. Efficiencies have been identified in the ER GMLRS test program that have allowed reduction of total test rockets required.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2021 President's Budget / December 2019 SAR (TY\$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	1042.7	117.3	75.6	64.7	19.7	20.0	20.0	0.0	1360.0
Procurement	5353.1	1176.5	977.2	808.5	984.5	990.0	960.0	117.5	11367.3
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	2.8	2.8	2.9	3.0	3.0	3.1	2.8	3.7	24.1
PB 2021 Total	6398.6	1296.6	1055.7	876.2	1007.2	1013.1	982.8	121.2	12751.4
PB 2020 Total	6460.2	1370.2	1296.5	774.4	981.7	996.3	961.9	2846.2	15687.4
Delta	-61.6	-73.6	-240.8	101.8	25.5	16.8	20.9	-2725.0	-2936.0

Quantity Summary										
FY 2021 President's Budget / December 2019 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	399	0	0	0	0	0	0	0	0	399
Production	0	41634	8214	6228	4776	6042	6012	5724	452	79082
PB 2021 Total	399	41634	8214	6228	4776	6042	6012	5724	452	79481
PB 2020 Total	420	41022	9570	9492	4620	6336	5808	5256	14947	97471
Delta	-21	612	-1356	-3264	156	-294	204	468	-14495	-17990

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1998	--	--	--	--	--	--	13.6
1999	--	--	--	--	--	--	17.7
2000	--	--	--	--	--	--	26.8
2001	--	--	--	--	--	--	16.8
2002	--	--	--	--	--	--	45.6
2003	--	--	--	--	--	--	59.4
2004	--	--	--	--	--	--	54.4
2005	--	--	--	--	--	--	90.0
2006	--	--	--	--	--	--	98.3
2007	--	--	--	--	--	--	43.2
2008	--	--	--	--	--	--	33.5
2009	--	--	--	--	--	--	46.3
2010	--	--	--	--	--	--	18.4
2011	--	--	--	--	--	--	12.2
2012	--	--	--	--	--	--	43.3
2013	--	--	--	--	--	--	61.2
2014	--	--	--	--	--	--	53.7
2015	--	--	--	--	--	--	43.7
2016	--	--	--	--	--	--	36.0
2017	--	--	--	--	--	--	21.2
2018	--	--	--	--	--	--	93.9
2019	--	--	--	--	--	--	113.5
2020	--	--	--	--	--	--	117.3
2021	--	--	--	--	--	--	75.6
2022	--	--	--	--	--	--	64.7
2023	--	--	--	--	--	--	19.7
2024	--	--	--	--	--	--	20.0
2025	--	--	--	--	--	--	20.0
Subtotal	399	--	--	--	--	--	1360.0

Annual Funding							
2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	BY 2003 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1998	--	--	--	--	--	--	14.3
1999	--	--	--	--	--	--	18.4
2000	--	--	--	--	--	--	27.4
2001	--	--	--	--	--	--	17.0
2002	--	--	--	--	--	--	45.6
2003	--	--	--	--	--	--	58.3
2004	--	--	--	--	--	--	52.1
2005	--	--	--	--	--	--	83.8
2006	--	--	--	--	--	--	89.0
2007	--	--	--	--	--	--	38.2
2008	--	--	--	--	--	--	29.1
2009	--	--	--	--	--	--	39.7
2010	--	--	--	--	--	--	15.5
2011	--	--	--	--	--	--	10.1
2012	--	--	--	--	--	--	35.3
2013	--	--	--	--	--	--	49.1
2014	--	--	--	--	--	--	42.2
2015	--	--	--	--	--	--	33.8
2016	--	--	--	--	--	--	27.6
2017	--	--	--	--	--	--	15.9
2018	--	--	--	--	--	--	69.3
2019	--	--	--	--	--	--	82.5
2020	--	--	--	--	--	--	83.4
2021	--	--	--	--	--	--	52.8
2022	--	--	--	--	--	--	44.3
2023	--	--	--	--	--	--	13.2
2024	--	--	--	--	--	--	13.2
2025	--	--	--	--	--	--	12.9
Subtotal	399	--	--	--	--	--	1114.0

Annual Funding 2032 Procurement Missile Procurement, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2003	822	110.4	--	13.1	123.5	6.6	130.1
2004	683	97.2	--	7.0	104.2	4.8	109.0
2005	954	96.9	--	3.7	100.6	11.3	111.9
2006	984	119.8	--	0.3	120.1	1.5	121.6
2007	925	123.4	--	0.9	124.3	0.7	125.0
2008	2070	241.8	--	20.8	262.6	1.1	263.7
2009	2646	298.7	--	10.1	308.8	0.4	309.2
2010	3228	343.7	--	--	343.7	0.4	344.1
2011	2442	264.1	--	--	264.1	0.4	264.5
2012	2940	332.8	--	--	332.8	0.4	333.2
2013	1824	232.9	--	--	232.9	0.4	233.3
2014	2166	269.6	--	3.0	272.6	0.4	273.0
2015	450	121.5	--	5.2	126.7	0.4	127.1
2016	1572	234.5	--	14.5	249.0	2.1	251.1
2017	2970	413.4	--	18.9	432.3	0.5	432.8
2018	7290	854.2	--	93.2	947.4	0.6	948.0
2019	7668	927.4	--	48.1	975.5	--	975.5
2020	8214	1119.9	--	56.1	1176.0	0.5	1176.5
2021	6228	867.1	--	109.6	976.7	0.5	977.2
2022	4776	772.5	--	35.5	808.0	0.5	808.5
2023	6042	941.5	--	43.0	984.5	--	984.5
2024	6012	946.7	--	43.3	990.0	--	990.0
2025	5724	917.8	--	42.2	960.0	--	960.0
2026	452	105.5	--	6.5	112.0	--	112.0
2027	--	--	5.5	--	5.5	--	5.5
Subtotal	79082	10753.3	5.5	575.0	11333.8	33.5	11367.3

Annual Funding 2032 Procurement Missile Procurement, Army							
Fiscal Year	Quantity	BY 2003 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2003	822	106.1	--	12.6	118.7	6.3	125.0
2004	683	90.9	--	6.6	97.5	4.5	102.0
2005	954	88.2	--	3.4	91.6	10.2	101.8
2006	984	106.7	--	0.3	107.0	1.3	108.3
2007	925	107.8	--	0.8	108.6	0.6	109.2
2008	2070	208.0	--	17.9	225.9	0.9	226.8
2009	2646	253.7	--	8.6	262.3	0.3	262.6
2010	3228	287.0	--	--	287.0	0.3	287.3
2011	2442	216.7	--	--	216.7	0.3	217.0
2012	2940	269.1	--	--	269.1	0.3	269.4
2013	1824	184.3	--	--	184.3	0.3	184.6
2014	2166	211.3	--	2.4	213.7	0.3	214.0
2015	450	93.9	--	4.0	97.9	0.3	98.2
2016	1572	177.7	--	11.0	188.7	1.6	190.3
2017	2970	307.1	--	14.0	321.1	0.4	321.5
2018	7290	622.4	--	68.0	690.4	0.4	690.8
2019	7668	662.6	--	34.3	696.9	--	696.9
2020	8214	784.4	--	39.2	823.6	0.4	824.0
2021	6228	593.0	--	75.0	668.0	0.3	668.3
2022	4776	518.0	--	23.8	541.8	0.3	542.1
2023	6042	618.9	--	28.3	647.2	--	647.2
2024	6012	610.1	--	27.9	638.0	--	638.0
2025	5724	579.9	--	26.7	606.6	--	606.6
2026	452	65.4	--	4.0	69.4	--	69.4
2027	--	--	3.3	--	3.3	--	3.3
Subtotal	79082	7763.2	3.3	408.8	8175.3	29.3	8204.6

FY 2021 includes \$127M OCO funding for 798 rockets

Annual Funding		
2020	Acq O&M	Operation and Maintenance, Army
Fiscal Year	TY \$M	
	Total Program	
2019		2.8
2020		2.8
2021		2.9
2022		3.0
2023		3.0
2024		3.1
2025		2.8
2026		2.8
2027		0.9
Subtotal		24.1

Annual Funding 2020 Acq O&M Operation and Maintenance, Army		
Fiscal Year	BY 2003 \$M	
	Total Program	
2019		2.0
2020		2.0
2021		2.0
2022		2.1
2023		2.0
2024		2.0
2025		1.8
2026		1.8
2027		0.6
Subtotal		16.3

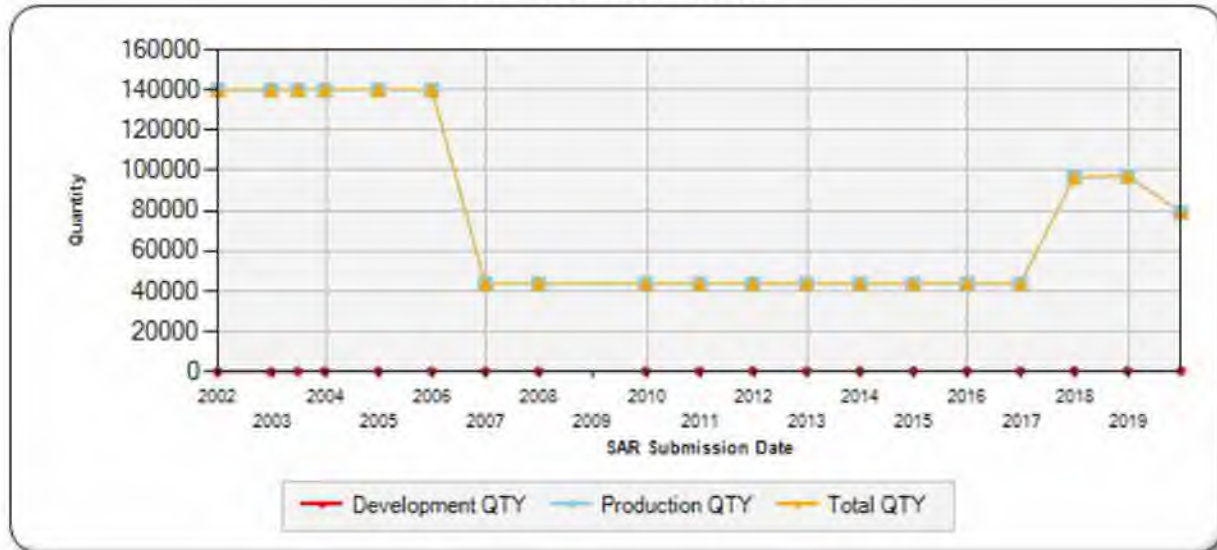
Charts

GMLRS/GMLRS AW first began SAR reporting in December 1997

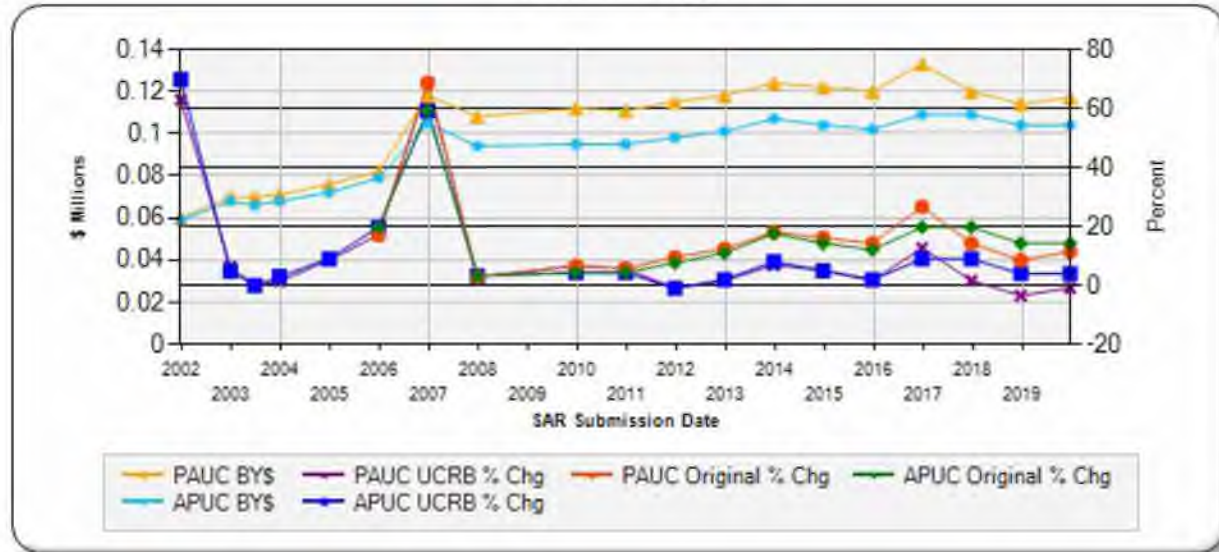
Program Acquisition Cost - GMLRS/GMLRS AW
Base Year 2003 \$M



Quantity - GMLRS/GMLRS AW



Unit Cost - GMLRS/GMLRS AW
Base Year 2003 \$M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Milestone B (March 2003)	
1.	GMLRS Unitary Milestone B (March 2003): The risk associated with Milestone B was related to the guidance set.
2.	GMLRS AW Milestone B (February 2012): Continuing Resolution Authority in FY 2012 has the potential to delay the award of the \$31M EMD contract, which would subsequently delay completion of EMD and subsequent production. Secondly, limited time between the expected FRP decision and the effective date of the DoD Cluster Munitions Policy prevents the Army from procuring "sufficient" inventory of GMLRS Alternative Warhead before the M30 GMLRS rockets are removed from inventory.
Milestone C (March 2003)	
1.	GMLRS Dual Purpose Improved Conventional Munition Milestone C (March 2003): The risks associated with Milestone C were reliability of new grenades meeting 1% dud rate and the guidance set.
2.	GMLRS Unitary Milestone C (March 2007): The risk associated with Milestone C was related to the guidance set.
3.	GMLRS AW Milestone C (May 2015): Sub-optimal program funding identified in the FY 2016 PB is below historical averages in FY 2015 through FY 2017. Decreased funding translates to lower rocket quantities and higher unit cost per annual contract. Failure to fund to the optimal rate could drive affordability concerns and cause second-tier subcontractors to not bid on GMLRS contracts. Secondly, material costs impact affordability since tungsten is a commodity with prices that fluctuate.
Milestone II (July 1998)	
1.	The risks associated with Milestone II were reliability of the dispense system, meeting the 1% dud rate with the new DPICM grenades and the inertial measurement unit.
Current Estimate (December 2019)	
1.	Current and planned GMLRS Unitary inventory is insufficient to meet multiple Combatant Command requirements. The program office is facilitating production capacity from 6,000 to 10,002 rockets per year starting in FY 2020. Unfunded requirements are identified and Overseas Contingency Operations funding was requested to buy to capacity.
2.	The availability of Insensitive Munition (IM) rocket motor to support FY 2018 FRP contract is rated as a low risk. 2,400 IM rocket motors were placed on contract on December 1, 2017 to support FY 2018 requirements.
3.	Steel case rocket motors, requiring a waiver, may be required to meet production capacity beyond FRP 13 until second source Insensitive Munition Propulsion System (IMPS) qualification is complete. Supplier 1 is scheduled to deliver 4,998 IMPS to support FRP 13 GMLRS deliveries.

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (May 2015)	
1.	No risks are identified to the Current Baseline Estimate.
Original Baseline Estimate (March 1998)	
1.	The cost risk documented in the July 1999 CARD defined the risk as low to moderate based on the quantity needed for commercially available and off-the-shelf parts for military applications.
Revised Original Estimate (June 2007)	
1.	The GMLRS program successfully obtained its Nunn-McCurdy certification on April 26, 2007, when the DAE approved the ADM to restructure the GMLRS program as ACAT IC program. The DAE directed GMLRS to restructure the program to "buy-to-budget" additional rocket quantities as can be afforded each given year, FY 2008 through FY 2013. The majority of the Nunn-McCurdy breach is a direct result of fact-of-life decrements imposed on GMLRS. The GMLRS program experienced a 70% reduction in procurement quantities between the FY 2007 PB and the FY 2008 PB request. GMLRS FY 2007 PB funded 140,004 rockets (Army Acquisition Objective), while the FY 2008 PB request supports the acquisition of 43,560 systems (Acquisition Procurement Objective). After the certification there was a low to moderate risk. The Revised Original Estimate included the GMLRS Unitary production. The May 2, 2007 ADM for GMLRS Unitary Milestone C and LRIP approved the Acquisition Strategy and the APB. It further stated the program is fully funded and the GMLRS program costs are affordable throughout the life cycle.
Current Procurement Cost (December 2019)	
1.	Increased Risk: Operational Risk increased due to Congressional Marks that reduce GMLRS quantities and increase risk to complete the ER GMLRS development in support of an Urgent Materiel Release fielding. The unit cost will be highly sensitive to the final negotiated prices for the new build Mod Pod and ER GMLRS rocket, as well as the final quantity requirements for ER GMLRS and total GMLRS.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	3/24/2003	1/7/2013
Approved Quantity	13998	4445
Reference	Milestone C ADM (DPICM)	Acquisition Strategy (AW)
Start Year	2003	2003
End Year	2005	2015

Notes

The GMLRS DPICM Milestone C ADM signed on March 24, 2003, approved an LRIP quantity not to exceed 13,998 rockets. This quantity was based on the Army Acquisition Objective of 140,004 rockets. The actual GMLRS DPICM LRIP quantity is 1,961 rockets.

The GMLRS Unitary Milestone C ADM signed May 2, 2007, approved an LRIP quantity not to exceed 3,480 rockets based on the total expected procurement quantity of 34,848. The actual GMLRS Unitary LRIP quantity is 2,484 rockets.

The GMLRS AW Milestone B ADM signed on February 19, 2012, approved an LRIP quantity of 498 rockets. However, the Acquisition Strategy for GMLRS AW signed on January 7, 2013, states the program will conduct the Initial Operational Test and Evaluation (IOT&E) during the EMD phase and combine Milestone C with the FRP Decision Review. Therefore, no LRIP is needed. Necessary assets were procured to support IOT&E during EMD.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost \$M	Description
Romania	3/20/2019	36	31.9	GMLRS Unitary rockets. Foreign Military Sales Case ID RO-B-UEW
Romania	3/20/2019	37	37.6	GMLRS AW rockets. Foreign Military Sales Case ID RO-B-UEW
Poland	2/25/2019	36	34.4	GMLRS Unitary rockets. Foreign Military Sales ID Case PF-B-UDJ
Poland	2/25/2019	9	15.7	GMLRS AW rockets. Foreign Military Sales Case ID PL-B-UDJ
Finland	5/31/2018	25	28.7	GMLRS AW rockets. Case ID FI-B-VAP
Finland	5/31/2018	15	17.7	GMLRS Unitary rockets. Case ID FI-B-VAQ
Romania	3/6/2018	8	9.9	GMLRS Unitary rockets. Foreign Military Sales Case ID RO-B-UEN
Romania	3/6/2018	8	10.2	GMLRS AW rockets. Foreign Military Sales Case ID RO-B-UEN
Germany	7/12/2017	100	82.5	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR018GE
Finland	1/27/2017	8	8.8	GMLRS AW Rockets. Case ID FI-B-VAR
France	12/22/2016	25	19.4	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR012FR
Germany	12/20/2016	2	1.9	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR017GE
France	8/9/2016	21	24.6	GMLRS Unitary Rockets. Case ID FR-B-WAN
Jordan	2/5/2016	24	28.9	GMLRS AW rockets. Foreign Military Sales. Case ID JO-B-YAY
Italy	4/10/2015	11	7.8	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR001IT.
United Arab Emirates	3/12/2015	65	83.5	GMLRS Unitary rockets. Case ID AE-B-ZVE
Bahrain	6/30/2014	8	5.6	GMLRS Unitary rockets. Case ID BA-B-UIW. Originally 6 GMLRS-U pods were on BA-UIW, but due to an increase in cost, only 4 pods were procured.
Singapore	2/28/2014	58	54.8	GMLRS Unitary rockets. Case ID SN-B-VFM
Italy	12/5/2012	25	18.6	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR004IT
Singapore	3/26/2012	12	10.1	GMLRS Unitary rockets. Case ID SN-B-VET
Italy	11/30/2011	11	7.8	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR001IT
Japan	5/1/2011	28	22.5	GMLRS Unitary rockets. Case ID JA-B-XIJ
Singapore	2/25/2011	14	10.2	GMLRS Unitary rockets. Case ID SN-N-VEN
Germany	11/24/2010	2	1.3	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR010GE
United Kingdom	2/1/2010	72	48.9	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR011UK
Jordan	1/27/2010	72	47.1	GMLRS Unitary rockets. Case ID JO-B-WYB
France	12/4/2009	43	33.8	GMLRS Unitary rockets. International Cooperative

Germany	6/1/2009	20	13.6	Program. Agreement Number GIPR004FR GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR009GE
Japan	2/1/2009	30	22.7	GMLRS Unitary rockets. Case ID JA-B-XGH
United Kingdom	1/12/2009	50	31.5	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR008UK
France	12/18/2008	2	1.4	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR002FR
United Kingdom	12/5/2008	168	105.8	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR007UK
Germany	10/15/2008	35	24.5	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR006GE
United Kingdom	7/25/2008	75	48.5	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR003UK
Germany	12/31/2007	13	9.4	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR001GE
Singapore	12/5/2007	18	15.0	GMLRS Unitary rockets. Case ID SN-B-VDO
United Arab Emirates	8/1/2007	130	102.8	GMLRS DPICM and Unitary rockets. Case ID AE-B-ZUD
United Kingdom	8/15/2005	109	67.7	GMLRS Unitary rockets. International Cooperative Program. Agreement Number GIPR001UK

Notes

All quantities are listed as rocket pods. The rocket pod refers to the Launch Pod Container that consists of six guided rockets.

The Multiple Launch Rocket System (MLRS) was cooperatively developed under a Memorandum of Understanding (MOU) partnership between the U.S., United Kingdom (UK), France, Germany and Italy. The design for the GMLRS DPICM rocket was developed under the terms and conditions of the MLRS MOU.

Only the U.S. and the United Arab Emirates (UAE) procured and continue to maintain stockpiles of M30 GMLRS DPICM pods.

Two additional variants of GMLRS were developed by the U.S. Army: the M31A1 GMLRS Unitary and M30A1 GMLRS AW. The following nations procured and continue to maintain stockpiles of M31A1 GMLRS Unitary pods: Bahrain, France, Germany, Italy, Japan, Jordan, Singapore, UAE, UK, and U.S.

The U.S., Jordan and Finland procured and continue to maintain stockpiles of M30A1 GMLRS AW.

Acronyms and Abbreviations

DPICM - Dual Purpose Improved Conventional Munition

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2003 \$M	BY 2003 \$M	% Change
	Current UCR Baseline (May 2015 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	5193.8	9334.9	
Quantity	43936	79481	
Unit Cost	0.118	0.117	-0.85
Average Procurement Unit Cost			
Cost	4367.1	8204.6	
Quantity	43560	79082	
Unit Cost	0.100	0.104	+4.00
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2003 \$M	BY 2003 \$M	% Change
	Revised Original UCR Baseline (Jun 2007 APB)	Current Estimate (Dec 2019 SAR)	
Program Acquisition Unit Cost			
Cost	4578.4	9334.9	
Quantity	43795	79481	
Unit Cost	0.105	0.117	+11.43
Average Procurement Unit Cost			
Cost	3966.7	8204.6	
Quantity	43560	79082	
Unit Cost	0.091	0.104	+14.29

The actual missile buy quantities and unit costs are subject to the mix between AW and Unitary warheads, standard versus extended range configurations, replacement pod cut-in, and replacement pod/Extended Range ECP tooling capacity ramp-up.

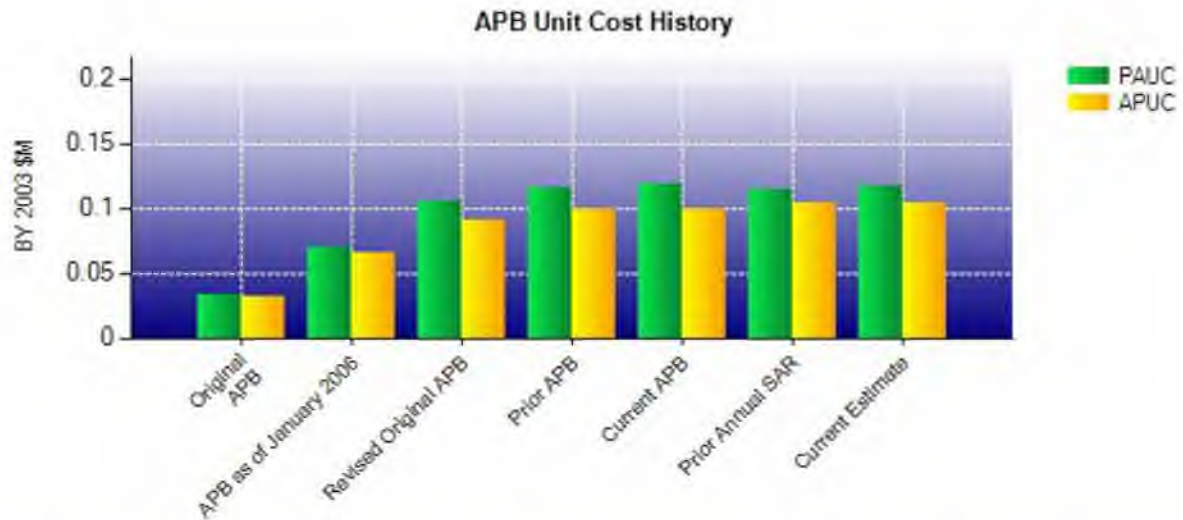
The split-out APUC and PAUC of the GMLRS variants are:

GMLRS DPICM APUC (\$0.133M (BY\$ 2003); Qty = 2,472)
 GMLRS UNITARY APUC (\$0.096M (BY\$ 2003); Qty = 34,038)
 GMLRS AW APUC (\$0.106M (BY\$ 2003); Qty = 41,300)
 GMLRS Unitary ER APUC (\$0.210M (BY\$ 2003), Qty = 636)
 GMLRS AW ER APUC (\$0.216M (BY\$ 2003), Qty = 636)

GMLRS DPICM PAUC (\$0.189M (BY\$ 2003); Qty = 2,565)
 GMLRS UNITARY PAUC (\$0.106M (BY\$ 2003); Qty = 34,180)
 GMLRS AW PAUC (\$0.110M (BY\$ 2003); Qty = 41,441)
 GMLRS Unitary ER PAUC (\$.504M (BY\$ 2003), Qty = 646)

GMLRS AW ER PAUC (\$.508M (BY\$ 2003), Qty = 649)

All GMLRS variants benefit from RDT&E funded future system enhancements (insensitive munitions, obsolescence, cost reduction initiatives), therefore an artificial pro-rating must be calculated to include them in the split-out PAUCs above. The split-out PAUCs exclude the funding for these future enhancements; these dollars are included in the composite PAUC shown in the Unit Cost section.



APB Unit Cost History						
Item	Date	BY 2003 \$M		TY \$M		
		PAUC	APUC	PAUC	APUC	
Original APB	Mar 1998	0.034	0.032	0.039	0.037	
APB as of January 2006	May 2003	0.070	0.066	0.084	0.081	
Revised Original APB	Jun 2007	0.105	0.091	0.133	0.119	
Prior APB	Feb 2012	0.116	0.099	0.146	0.127	
Current APB	May 2015	0.118	0.100	0.154	0.133	
Prior Annual SAR	Dec 2018	0.114	0.104	0.161	0.148	
Current Estimate	Dec 2019	0.117	0.104	0.160	0.144	

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.039	-0.003	0.001	0.001	0.009	0.037	0.000	0.000	0.045	0.084

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.084	0.008	-0.001	0.027	0.001	0.041	0.000	0.000	0.076	0.160

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.037	-0.003	0.004	0.001	0.006	0.036	0.000	0.000	0.044	0.081

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.081	0.008	-0.006	0.027	0.000	0.034	0.000	0.000	0.063	0.144

SAR Baseline History					
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate	
Milestone I		N/A	N/A	N/A	N/A
Milestone II		N/A	Mar 1998	Mar 1998	Jul 1998
Milestone C		N/A	Oct 2003	Mar 2003	Mar 2003
IOC		N/A	Apr 2004	Nov 2006	Dec 2005
Total Cost (TY \$M)		N/A	1688.6	11848.9	12751.4
Total Quantity		N/A	43182	140239	79481
PAUC		N/A	0.039	0.084	0.160

The Milestone C and IOC reported above reflect the GMLRS Dual Purpose Improved Conventional Munition variant. Milestone C for the GMLRS Unitary variant was approved May 2007 and GMLRS AW variant was approved May 2015. IOC for the GMLRS Unitary variant was approved December 2008 and GMLRS AW variant was approved November 2016.

Cost Variance

Summary TY \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	500.5	11348.4	--	--	11848.9
Previous Changes					
Economic	+3.2	+615.8	--	+0.3	+619.3
Quantity	+212.0	-3682.1	--	--	-3470.1
Schedule	-9.1	+2581.7	--	--	+2572.6
Engineering	--	+24.2	--	--	+24.2
Estimating	+605.6	+3449.7	--	+27.2	+4082.5
Other	--	--	--	--	--
Support	--	+10.0	--	--	+10.0
Subtotal	+811.7	+2999.3	--	+27.5	+3838.5
Current Changes					
Economic	-0.5	+19.4	--	--	+18.9
Quantity	-5.5	-1744.6	--	--	-1750.1
Schedule	--	-459.4	--	--	-459.4
Engineering	+53.5	-5.0	--	--	+48.5
Estimating	+0.3	-790.4	--	-3.4	-793.5
Other	--	--	--	--	--
Support	--	-0.4	--	--	-0.4
Subtotal	+47.8	-2980.4	--	-3.4	-2936.0
Total Changes	+859.5	+18.9	--	+24.1	+902.5
Current Estimate	1360.0	11367.3	--	24.1	12751.4

Summary BY 2003 \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	485.4	9294.8	--	--	9780.2
Previous Changes					
Economic	--	--	--	--	--
Quantity	+170.7	-2637.9	--	--	-2467.2
Schedule	-5.1	+1291.3	--	--	+1286.2
Engineering	--	+16.8	--	--	+16.8
Estimating	+431.7	+2078.7	--	+18.3	+2528.7
Other	--	--	--	--	--
Support	--	+8.9	--	--	+8.9
Subtotal	+597.3	+757.8	--	+18.3	+1373.4
Current Changes					
Economic	--	--	--	--	--
Quantity	-4.0	-1068.0	--	--	-1072.0
Schedule	--	-311.9	--	--	-311.9
Engineering	+35.0	-3.0	--	--	+32.0
Estimating	+0.3	-464.8	--	-2.0	-466.5
Other	--	--	--	--	--
Support	--	-0.3	--	--	-0.3
Subtotal	+31.3	-1848.0	--	-2.0	-1818.7
Total Changes	+628.6	-1090.2	--	+16.3	-445.3
Current Estimate	1114.0	8204.6	--	16.3	9334.9

Previous Estimate: December 2018

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.5
Quantity variance due to efficiencies identified in the ER GMLRS test program that have allowed reduction of total test rockets required from 420 to 399 . (Quantity)	-4.0	-5.5
Revised estimate to support emerging requirements in FY 2023-2025. (Engineering)	+35.0	+53.5
Adjustment for current and prior escalation. (Estimating)	+0.3	+0.3
RDT&E Subtotal	+31.3	+47.8

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+19.4
Total Quantity variance resulting from a decrease of 17,969 GMLRS AW and Unitary rockets from 97,051 to 79,082. (Subtotal)	-1799.6	-2940.2
In support of the July 2019 TMR quantity variance resulting from a decrease of 17,969 Unitary/AW rockets from 97,051 to 79,082. (Quantity)	(-1068.0)	(-1744.6)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(-311.9)	(-509.7)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(-3.0)	(-5.0)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-416.7)	(-680.9)
Re-phasing of procurement quantities in FY 2020-2026 in accordance with available funding. (Schedule)	0.0	+50.3
Revised estimate to reflect decreased cost estimate for Insensitive Munition Propulsion System motor. (Estimating)	-50.7	-113.2
Adjustment for current and prior escalation. (Estimating)	+2.6	+3.7
Decrease in Other Support due to reduction in Training Aid funding. (Support)	-0.3	-0.4
Procurement Subtotal	-1848.0	-2980.4

(QR) Quantity Related

Acq O&M	\$M	
Current Change Explanations	Base Year	Then Year
Revised estimate to reflect acceleration of last year of production from FY 2028 to FY 2026. (Estimating)	-2.0	-3.4
Acq O&M Subtotal	-2.0	-3.4

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: GMLRS FRP X
Contractor: Lockheed Martin Missiles and Fire Control - Dallas
Contractor Location: 1701 W Marshall Drive
 Grand Prairie, TX 75051-0000
Contract Number: W31P4Q-15-C-0103
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: June 04, 2015
Definitization Date: November 01, 2016

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
226.9	230.3	924	241.0	241.0	924	223.2	223.2

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the increase in Low Cost, Reduced Range Practice Rocket (LCRRPR) pod quantities for the Army. Initial Ceiling Price of \$230.3M reflects a correction to last year's SAR.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FPIF/CPFF) contract.

General Contract Variance Explanation

Cost and schedule variances are not reported for the cost portion of this contract because the CPFF portion does not meet the threshold requirements for EVM reporting, and the incentive portion of this contract is part of an EVM Waiver and Class Deviation approved by the Army Acquisition Executive on December 6, 2015, for all FPIF FRP contracts subsequent to FRP Lot 1.

Notes

The contract was executed June 4, 2015, as an undefinitized contract action change order in the Not-To-Exceed (NTE) amount of \$226.9M. The NTE was awarded for GMLRS AW and LCRRPR requirements and Depot Spares for the Army, U.S. Marine Corps, Bahrain and United Arab Emirates.

FRP X was originally combined with FRP IX and was decoupled during OSD Peer Review. Additional delays in definitization were caused by changing contract type from FFP to FPIF, Army Peer Review requirements and Army Contracting Command personnel shortages. FRP X was definitization on November 1, 2016.

The Period of Performance (PoP) was extended from March 2017 to December 2017 for incoming Receiving Inspection Rework for a U.S. Marine Corps GMLRS AW pod.

P00023 extended the contract PoP from December 2017 to September 2019 to incorporate for tooling to support increased production capacity to 10K. P00027 extended the PoP to July 2020 to support the longest lead time supplier in the increased production capacity effort,

P00028 executed 75% of the 10K funding for the tooling effort. P00029 definitized 10K tooling for an additional \$11M.

Contract cost change from \$223.2 to \$241.0 due to error during change in personnel.

This Contract is more than 90% complete; therefore, this is the final report for this contract

Contract Identification

Appropriation: Procurement
Contract Name: GMLRS FRP XI
Contractor: Lockheed Martin Missiles and Fire Control - Dallas
Contractor Location: 1701 W Marshall Drive
 Grand Prairie, TX 75051-0000
Contract Number: W31P4Q-16-C-0102
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: May 19, 2016
Definitization Date: December 01, 2017

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
331.7	331.7	4974	525.0	525.0	7158	499.0	499.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to options exercised, change order incorporations and negotiated reopener clauses.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FPIF/CPFF) contract.

General Contract Variance Explanation

Cost and schedule variances are not reported for the cost portion of this contract because the CPFF portion does not meet the threshold requirements for EVM reporting, and the incentive portion of this contract is part of an EVM Waiver and Class Deviation approved by the Army Acquisition Executive on December 6, 2015, for all FPIF FRP contracts subsequent to FRP Lot 1.

Notes

The contract was executed May 19, 2016, as an undefinitized contract action change order in the Not-To-Exceed (NTE) amount of \$331.7M. The NTE was awarded for GMLRS AW and Low Cost, Reduced Range Practice Rocket (LCRRPR) requirements for the Army, U.S. Marine Corps, Finland, Israel, Jordan and Singapore. The NTE was updated on July 27, 2016, to the amount of \$321.4M.

Definitization was December 1, 2017, to include 240 GMLRS AW rockets and 1944 LCRRPR. P00020 modification added 2400 Insensitive Munition (IM) Propulsion Systems, and funding was increased by \$91.3M.

The target price increased due to additional efforts to include GMLRS Phase II pod replacement and the IMPS Phase II. The Period of Performance was extended to August 31, 2020 to coincide with delivery of IM Motors.

Initial quantity of 1944 (this was the added LCRRPR) was reported in error, the correct initial should have been reported as 4974, with the added 240 GMLRS AW rockets and 1944 LCRRPR the current quantity is 7158.

The target price increased due to additional efforts to include GMLRS Phase II pod replacement and the IMPS Phase II. The Period of Performance was extended to August 31, 2020 to coincide with delivery of IM Motors. P00049 definitized Mod Pod Phase II and increased funding by \$15M. P00057 incrementally funded the IMPS Phase II effort by \$1.8M. P00055 definitized the IMPS Phase II effort.

P00054 definitized German 600 effort and increased funding by \$9.8M.

Contract Identification

Appropriation: Procurement
Contract Name: GMLRS FRP XII
Contractor: Lockheed Martin Missiles and Fire Control - Dallas
Contractor Location: 1701 W Marshall Drive
 Grand Prairie, TX 75051-0000
Contract Number: W31P4Q-17-C-0080
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: May 19, 2016
Definitization Date: June 01, 2018

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
471.7	471.7	5736	425.0	425.0	5796	471.7	471.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the purchase of M31 parts to send to Software Engineering Directorate to build a testbed and to extend Period of Performance to December 31, 2019 for the M31 Iron Bird effort.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FPIF/CPFF) contract.

General Contract Variance Explanation

Cost and schedule variances are not reported for the cost portion of this contract because the CPFF portion does not meet the threshold requirements for EVM reporting, and the incentive portion of this contract is part of an EVM Waiver and Class Deviation approved by the Army Acquisition Executive on December 6, 2015, for all FPIF FRP contracts subsequent to FRP Lot 1.

Notes

The contract was executed on June 15, 2017, as an undefinitized contract award in the Not-To-Exceed (NTE) amount of \$471.7M. The NTE was awarded for GMLRS AW and Unitary Rockets, plus LCRRPR requirements for the Army, U.S. Marine Corps, Germany, France, Finland, and Singapore.

FRP XII contract was definitized on June 1, 2018. Added NTE for purchase of M31 parts to send to Software Engineering Directorate to build a testbed. Extended Period of Performance (PoP) to December 31, 2019 for the M31 Iron Bird effort. PoP was extended at no-cost to 30 Jun 2021 due to the Roxel Motor delay. Funding increase of \$208k for unexpected high repair and rejection rate of Download/De-Mate.

Contract Identification

Appropriation: Procurement
Contract Name: GMLRS FRP XIII
Contractor: Lockheed Martin Missiles and Fire Control - Dallas
Contractor Location: 1701 W. Marshall Dr.
 Grande Prairie, TX 75051
Contract Number: W31P4Q-18-C-0049
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: April 28, 2018
Definitization Date: September 11, 2018

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
828.7	828.7	11196	792.9	793.2	11196	792.9	792.9

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to Pod versus Rocket count.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FPIF/CPFF) contract.

General Contract Variance Explanation

Cost and schedule variances are not reported for the cost portion of this contract because the CPFF portion does not meet the threshold requirements for EVM reporting, and the incentive portion of this contract is part of an EVM Waiver and Class Deviation approved by the Army Acquisition Executive on December 6, 2015, for all FPIF FRP contracts subsequent to FRP Lot 1.

Notes

The contract was executed on April 27, 2018, as an undefinitized contract action in the Not-to-Exceed (NTE) amount of \$828.7M for 6,996 rockets. The contract was awarded below the NTE for GMLRS AW and Unitary Rockets 6,996 tactical rockets and 4,200 LCRRPR requirements for the Army, U.S. Marine Corps, and Romania. The contract was definitized September 11, 2018, for a quantity of 11,196 rockets.

Contract Identification

Appropriation: Procurement
Contract Name: GMLRS FRP XIV
Contractor: Lockheed Martin Corporation
Contractor Location: 1701 W. Marshall Dr.
 Grand Prairie, TX 75051
Contract Number: W31P4Q-18-C-0049/1
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: March 27, 2019
Definitization Date:

Contract Price								
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)		
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager	
1167.4	N/A	11640	1167.4	N/A	11640	1167.4	1167.4	

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FPIF/CPFF) contract.

General Contract Variance Explanation

Cost and schedule variances are not reported for the cost portion of this contract because the CPFF portion does not meet the threshold requirements for EVM reporting, and the incentive portion of this contract is part of an EVM Waiver and Class Deviation approved by the Army Acquisition Executive on December 6, 2015, for all FPIF FRP contracts subsequent to FRP Lot 1.

Notes

FRP 14 was awarded as a "work within scope" modification to the FRP 13 instrument that included 9558 tactical rockets and 2082 LCRPPRs.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	399	376	399	94.24%
Production	31829	31829	79082	40.25%
Total Program Quantity Delivered	32228	32205	79481	40.52%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	12751.4	Years Appropriated	23
Expended to Date	4988.7	Percent Years Appropriated	76.67%
Percent Expended	39.12%	Appropriated to Date	7695.2
Total Funding Years	30	Percent Appropriated	60.35%

The above data is current as of February 10, 2020.

Notes

The 420 rockets delivered was reported in error in the December 2018 SAR. There have only been 376 developmental rockets delivered to date. The remaining 23 developmental rockets to be delivered are ER GMLRS rockets.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	January 16, 2020
Source of Estimate:	POE
Quantity to Sustain:	13180
Unit of Measure:	Rocket Pod
Service Life per Unit:	10.00 Years
Fiscal Years in Service:	FY 2005 - FY 2040

The O&S Costs include all variants (Dual Purpose Improved Conventional Munition (DPICM), Unitary, Alternative Warhead (AW), Extended Range (ER) Unitary and ER AW). The rocket pod refers to the Launch Pod Container that consists of six guided rockets with an expected service life of ten years and procurement of 13,180 rocket pods (total of 79,082 rockets). The 399 RDT&E rockets are test articles and will be consumed.

Sustainment Strategy

The Sustainment Strategy is two-level maintenance - Field and Sustainment. An organic depot capability was established for GMLRS DPICM and Unitary variants in 2nd Quarter FY 2009. This capability was upgraded to incorporate GMLRS AW in 3rd Quarter FY 2016.

Antecedent Information

No Antecedent

Cost Element	Annual O&S Costs BY2003 \$K	
	GMLRS/ GMLRS AW Average Annual Cost Per Rocket Pod	No Antecedent (Antecedent)
Unit-Level Manpower	0.000	--
Unit Operations	0.013	--
Maintenance	0.901	--
Sustaining Support	1.127	--
Continuing System Improvements	0.065	--
Indirect Support	0.000	--
Other	0.000	--
Total	2.106	--

The Cost Element Sustaining Support includes Missile Stockpile Reliability Certification, base operations, second destination transportation, System Engineering Program Management, and training. The Continuing System Improvements consists of software maintenance.

Item	Total O&S Cost \$M			
	GMLRS/ GMLRS AW		Current Estimate	No Antecedent (Antecedent)
	Current Production APB Objective/Threshold			
Base Year	204.8	225.3	277.5¹	N/A
Then Year	337.0	N/A	415.6	N/A

¹ APB O&S Cost Breach

Disposal Cost is included in the Operating and Support Cost of the current APB objective and threshold for this program.

Disposal Cost is excluded from the Operating and Support Cost of the Current Estimate.

The O&S Cost deviation was reported in the December 2018 SAR and is due to an increase in quantities from 43,560 to 79,082 to support the Total Munitions Requirements.

Equation to Translate Annual Cost to Total Cost

Total O&S Cost = Average Annual Cost per Rocket Pod x Number of Rocket Pods x Life per Rocket Pod = \$2.106K x 13,180 Rocket Pods x 10 Years = \$277.5 (BY 2003 \$M)

O&S Cost Variance		
Category	BY 2003 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2018 SAR	408.4	
Programmatic/Planning Factors	-55.3	Reduction is due to the decrease in quantities from 97,051 to 79,082 to support the Total Munitions Requirement.
Cost Estimating Methodology	-75.6	\$75.6M error reporting disposal costs in previous total O&S cost.
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	-130.9	
Current Estimate	277.5	

Disposal Estimate Details

Date of Estimate: January 13, 2020
Source of Estimate: POE
Disposal/Demilitarization Total Cost (BY 2003 \$M): 75.6