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Exhibit P-40, Budget Line Item Justification: PB 2020 Army **Date:** March 2019

Appropriation / Budget Activity / Budget Sub Activity: 2034A: Procurement of Ammunition, Army / BA 01: Ammunition / BSA 37: Artillery Ammunition	P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982
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ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604814A
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Line Item MDAP/MAIS Code: 366

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity (<i>Units in Each</i>)	9,641	2,841	2,208	-	804	804	737	226	236	232	-	16,925
Gross/Weapon System Cost (<i>\$ in Millions</i>)	927.578	220.234	173.891	-	93.486	93.486	86.282	41.068	43.000	43.000	-	1,628.539
Less PY Advance Procurement (<i>\$ in Millions</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) (<i>\$ in Millions</i>)	927.578	220.234	173.891	-	93.486	93.486	86.282	41.068	43.000	43.000	-	1,628.539
Plus CY Advance Procurement (<i>\$ in Millions</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority (<i>\$ in Millions</i>)	927.578	220.234	173.891	-	93.486	93.486	86.282	41.068	43.000	43.000	-	1,628.539

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares (<i>\$ in Millions</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost (<i>\$ in Dollars</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost (<i>\$ in Dollars</i>)	96,211.80	77,519.89	78,754.98	-	116,276.12	116,276.12	117,071.91	181,716.81	182,203.39	185,344.83	-	96,220.92

Description:

FY 2020 funding totals include \$0.0M for Base and \$93.486M for Overseas Contingency Operations (OCO); of which \$57.434M and quantity of 441 projectiles is realigned as part of the OCO for Base Requirements. FY 2020 OCO for Base Requirements is OCO funding for base budget requirements in support of the National Defense Strategy. The Budget requests these funds in OCO to comply with the base budget defense caps included in the Budget Control Act of 2011.

FY20 P1 total quantity is an error and does not match the correct quantity reflected in this P-40 Exhibit.

This budget line item includes the Excalibur family of munitions for the use in the M777A2 Lightweight 155mm Howitzer (LW155), the M109A6 Paladin Howitzer, the M109A7 Paladin PIM Howitzer and the Swedish Archer Howitzer.

(E80100) Excalibur is a Precision Guided Extended Range 155mm Artillery projectile providing Brigade Combat Teams an organic precision fires capability. Additionally it provides improved fire support capability due to its increased range of 40.5 kilometers and demonstrated accuracy of less than 3 meters radial miss distances, which enables a first round effect on target reducing the number of rounds required while reducing collateral damage. Excalibur Shaped Trajectory configuration enables user defined angle of attack and angle of fall to maximize effect on target. Excalibur is compatible with the M777A2 Lightweight 155mm Howitzer (LW155), the M109A6 Paladin Howitzer, the M109A7 Paladin PIM Howitzer, and the Swedish Archer Howitzer. Excalibur provides a 35% range increase over current Rocket Assisted Projectiles with a less than 10 meter circular error probable requirement at all ranges. Excalibur is resistant to Global Positioning System (GPS) jamming. Excalibur's mature configuration provides significant growth potential to support the National Defense Strategy, the Army Long Range Precision Fires (LRPF) Cross Functional Team (CFT), Cannon Delivered Area Effects Munitions (C-DAEM) Increment 1 Hit to Kill solution, and M777 Long Range Cannon (LRC) initiatives. Current Excalibur 1b has achieved 62.5 kilometers in Extended Range Cannon Artillery (ERCA) demonstration test.

Excalibur is currently fielded and in use by units throughout Afghanistan and deployed globally to support other Military Contingency Operations. Excalibur is an International Cooperative Development program, teamed with the Kingdom of Sweden (KoS), which contributed resources towards the development in accordance with an established Project Agreement. Excalibur Increment 1a-1 was initially fielded to units in Iraq and Afghanistan in response to an urgent need request in support of Operation Iraqi Freedom (as of September 2010 re-named to Operation New Dawn) and Operation Enduring Freedom. Increment 1a-2 was fielded in early FY 2012 and greatly increases range from 25.2 kilometers to 40.5 kilometers. Excalibur Increment 1b provides further performance improvements while significantly lowering unit costs. Increment 1b completed a successful Initial Operational Test and Evaluation in February 2014 as well as a Full Rate Production Decision Review in June 2014. The Excalibur Increment 1b projectile was Type Classified and Full Material Released in June 2014.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Army		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 2034A: Procurement of Ammunition, Army / BA 01: Ammunition / BSA 37: Artillery Ammunition		P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604814A
Line Item MDAP/MAIS Code: 366		

This item is Code A, approved for service use.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Army **Date:** March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2034A: Procurement of Ammunition, Army / BA 01: Ammunition / BSA 37: Artillery Ammunition

P-1 Line Item Number / Title:
6600E80100 / Proj 155mm Extended Range M982

ID Code (A=Service Ready, B=Not Service Ready): A **Program Elements for Code B Items:** N/A **Other Related Program Elements:** 0604814A

Line Item MDAP/MAIS Code: 366

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/MAIS Code	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)
P-5	E80103 / PROJ, 155mm ARTY, Extended Range M982-U Excalibur [DA58]	P-5a, P-21	A		9,641 / 927.578	2,841 / 220.234	2,208 / 173.891	- / -	804 / 93.486	804 / 93.486
P-40	Total Gross/Weapon System Cost				9,641 / 927.578	2,841 / 220.234	2,208 / 173.891	- / -	804 / 93.486	804 / 93.486

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
The FY 2020 Budget supports critical Army Title 10 war reserve/operational, training, and test requirements in accordance with Department of Defense Instruction 3000.04 (Munitions Requirements Process) and Army Regulation 5-13 (Total Army Munitions Requirements Process and Prioritization System). War reserve requirements support Office of the Secretary of Defense (OSD) approved Combatant Commander Operational Plans, Homeland Defense, and other OSD-directed missions. Training requirements support individual and collective training of Active and Reserve Component forces at Army schools, home station, and the combined training centers. Test requirements support the development, fielding, safety, and quality assurance of Army munitions and equipment throughout their life-cycle.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

This is a critical munition and war reserve item currently being used in combat. The FY 2020 request builds a war reserve inventory in accordance with the Army procurement goals.

FY 2020 funding totals include \$0.0 million for Base and \$93.486 million for Overseas Contingency Operations, with a quantity of 441 Increment 1b projectiles for \$57.434 realigned as part of the OCO for Base Requirements funding which reflects the Department's compliance with the Budget Control Act of 2011.

FY 2020 Overseas Contingency Operations funding also includes \$36.052 million, with a quantity of 363 Increment 1b projectiles for OCO for Enduring Requirements.

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Exhibit P-5, Cost Analysis: PB 2020 Army		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 2034A / 01 / 37	P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982	Item Number / Title [DODIC]: E80103 / PROJ, 155mm ARTY, Extended Range M982-U Excalibur [DA58]

ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:
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Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity (Units in Each)	9,641	2,841	2,208	-	804	804
Gross/Weapon System Cost (\$ in Millions)	927.578	220.234	173.891	-	93.486	93.486
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	927.578	220.234	173.891	-	93.486	93.486
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Total Obligation Authority (\$ in Millions)	927.578	220.234	173.891	-	93.486	93.486

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares (\$ in Millions)	-	-	-	-	-	-
Gross/Weapon System Unit Cost (\$ in Dollars)	96,211.80	77,519.89	78,754.98	-	116,276.12	116,276.12

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)
Hardware Cost																		
Recurring Cost																		
COMPLETE ROUND(†)	90,782.61	9,641	875.235	65,673.32	2,836	186.250	74,770.00	2,157	161.279	-	-	-	99,121.00	804	79.693	99,121.00	804	79.693
CONTAINER, EXCALIBUR	2,100.85	9,641	20.254	2,100.00	2,836	5.956	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal: Recurring Cost</i>	-	-	895.489	-	-	192.205	-	-	161.279	-	-	0.000	-	-	79.693	-	-	79.693
Subtotal: Hardware Cost	-	-	895.489	-	-	192.205	-	-	161.279	-	-	0.000	-	-	79.693	-	-	79.693
Software Cost																		
Non Recurring Cost																		
Shape Trajectory	-	-	-	-	-	14.000	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal: Non Recurring Cost</i>	-	-	-	-	-	14.000	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Software Cost	-	-	-	-	-	14.000	-	-	-	-	-	-	-	-	-	-	-	-
Support - Acceptance Testing Cost																		
Acceptance Test	-	-	1.881	-	-	1.050	-	-	0.600	-	-	-	-	-	0.371	-	-	0.371
<i>Subtotal: Support - Acceptance Testing Cost</i>	-	-	1.881	-	-	1.050	-	-	0.600	-	-	0.000	-	-	0.371	-	-	0.371
Support - Engineering Change Proposals Cost																		
Engineering Change Proposals	-	-	9.103	-	-	3.925	-	-	4.277	-	-	-	-	-	4.176	-	-	4.176

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Exhibit P-5, Cost Analysis: PB 2020 Army		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 2034A / 01 / 37	P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982	Item Number / Title [DODIC]: E80103 / PROJ, 155mm ARTY, Extended Range M982-U Excalibur [DA58]

ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:
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Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)
<i>Subtotal: Support - Engineering Change Proposals Cost</i>	-	-	9.103	-	-	3.925	-	-	4.277	-	-	0.000	-	-	4.176	-	-	4.176
Support - Hardware Analysis Cost																		
Hardware Analysis	-	-	5.350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal: Support - Hardware Analysis Cost</i>	-	-	5.350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Support - Product Improvement Cost																		
Reliability	-	-	1.325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal: Support - Product Improvement Cost</i>	-	-	1.325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Support - Production Engineering Cost																		
Production Engineering	-	-	12.653	-	-	7.554	-	-	7.043	-	-	-	-	-	8.591	-	-	8.591
<i>Subtotal: Support - Production Engineering Cost</i>	-	-	12.653	-	-	7.554	-	-	7.043	-	-	0.000	-	-	8.591	-	-	8.591
Support - Quality Assurance Cost																		
Quality Assurance	-	-	1.776	-	-	1.500	-	-	0.692	-	-	-	-	-	0.654	-	-	0.654
<i>Subtotal: Support - Quality Assurance Cost</i>	-	-	1.776	-	-	1.500	-	-	0.692	-	-	0.000	-	-	0.654	-	-	0.654
Gross/Weapon System Cost	96,211.80	9,641	927.578	77,519.89	2,841	220.234	78,754.98	2,208	173.891	-	-	-	116,276.12	804	93.486	116,276.12	804	93.486

Remarks:

Excalibur lb FY 2018 and prior year pricing benefited from contractor funded multiyear procurement strategy to minimize unit costs based on purchase quantities of 2000 - 2500 projectiles regardless of yearly government funding. FY 2019 and future year pricing based on traditional contract strategy of unit pricing depending on individual order quantity.

(†) indicates the presence of a P-5a

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Exhibit P-5a, Procurement History and Planning: PB 2020 Army							Date: March 2019				
Appropriation / Budget Activity / Budget Sub Activity: 2034A / 01 / 37			P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982				Item Number / Title [DODIC]: E80103 / PROJ, 155mm ARTY, Extended Range M982-U Excalibur [DA58]				

Cost Elements	O C O	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty <i>(Each)</i>	Unit Cost <i>(\$)</i>	Specs Avail Now?	Date Revision Available	RFP Issue Date
COMPLETE ROUND ^(†)		2018	RAYTHEON MISSILE SYSTEMS / TUCSON, AZ	Option / FFP	PICATINNY ARSENAL, NJ	Dec 2017	Sep 2019	821	65,673.32	Y		
COMPLETE ROUND ^(†)		2018	RAYTHEON MISSILE SYSTEMS, CO / TUCSON, AZ	Option / FFP	PICATINNY ARSENAL, NJ	Jun 2018	Jan 2020	2,015	65,673.32	Y		
COMPLETE ROUND ^(†)		2019	RAYTHEON MISSILE SYSTEMS,CO. / TUCSON, AZ	SS / FFP	PICATINNY ARSENAL, NJ	Mar 2019	Jan 2021	2,157	74,770.00	Y		
COMPLETE ROUND ^(†)	✓	2020	RAYTHEON MISSILE SYSTEMS,CO. / TUCSON, AZ	Option / FFP	PICATINNY ARSENAL, NJ	Dec 2019	Jan 2022	804	99,121.00	Y		

^(†) indicates the presence of a P-21

Remarks:

FY 2018 awards are options to an original competitive contract awarded in 2008.
FY 2019 is a new Sole Source contract.

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Exhibit P-21, Production Schedule: PB 2020 Army			Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 2034A / 01 / 37		P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982	
Item Number / Title [DODIC]: E80103 / PROJ, 155mm ARTY, Extended Range M982-U Excalibur [DA58]			

Cost Elements <i>(Units in Each)</i>					Fiscal Year 2018													Fiscal Year 2019													B A L A N C E		
O C C O	M F R #	FY	SERVICE	PROC QTY	ACCEP T P R I O R T O 1 O C T 2 0 1 7	BAL D U E A S O F 1 O C T	Calendar Year 2018													Calendar Year 2019													
							O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P			

COMPLETE ROUND																															
Prior Years Deliveries: 9641																															
	1	2018	ARMY	821	0	821		A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	621	
	2	2018	ARMY	2,015	0	2,015																								2,015	
	2	2018	MC (†)	69	0	69																								69	
	2	2018	Total	2,084	0	2,084																								2,084	
	3	2019	ARMY	2,157	0	2,157																					A	-	-	-	2,157
✓	3	2020	ARMY	804	0	804																								804	

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Exhibit P-21, Production Schedule: PB 2020 Army															Date: March 2019														
Appropriation / Budget Activity / Budget Sub Activity: 2034A / 01 / 37										P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982										Item Number / Title [DODIC]: E80103 / PROJ, 155mm ARTY, Extended Range M982-U Excalibur [DA58]									

Cost Elements <i>(Units in Each)</i>					Fiscal Year 2020															Fiscal Year 2021															B A L A N C E		
O C C O	M F R #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2019	BAL DUE AS OF 1 OCT	Calendar Year 2020															Calendar Year 2021															
							O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P							
COMPLETE ROUND																																					
Prior Years Deliveries: 9641																																					
	1	2018	ARMY	821	200	621	200	200	200	21																							0				
	2	2018	ARMY	2,015	0	2,015	-	-	-	179	184	184	184	184	184	184	183	183	183	183	-												0				
	2	2018	MC (†)	69	0	69	-	-	-	-	-	-	-	-	-	-	-	-	-	69												0					
	2	2018	Total	2,084	0	2,084	-	-	-	179	184	184	184	184	184	183	183	183	183	69	-	-	-	-	-	-	-	-	-	-	-	0					
	3	2019	ARMY	2,157	0	2,157	-	-	-	-	-	-	-	-	-	-	-	-	-	-	179	180	180	180	180	180	180	180	180	180	180	538					
✓	3	2020	ARMY	804	0	804			A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	804						
							O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P							

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Exhibit P-21, Production Schedule: PB 2020 Army		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 2034A / 01 / 37		P-1 Line Item Number / Title: 6600E80100 / Proj 155mm Extended Range M982
Item Number / Title [DODIC]: E80103 / PROJ, 155mm ARTY, Extended Range M982-U Excalibur [DA58]		

MFR Ref #	Manufacturer Name - Location	Production Rates (Each / Month)			Procurement Leadtime (Months)							
		MSR For 2020	1-8-5 For 2020	MAX For 2020	Initial				Reorder			
					ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1	ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1
1	RAYTHEON MISSILE SYSTEMS - TUCSON, AZ	40	200	400	12	3	21	24	12	9	19	28
2	RAYTHEON MISSILE SYSTEMS, CO - TUCSON, AZ	40	200	400	12	9	19	28	12	9	19	28
3	RAYTHEON MISSILE SYSTEMS,CO. - TUCSON, AZ	40	200	400	12	6	22	28	12	3	25	28

Remarks:
FY 2018 funded delivery period longer than 12 months due to unplanned increase in funds to support the critical munitions and to execute all available headspace on expiring contract to receive the most economical unit price.

(†) Delivery rows marked with this symbol indicate that they are funded through a separate Line Item. See the respective components' exhibits for details, including the full delivery schedule.
"A" in the Delivery Schedule indicates the Contract Award Date.

Note: Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to than 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand).If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).