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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	32.079	7.044	7.254	4.017	-	4.017	-	-	-	-	-	-
2038: <i>ADVANCED MINOR CALIBER GUN</i>	19.597	5.699	5.853	4.017	-	4.017	-	-	-	-	-	-
3401: <i>Guided Projectile</i>	12.482	1.345	1.401	0.000	-	0.000	-	-	-	-	-	-

**A. Mission Description and Budget Item Justification**

Project 2038: The 25mm MK 38 MOD 2 and MOD 3 Machine Gun Systems (MGS) provide Anti-Surface Warfare (ASUW) and Anti-terrorism and Force Protection (AT/FP) capability as a simple, stabilized, low cost solutions to outfit near-term deployers to counter small boat threats. Over 360 U.S. Navy-owned systems are installed on U.S. Navy AS, CG, CVN, DDG, LCC, LHA, LHD, LSD, OSV, PC class ships, MK VI Patrol Boats and U.S. Coast Guard Fast Response Cutters. Established in order to respond to Joint Urgent Operational Need Statement (JUONS) CC-0558 for Counter Unmanned Aerial Systems (C-UAS), the MK 38 MOD 3 MGS's electro-optical/infra-red sensor, hardware, and software is being upgraded to counter emerging unmanned aerial threats. Initial C-UAS capability was fielded in Q1FY20. Incremental improvements are being made to this C-UAS capability, for cybersecurity and to address operability issues. Meanwhile, the 30mm MK 38 MOD 4 Gun Weapon System, which is being developed under PE 0604030N PU 1037, will introduce greater accuracy, lethality, and effective range for C-UAS and Counter Unmanned Surface Vehicle (C-USV) capability with integration to highly accurate fire control system, 30mm gun, and targeting sensor. Project 2038 provides qualification and logistics development of the 30mm MK 38 MOD 4. Upgrading fielded 25mm MK 38 MGS to MOD 3 with C-UAS and concurrently developing the MOD 4 GWS is the fastest and most cost-effective way to field critical C-UAS ship self-defense capability.

Projects 3401: The Gun Launched Guided Projectile (GLGP) program leverages Hypervelocity Projectile (HVP) technology developed under each of the respective Strategic Capabilities Office (SCO) and Office of Naval Research (ONR) Future Naval Capabilities (FNC) programs to provide gun-based Anti-Ship Cruise Missile (ASCM) defense. The Gun Launched Guided Projectile program is cancelled in FY2022 due to cost and is concluded in FY2021.

Gun-based ASCM defense capability increases both ship's weapon capacity against ASCM raids and battle persistence in successive ASCM raids. The performance improvement is achieved without relying on Vertical Launch System (VLS) cells for weapon deployment. This effectively deepens the ship's magazine for raid defense and supports larger allocation of VLS cells to offensive capability. In addition to improved capacity and battle persistence, gun-based ASCM defense solutions provide a cost effective response to an ASCM attack due to the unit cost of the projectile relative to missiles. The introduction of gun-based ASCM defense for large caliber guns is made possible by recent advancements in microelectronics, sensors, and energetic systems that enable precision guidance and tailored lethality. GLGP incorporates these HVP technologies into an aerodynamically streamlined sub-caliber airframe to achieve a highly maneuverable projectile. When launched from the MK 45 Gun Weapon System (GWS) at high velocities, GLGP's high maneuverability combined with high kinetic energy at the intercept yields effectiveness against ASCMs. Initial HVP technology demonstration focused on land-based system integration and implementation. Shipboard integration requires some modifications to the initial concept of operations to implement the technology effectively and affordably. This project matures critical enabling technologies needed to integrate HVP technology on Navy ships and executes the requisite acquisition, systems engineering, and test planning activities to initiate a development effort.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Navy	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	7.328	10.578	10.098	-	10.098
Current President's Budget	7.044	7.254	4.017	-	4.017
Total Adjustments	-0.284	-3.324	-6.081	-	-6.081
• Congressional General Reductions	-	-0.053			
• Congressional Directed Reductions	-	-4.728			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.284	0.000			
• Program Adjustments	0.000	1.457	-5.917	-	-5.917
• Rate/Misc Adjustments	0.000	0.000	-0.164	-	-0.164

**Change Summary Explanation**

FY20: -\$0.284M SBIR

FY21: +\$1.457M OCO Request, -\$4.728M Restoring acquisition accountability, -\$0.053M undistributed congressional reduction

FY22: -\$5.917M GLGP, -\$0.164M Misc rate adjustments

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>				<b>Project (Number/Name)</b> 2038 / <i>ADVANCED MINOR CALIBER GUN</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2038: <i>ADVANCED MINOR CALIBER GUN</i>	19.597	5.699	5.853	4.017	-	4.017	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

Project 2038: The 25mm MK 38 MOD 2 and MOD 3 Machine Gun Systems (MGS) provide Anti-Surface Warfare (ASUW) and Anti-terrorism and Force Protection (AT/FP) capability as a simple, stabilized, low cost solutions to outfit near-term deployers to counter small boat threats. Over 360 U.S. Navy-owned systems are installed on U.S. Navy AS, CG, CVN, DDG, LCC, LHA, LHD, LSD, OSV, PC class ships, MK VI Patrol Boats and U.S. Coast Guard Fast Response Cutters. Established in order to respond to Joint Urgent Operational Need Statement (JUONS) CC-0558) for Counter Unmanned Aerial Systems (C-UAS), the MK 38 MOD 3 MGS's electro-optical/infra-red sensor, hardware, and software is being upgraded to counter emerging unmanned aerial threats. Initial C-UAS capability was fielded in Q1FY20. Incremental improvements are being made to this C-UAS capability, for cybersecurity and to address operability issues. Meanwhile, the 30mm MK 38 MOD 4 Gun Weapon System, which is being developed under PE 0604030N PU 1037, will introduce greater accuracy, lethality, and effective range for C-UAS and Counter Unmanned Surface Vehicle (C-USV) capability with integration to highly accurate fire control system, 30mm gun, and targeting sensor. Project 2038 provides qualification and logistics development of the 30mm MK 38 MOD 4. Upgrading fielded 25mm MK 38 MGS to MOD 3 with C-UAS and concurrently developing the MOD 4 GWS is the fastest and most cost-effective way to field critical C-UAS ship self-defense capability.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Systems Engineering and Testing	5.699	5.853	4.017	0.000	4.017
<b>Articles:</b>	-	-	-	-	-
<b>FY 2021 Plans:</b>					
- Completed evaluation of 30mm gun mount candidates via comparative testing and down-selection					
- Completed evaluation of electro-optical sensor via comparative testing and down-selection					
- Qualification of prototype 30mm MK 38 MOD 4 Gun Weapon System (GWS)					
- MK 38 MOD 4 GWS Preliminary logistics development					
- Start planning for Quick Reaction Assessment (QRA) of prototype 30mm MK 38 MOD 4 GWS					
- Evaluate 30mm Ammunition Candidate for GWS Integration					
<b>FY 2021 OCO Plans:</b>					
- Continue developing and testing follow-on C-UAS software build for MK 38 MOD 3 with Cybersecurity Compliant Operating Systems					
<b>FY 2022 Base Plans:</b>					
- Continue qualification of prototype 30mm MK 38 MOD 4 Gun Weapon System (GWS)					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>	<b>Project (Number/Name)</b> 2038 / <i>ADVANCED MINOR CALIBER GUN</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<ul style="list-style-type: none"> <li>- Qualify and certify follow-on C-UAS software build for MK 38 MOD 3</li> <li>- Collect user feedback on C-UAS upgrade to MK 38 MOD 3</li> <li>- Continue planning for Quick Reaction Assessment of prototype 30mm MK 38 MOD 4 GWS</li> <li>- Continue Evaluation of 30mm Ammunition Candidate for GWS Integration</li> <li>- Test and field tracker improvements and train Fleet</li> </ul> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease in funding due to reduced qualification efforts of prototype 30mm gun weapon system. Prototype 30mm gun weapon system evaluation project finishes in FY2023.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	5.699	5.853	4.017	0.000	4.017

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Engineering and technical support for logistics development and limited qualification of the 30mm MK 38 MOD 4 GWS competitively acquired using Other Transactional Authority (OTA) through the Defense Ordnance Technology Consortium (DOTC).

Development and testing of C-UAS software build for MK38 MOD 3 with Cybersecurity Compliant Operating Systems acquired via existing basic ordering agreement with BAE Land & Armaments system for MK 38 MGS.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>	<b>Project (Number/Name)</b> 2038 / <i>ADVANCED MINOR CALIBER GUN</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Counter-UAS (JUONS CC-0558) Primary Product Integration	SS/BOA	BAE Systems : Minneapolis MN	14.624	1.200	Sep 2020	0.000		0.000		-		0.000	-	-	-
30mm MK 38 MOD 4 Electro-optical Sensor/ Gun Mount Performance Demonstration	C/CPFF	BAE Systems : Minneapolis, MN	0.000	1.641	Oct 2020	0.000		0.000		-		0.000	-	-	-
30mm MK 38 MOD 4 Electro-optical Sensor/ Gun Mount Performance Demonstration	C/CPFF	MSI-Defence Systems : Rock Hill, SC	0.000	0.575	Sep 2020	0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			14.624	3.416		0.000		0.000		-		0.000	-	-	N/A

**Remarks**  
 Primary Product Integration effort awarded to BAE Systems to update the 25mm MK 38 MOD 3 system's C-UAS software to transition to a cybersecurity compliant operating system and address operability. MK38 Counter UAS/UAV Improvement Cost Category revised to 30mm MK 38 MOD 4 GWS. The new 30mm MK 38 MOD 4 GWS efforts awarded to BAE and MSI to conduct performance demonstrations of electro-optical sensor and gun mount candidates for the MK 38 MOD 4 GWS down-select.

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering Services	WR	NSWC, DD : Dahlgren, VA	4.118	1.660	Nov 2019	5.046	Jan 2021	2.285	Oct 2021	-		2.285	-	-	-
Government Engineering Services	WR	NSWC, IHD : Picatinny, NJ	0.690	0.460	Feb 2020	0.523	Jan 2021	0.561	Oct 2021	-		0.561	-	-	-
Government Engineering Services	WR	NSWC, CR : Crane, IN	0.165	0.163	Feb 2020	0.284	Apr 2021	1.171	Oct 2021	-		1.171	-	-	-
<b>Subtotal</b>			4.973	2.283		5.853		4.017		-		4.017	-	-	N/A

**Remarks**  
 Government Engineering Services: NSWC Dahlgren provides engineering services for gun weapon system technical direction and test engineering. NSWC IHD provides engineering services for gun weapon system configuration management, logistics, and in-service engineering. NSWC Crane provides engineering services for electro-optical sensor technical direction and test engineering.



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**Exhibit R-4, RDT&E Schedule Profile:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>	<b>Project (Number/Name)</b> 2038 / <i>ADVANCED MINOR CALIBER GUN</i>
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
<b>Proj 2038</b>																												
Counter-UAS (JUONS CC-0558): Certification & Fielding of Software Baselines	█																											
Counter-UAS (JUONS CC-0558): Software Fixes for Capability Improvements			█																									
Counter-UAS (JUONS CC-0558): Develop and Test Follow-on Software Baseline with Cybersecurity Compliant Operating Systems				█																								
Counter-UAS (JUONS CC-0558): Qualification and Certification of Follow-on Software Baseline												█																
Counter-UAS (JUONS CC-0558): Field follow-on Software Baseline, Train User and Collect Feedback																█												
30mm MK 38 MOD 4 GWS: Evaluation of Gun Mount candidates	█																											
30mm MK 38 MOD 4 GWS: Evaluation of EOS candidates	█																											
30mm MK 38 MOD 4 GWS: Limited Qualification of Prototype Gun Weapon System								█																				
30mm MK 38 MOD 4 GWS: Preliminary logistics development								█																				
30mm MK 38 MOD 4 GWS: Plan and Conduct Quick Reaction Assessment								█																				
30mm MK 38 MOD 4 GWS: Evaluate 30mm Ammunition Candidate for GWS Integration				█																								

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>	<b>Project (Number/Name)</b> 2038 / <i>ADVANCED MINOR CALIBER GUN</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2038</b>				
Counter-UAS (JUONS CC-0558): Certification & Fielding of Software Baselines	1	2020	2	2020
Counter-UAS (JUONS CC-0558): Software Fixes for Capability Improvements	3	2020	4	2021
Counter-UAS (JUONS CC-0558): Develop and Test Follow-on Software Baseline with Cybersecurity Compliant Operating Systems	4	2020	3	2022
Counter-UAS (JUONS CC-0558): Qualification and Certification of Follow-on Software Baseline	3	2022	4	2022
Counter-UAS (JUONS CC-0558): Field follow-on Software Baseline, Train User and Collect Feedback	4	2022	4	2022
30mm MK 38 MOD 4 GWS: Evaluation of Gun Mount candidates	1	2020	1	2021
30mm MK 38 MOD 4 GWS: Evaluation of EOS candidates	1	2020	1	2021
30mm MK 38 MOD 4 GWS: Limited Qualification of Prototype Gun Weapon System	3	2021	2	2022
30mm MK 38 MOD 4 GWS: Preliminary logistics development	2	2021	2	2022
30mm MK 38 MOD 4 GWS: Plan and Conduct Quick Reaction Assessment	3	2021	4	2022
30mm MK 38 MOD 4 GWS: Evaluate 30mm Ammunition Candidate for GWS Integration	1	2021	4	2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>				<b>Project (Number/Name)</b> 3401 / <i>Guided Projectile</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3401: <i>Guided Projectile</i>	12.482	1.345	1.401	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

Projects 3401: The Gun Launched Guided Projectile (GLGP) program leverages Hypervelocity Projectile (HVP) technology developed under each of the respective Strategic Capabilities Office (SCO) and Office of Naval Research (ONR) Future Naval Capabilities (FNC) programs to provide gun-based Anti-Ship Cruise Missile (ASCM) defense. The Gun Launched Guided Projectile program is cancelled in FY2022 due to cost and is concluded in FY2021.

Gun-based ASCM defense capability increases both ship's weapon capacity against ASCM raids and battle persistence in successive ASCM raids. The performance improvement is achieved without relying on Vertical Launch System (VLS) cells for weapon deployment. This effectively deepens the ship's magazine for raid defense and supports larger allocation of VLS cells to offensive capability. In addition to improved capacity and battle persistence, gun-based ASCM defense solutions provide a cost effective response to an ASCM attack due to the unit cost of the projectile relative to missiles. The introduction of gun-based ASCM defense for large caliber guns is made possible by recent advancements in microelectronics, sensors, and energetic systems that enable precision guidance and tailored lethality. GLGP incorporates these HVP technologies into an aerodynamically streamlined sub-caliber airframe to achieve a highly maneuverable projectile. When launched from the MK 45 Gun Weapon System (GWS) at high velocities, GLGP's high maneuverability combined with high kinetic energy at the intercept yields effectiveness against ASCMs. Initial HVP technology demonstration focused on land-based system integration and implementation. Shipboard integration requires some modifications to the initial concept of operations to implement the technology effectively and affordably. This project matures critical enabling technologies needed to integrate HVP technology on Navy ships and executes the requisite acquisition, systems engineering, and test planning activities to initiate a development effort.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Systems Engineering and Testing	1.345	1.401	0.000	0.000	0.000
<b>Articles:</b>	-	-	-	-	-
<b>FY 2021 Plans:</b>					
- Refine Milestone B documentation based on completion of sensitivity/ trade space analyses					
- Refine combat system integration architecture definition					
- Complete common interface definition documentation preparation for ammunition handling, projectile initialization					
- FY21 Accomplishments:					
Completed development of HVP technical data package					
Drafted requirement assumptions and acquisition documentation to support Milestone B					
Completed draft GLGP Interface control documentation and draft GLGP Aegis integration construct					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>	<b>Project (Number/Name)</b> 3401 / <i>Guided Projectile</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Completed risk reduction and technology maturation reports Conducted HVP/GLGP gun-based defense studies Documented models and simulations for HVP technology  <b><i>FY 2022 Base Plans:</i></b> N/A  <b><i>FY 2022 OCO Plans:</i></b> N/A  <b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> FY 2021 to FY 2022 decrease due to completion of Technology Maturation efforts.					
<b>Accomplishments/Planned Programs Subtotals</b>	1.345	1.401	0.000	0.000	0.000

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Leverage the Office Of Naval Research (ONR) sponsored Future Naval Capabilities project, Strategic Capabilities Office (SCO) Hypervelocity Projectile (HVP) demonstrations, and Government developed Interface Control Drawings and specification to establish a competitive solicitation for Engineering & Manufacturing Development (E&MD) Phase.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>	<b>Project (Number/Name)</b> 3401 / <i>Guided Projectile</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
5 Inch Cartridge Case Process Modification	C/CPFF	Rock Island : Rock Island, IN	0.684	0.000		0.000		0.000		-		0.000	-	-	-
Interface Development	WR	NSWC Dahlgren : Dahlgren, VA	1.085	0.000		0.000		0.000		-		0.000	-	-	-
Tech Maturation	FFRDC	MIT : Boston, MA	0.350	0.000		0.000		0.000		-		0.000	-	-	-
Tech Maturation	WR	NSWC IH : Indian Head, MD	4.452	0.000		0.000		0.000		-		0.000	-	-	-
Tech Maturation	FFRDC	APL : Laurel, MD	0.312	0.000		0.000		0.000		-		0.000	-	-	-
Combat System and Terminal Guidance Analyses	C/CPFF	APL : Laurel, MD	0.500	0.000		0.150	Nov 2020	0.000		-		0.000	-	-	-
Systems Engineering, Cyber, T&E, Software Guidance, and Electronic Engineering	WR	NSWC DD : Dahlgren, VA	2.670	1.125	Nov 2019	0.833	Nov 2020	0.000		-		0.000	-	-	-
Fuzing Warhead, Propellant Charge	WR	NSWC IHD : indian Head, MD	0.150	0.120	Apr 2020	0.138	Nov 2020	0.000		-		0.000	-	-	-
CM/Data Management Acquisition Support Logistics	WR	NSWC IH : Picatinny, NJ	0.630	0.100	Feb 2020	0.146	Nov 2020	0.000		-		0.000	-	-	-
<b>Subtotal</b>			10.833	1.345		1.267		0.000		-		0.000	-	-	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Program Office Contractor Services	C/CPFF	Various : Arlington, VA	1.445	0.000		0.134	Nov 2020	0.000		-		0.000	-	-	-
Program Support Services	FFRDC	MITRE : McLean, VA	0.089	0.000		0.000		0.000		-		0.000	-	-	-
Program Support Services	WR	NPS : Monterey, CA	0.090	0.000		0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			1.624	0.000		0.134		0.000		-		0.000	-	-	N/A





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**Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603795N / <i>Land Attack Tech</i>	<b>Project (Number/Name)</b> 3401 / <i>Guided Projectile</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 3401</i></b>				
EMD planning	1	2020	4	2021
Technology Maturation and studies	1	2020	4	2021