

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy **Date:** February 2018

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	15.471	17.260	35.668	15.529	1.400	16.929	0.000	0.000	0.000	0.000	0.000	85.328
2020: <i>Advanced Gun System Projectile</i>	0.000	0.000	18.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.000
2038: <i>ADVANCED MINOR CALIBER GUN</i>	15.471	1.073	2.100	0.000	1.400	1.400	0.000	0.000	0.000	0.000	0.000	20.044
3370: <i>Railgun</i>	0.000	4.581	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.581
3401: <i>Guided Projectile</i>	0.000	0.000	15.568	15.529	-	15.529	0.000	0.000	0.000	0.000	0.000	31.097
9999: <i>Congressional Adds</i>	0.000	11.606	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.606

A. Mission Description and Budget Item Justification

Project 2020: The Advanced Gun System (AGS) projectile will provide Naval Surface Fires support for DDG 1000 class destroyers from the MK-51 Gun Weapon System (GWS). The AGS projectile will replace the Long Range Land Attack Projectile which was the original 155mm munitions developed for the MK-51 GWS. The development effort focuses on integration of a 155mm guided projectile in the MK-51 GWS which includes modifications to address initialization, dimensional, gun launch, and automated handling interface differences. Components affected by the integration of a 155mm guided projectile include the guided projectile, the propelling charge, the MK-51 Gun Weapon System, and the Total Ship Computing Environment. The program was funded under PE 0204202N DDG 1000 in FY 2017. The capability is planned for Initial Operational Capability in 4QFY2021. This is not a new start.

Project 2038: The Advanced Minor Caliber Gun supported non-recurring engineering, component integration, and testing efforts required for capability upgrades to the MK38 Mod 2, a minor caliber gun weapon system.

Project 2038 OCO: In order to respond to the Joint Urgent Operational Need (JUONs CC-0558) Counter Unmanned Aerial Systems (CUAS), the MK 38 MOD 2 Machine Gun System will be upgraded to counter these threats. Fielding is expected to start 1st quarter FY20.

Projects 3370 & 3401: The Gun Launched Guided Projectile effort will double the range of the current 5-inch conventional ammunition while meeting multi-mission operational requirements for Anti-Surface Warfare (ASuW), Anti-Air Warfare (AAW), and Naval Surface Fire Support (NSFS) missions. This project executes pre milestone (MS) B activities and begins preparations for the Engineering, Manufacturing, and Development Phase planned for FY 2020. This includes development of system specifications and interface control documents to support MS B. Maturation of subcomponents and integration risk reduction efforts will be initiated to support MS B Acquisition Milestone and Competitive E&MD Award. The Gun Launched Guided Projectile project was previously funded under the PE 0603925N / Directed Energy and Electronic Weapon Systems (Proj: 3370 Railgun) and 0603795N / Land Attack Tech (Proj: 3370 Railgun). This is not a new start.

Proj 9999: The objective is to demonstrate a 5-inch guided projectile capable of conducting Naval Surface Fire Support missions to a range of not less than 26 nautical miles (nmi). Priority consideration will be given to mature designs capable of achieving qualification for fleet introduction in the near term.

UNCLASSIFIED

PE 0603795N: *Land Attack Tech* **UNCLASSIFIED** Page 2 of 31 R-1 Line #74
Navy

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy									Date: February 2018			
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 2020 / Advanced Gun System Projectile			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2020: Advanced Gun System Projectile	0.000	0.000	18.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Advanced Gun System (AGS) projectile will provide affordable Naval Surface Fires Support for DDG 1000 class destroyers from the MK 51 Gun Weapon System (commonly referred to as AGS). Initiation of a demonstration and development planning for an affordable round was directed by Assistant Secretary of the Navy, Research, Development, and Acquisition to address the unaffordability of the Long Range Land Attack Projectile. The effort focuses on integration of an affordable 155mm guided projectile in the MK 51 GWS and includes modifications to address initialization, dimensional, gun launch, and automated handling interface differences. Components affected by the integration of an affordable 155mm guided projectile include the guided projectile, the propelling charge, the MK 51 Gun Weapon System, and the Total Ship Computing Environment. The program is funded under PE 0204202N DDG 1000 in FY 2017. Initial Operational Capability is planned for 4QFY2021.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Systems Engineering and Design Verification Articles: FY 2018 Plans: Baseline Interface Control Documents Baseline system specification for a 155mm guided projectile Initiate modifications to the guided projectile to support interface requirements Begin design on MK-51 Gun Weapon System modifications Begin design verification testing on MK-51 Gun Weapon System modifications Begin design verification testing for an alternate propelling charge system Complete alternate logical and electrical Critical Design Review for initialization conversion Complete a technology transfer to industry for the electrical and logical interface conversion Initiate development on system integration modifications FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement:								0.000	18.000	0.000	0.000	0.000
								-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018		
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>		Project (Number/Name) 2020 / <i>Advanced Gun System Projectile</i>	

<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Decrease due to Advanced Gun System not being funded past FY 2018.					
Accomplishments/Planned Programs Subtotals	0.000	18.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
Projectile decision based on capability, cost, technology maturity, and ability to support DDG-1000 Initial Operational Capability schedule.

E. Performance Metrics
Development cost, unit cost, Initial Operational Capability schedule.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 2020 / Advanced Gun System Projectile					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Guided Projectile Modification Development	C/CPFF	TBD : Not Specified	0.000	0.000		3.200	Dec 2017	0.000		-		0.000	39.502	42.702	-
Propelling Charge Development	C/CPFF	BAE Systems : Fridley, MN	0.000	0.000		2.655	Dec 2017	0.000		-		0.000	9.148	11.803	-
Munitions Container Development	C/CPFF	BAE Systems : Fridley, MN	0.000	0.000		2.100	Dec 2017	0.000		-		0.000	3.540	5.640	-
Munition Container Modification Development, Electrical	WR	NSWC Dahlgren : Dahlgren, VA	0.000	0.000		0.365	Oct 2017	0.000		-		0.000	0.200	0.565	-
Munitions Container and Propelling Charge Technical Data Package Modification	WR	NSWC IHEODTD : Picatinny, NJ	0.000	0.000		0.241	Oct 2017	0.000		-		0.000	0.246	0.487	-
Munitions Container and Propelling Charge Technical Data Package Modification	WR	NSWC CN : Corona, CA	0.000	0.000		0.075	Oct 2017	0.000		-		0.000	0.080	0.155	-
MK 51 Munition Container Modification Development, Software	MIPR	ARDEC : Picatinny, NJ	0.000	0.000		0.250	Oct 2017	0.000		-		0.000	0.100	0.350	-
MK 51 GWS Modification Development	C/CPFF	BAE Systems : Fridley, MN	0.000	0.000		5.068	Dec 2017	0.000		-		0.000	19.932	25.000	-
Total Ship Computing Environment Modification Development	C/CPFF	Raytheon IDS : Tewksbury, MA	0.000	0.000		0.000		0.000		-		0.000	15.000	15.000	-
Subtotal			0.000	0.000		13.954		0.000		-		0.000	87.748	101.702	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Services Engineering	WR	NSWC Dahlgren : Dahlgren, VA	0.000	0.000		0.780	Oct 2017	0.000		-		0.000	1.251	2.031	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 2020 / Advanced Gun System Projectile					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Services Engineering	WR	NSWC IHEOTD : Indian Head MD	0.000	0.000		0.790	Oct 2017	0.000		-		0.000	1.128	1.918	-
Government Services Engineering	WR	NSWC IHEOTD : Picatinny, NJ	0.000	0.000		0.626	Oct 2017	0.000		-		0.000	1.144	1.770	-
Government Services Engineering	WR	NAWC,CL : China Lake, CA	0.000	0.000		0.100	Oct 2017	0.000		-		0.000	0.181	0.281	-
Subtotal			0.000	0.000		2.296		0.000		-		0.000	3.704	6.000	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Analysis and Articles	MIPR	USAASC : Picatinny, NJ	0.000	0.000		0.500	Oct 2017	0.000		-		0.000	4.704	5.204	-
Test Range	MIPR	Dugway Proving Grounds : Dugway, UT	0.000	0.000		0.450	Oct 2017	0.000		-		0.000	0.900	1.350	-
Test Range	MIPR	Yuma Proving Grounds : Yuma, AZ	0.000	0.000		0.180	Oct 2017	0.000		-		0.000	0.300	0.480	-
Test Range	WR	Dahlgren Range : Dahlgren, VA	0.000	0.000		0.320	Oct 2017	0.000		-		0.000	1.269	1.589	-
Test Range	WR	White Sands Missile Range : White Sands, NM	0.000	0.000		0.000		0.000		-		0.000	0.900	0.900	-
Test Range	WR	NSWC IHEODTD : Picatinny, NJ	0.000	0.000		0.000		0.000		-		0.000	0.575	0.575	-
Subtotal			0.000	0.000		1.450		0.000		-		0.000	8.648	10.098	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy													Date: February 2018		
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>				Project (Number/Name) 2020 / <i>Advanced Gun System Projectile</i>					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Support Services	C/CPFF	CACI : Arlington, VA	0.000	0.000		0.300	Oct 2017	0.000		-		0.000	0.900	1.200	-
Subtotal			0.000	0.000		0.300		0.000		-		0.000	0.900	1.200	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		18.000		0.000		-		0.000	101.000	119.000	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy	Date: February 2018
--	----------------------------

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 2020 / <i>Advanced Gun System Projectile</i>
--	---	--

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
<i>Proj 2020</i>																												
Guided Projectile Modification Development																												
Propelling Charge Development																												
Munitions Container Modification Development																												
MK 51 GWS Development																												
Propelling Charge Qual, DT/FOTE hardware award																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 2020 / <i>Advanced Gun System Projectile</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 2020</i>				
Guided Projectile Modification Development	1	2018	4	2018
Propelling Charge Development	1	2018	4	2018
Munitions Container Modification Development	1	2018	4	2018
MK 51 GWS Development	1	2018	4	2018
Propelling Charge Qual, DT/FOTE hardware award	2	2018	4	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 2038 / ADVANCED MINOR CALIBER GUN			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2038: ADVANCED MINOR CALIBER GUN	15.471	1.073	2.100	0.000	1.400	1.400	0.000	0.000	0.000	0.000	0.000	20.044
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Advanced Minor Caliber Gun project supported non-recurring engineering, component integration, testing and qualification efforts required for the capability upgrades to the MK 38 MOD 2, a minor caliber gun weapon system. The new configuration (MOD 3) creates a near term improvement to address ship based, close range solutions to defeat the Fast Attack Craft (FAC)/Fast In-Shore Attack Craft (FIAC) threat. The MK 38 MOD 2 was developed in FY 2004 to outfit near term deployers to counter small boat threats.												
OCO: In order to respond to the Joint Urgent Operational Need (CC-0558) for Counter Unmanned Aerial Systems (CUAS), the MK 38 MOD 2 Machine Gun System will be upgraded to counter these threats. Both FY2018 and FY2019 funding in OCO supports the modifications for this requirement. Fielding is expected to start 1st quarter FY20.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Systems Engineering and Testing Articles:								1.073	2.100	0.000	1.400	1.400
								-	-	-	-	-
FY 2018 Plans: Begin development of system requirements and specifications. Begin development and incremental testing of Counter-Unmanned Aerial System (C-UAS) software upgrade. Procure Engineering Prototype Hardware Develop Introductory Safety Review Board package for Weapon System Explosives Safety Review Board Concurrence. FY 2019 Base Plans: N/A FY 2019 OCO Plans: - Delivery of final Counter-UAS capability software release - Complete land-based and at-sea qualification testing - Obtain WSESRB concurrence for deployment - Obtain element certification of new MK 38 HW/W baseline												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy				Date: February 2018	
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>		Project (Number/Name) 2038 / <i>ADVANCED MINOR CALIBER GUN</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO
- Field engineering design model for Initial Operational Capability					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Decrease from FY 2018 to FY2019 due to nearing completion of efforts supporting Joint Urgent Operational Need (CC-0558) for Counter Unmanned Aerial Systems (CUAS).					
Accomplishments/Planned Programs Subtotals		1.073	2.100	0.000	1.400
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy Hardware improvement based on engineering changes was integrated into FY 2017 and follow-on production orders.					
E. Performance Metrics Quarterly program reviews and semi-annual product certification panel reviews.					

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>						Project (Number/Name) 2038 / <i>ADVANCED MINOR CALIBER GUN</i>			
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Product Integration	SS/BOA	BAE Systems : Minneapolis MN	12.062	0.663	Apr 2017	1.500	Mar 2018	0.000		0.500	Nov 2018	0.500	0.000	14.725	-
Subtotal			12.062	0.663		1.500		0.000		0.500		0.500	0.000	14.725	N/A
Remarks ECPs spiral development - Electro Optical Site (EOS) capabilities															
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Services	WR	NSWC, DD : Dahlgren, VA	2.406	0.343	Jan 2017	0.200	Mar 2018	0.000		0.500	Nov 2018	0.500	0.000	3.449	-
Government Engineering Services	WR	NSWC, IHD : Picatinny, NJ	0.638	0.002	Oct 2017	0.200	Mar 2018	0.000		0.200	Nov 2018	0.200	0.000	1.040	-
Government Engineering Seervices	WR	NSWC, CR : Crane, IN	0.000	0.065	Oct 2017	0.200	Mar 2018	0.000		0.200	Nov 2018	0.200	0.000	0.465	-
Subtotal			3.044	0.410		0.600		0.000		0.900		0.900	0.000	4.954	N/A
Remarks Configuration Management (CM) work engineering tech manuals updates.															
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support Services	C/CPFF	ALION : Washington, DC	0.365	0.000		0.000		0.000		-		0.000	0.000	0.365	-
Subtotal			0.365	0.000		0.000		0.000		-		0.000	0.000	0.365	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy										Date: February 2018				
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech					Project (Number/Name) 2038 / ADVANCED MINOR CALIBER GUN				
		Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		15.471	1.073		2.100		0.000		1.400		1.400	0.000	20.044	N/A
Remarks														

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy


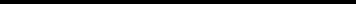

Date: February 2018

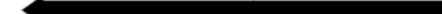
Appropriation/Budget Activity
1319 / 4

R-1 Program Element (Number/Name)
PE 0603795N / *Land Attack Tech*

Project (Number/Name)
2038 / *ADVANCED MINOR CALIBER GUN*

2038 / Advance Minor Caliber Gun Program Schedule

ID	Task Name	2016				2017				2018				2019				2020				2021				2022			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	MK 38 MOD 3 (Increment II)																												
2	Qualification Test																												
3	ECPs Based on Sea Trials																												

ID	Task Name	2016				2017				2018				2019				2020				2021				2022			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	MK38 MGS CUAS Upgrade																												
2	Requirements Development																												
3	Design Development																												
4	Final SW Release																												
5	Qualification Testing																												
6	Safety & Certification																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 2038 / <i>ADVANCED MINOR CALIBER GUN</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 2038</i>				
Increment II Qualification Test	1	2017	3	2017
Engineering Changes based on Sea Trials	3	2017	4	2017
Requirements and Design Development	1	2018	4	2018
Final SW Release Counter (UAS)	3	2018	2	2019
Qualification Testing	1	2019	4	2019
Safety and Element Certification	3	2019	3	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>				Project (Number/Name) 3370 / <i>Railgun</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3370: <i>Railgun</i>	0.000	4.581	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.581
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
The Hyper Velocity Projectile Block (BLK) 0 will double the range of the current 5-inch conventional ammunition to support multi-mission operational requirements for Anti-Surface Warfare (ASuW), Anti-Air Warfare (AAW), and Naval Surface Fire Support (NSFS) missions. This project executes pre Milestone B (MS B) activities and begins preparations for the Engineering, Manufacturing, and Development Phase planned for FY 2019. This includes development of the system specification and interfaces, and support Hyper Velocity Projectile risk reduction efforts required to transition to Milestone B (MS B). The Hyper Velocity Projectile project was previously funded under the PE 0603925N / Directed Energy and Electronic Weapon Systems.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Systems Engineering and Testing	4.581	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans: FY 2018 plans is funded under project 3401: Guided Projectile.					
FY 2019 Base Plans: N/A					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: No change from FY 2018 to FY 2019.					
Accomplishments/Planned Programs Subtotals	4.581	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
Leveraging the ONR sponsored Future Naval Capabilities project, SCO activities, and Gov't developed Interface Control Drawings and specifications to establish a competitive solicitation for E&MD Phase in FY 2020.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 3370 / <i>Railgun</i>

E. Performance Metrics

Quarterly Program Reviews, Monthly Reports, and Periodic Design Reviews.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 3370 / Railgun					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Services	WR	NSWC, DD : Dahlgren, VA	0.000	3.671	Jan 2017	0.000		0.000		-		0.000	0.000	3.671	-
Government Engineering Services	WR	NSWC, Indian Head : Indian Head, MD	0.000	0.250	Oct 2016	0.000		0.000		-		0.000	0.000	0.250	-
Government Engineering Services	WR	NSWC IHD Picatinny Detachment : Picatinny Arsenal, NJ	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Government Engineering Services	MIPR	COTF/MCOTEA : Norfolk, VA	0.000	0.039	Dec 2016	0.000		0.000		-		0.000	0.000	0.039	-
HVP Tactical Development Risk Reduction Studies/ Analysis	C/CPFF	DOTC Competitively Selected Vendor: TBD : L3	0.000	0.116	Jan 2017	0.000		0.000		-		0.000	0.000	0.116	-
Program Support Services	C/CPFF	MITRE : McLean, VA	0.000	0.350	Jul 2017	0.000		0.000		-		0.000	0.000	0.350	-
Subtotal			0.000	4.426		0.000		0.000		-		0.000	0.000	4.426	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hypervelocity Projectile	WR	NSWC PHD : Pt. Hueneme, CA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Subtotal			0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WNY Front Office Corp Ops	C/CPFF	NAVSEA : WNY	0.000	0.141	Jul 2017	0.000		0.000		-		0.000	0.000	0.141	-
Cancelled Accounts	C/CPFF	NAVSEA : WNY	0.000	0.014	Jul 2017	0.000		0.000		-		0.000	0.000	0.014	-
Subtotal			0.000	0.155		0.000		0.000		-		0.000	0.000	0.155	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy										Date: February 2018			
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>					Project (Number/Name) 3370 / <i>Railgun</i>			
	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	4.581		0.000		0.000		-		0.000	0.000	4.581	N/A
Remarks													

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy	Date: February 2018
--	----------------------------

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 3370 / <i>Railgun</i>
--	---	---

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
<i>Proj 3370</i>																												
Technical Studies/Risk Reduction effort																												
System Engineering Plan (SEP) Development																												
MS B Documentation																												
System Spec and Interface Requirement																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 3370 / <i>Railgun</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 3370</i>				
Technical Studies/Risk Reduction effort	1	2017	4	2017
System Engineering Plan (SEP) Development	1	2017	4	2017
MS B Documentation	1	2017	1	2017
System Spec and Interface Requirement	1	2017	4	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 3401 / Guided Projectile			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3401: Guided Projectile	0.000	0.000	15.568	15.529	-	15.529	0.000	0.000	0.000	0.000	0.000	31.097
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Decrease of \$263K a result of OSD Budgetary PBD/RMD Adjustments and DON Leadership Decisions results in decrease in DOTC funded amount.

A. Mission Description and Budget Item Justification

The Gun Launched Guided Projectile effort will double the range of the current 5-inch conventional ammunition while meeting multi-mission operational requirements for Anti-Surface Warfare (ASuW), Anti-Air Warfare (AAW), and Naval Surface Fire Support (NSFS) missions. This project executes pre milestone (MS) B activities and begins preparations for the Engineering, Manufacturing, and Development Phase planned for FY 2020. This includes development of system specifications and interface control documents to support MS B. Maturation of subcomponents and integration risk reduction efforts will be initiated to support MS B Acquisition Milestone and Competitive E&MD Award. The Gun Launched Guided Projectile project was previously funded under the PE 0603925N / Directed Energy and Electronic Weapon Systems (Proj: 3370 Railgun) and 0603795N / Land Attack Tech (Proj: 3370 Railgun). This is not a new start.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Systems Engineering and Testing	0.000	15.568	15.529	0.000	15.529
Articles:	-	-	-	-	-
FY 2018 Plans: Continue development of Mechanical and Electrical Interface Control Documentation (ICDs). Continue Tactical Subcomponent Risk Reduction Development Efforts. Test MK 45 Mod 4 Initialization and Gun Mount Prototypes verifying interfaces and specifications. Develop documentation required for MS B Entrance Criteria. Continue Risk Reduction Studies. Develop System Architecture for Combat System Integration.					
FY 2019 Base Plans: Finalize and publish Request for Proposals for Engineering, Manufacturing, and Development award. Evaluate technical and cost proposals. Complete development of Mechanical and Electrical Interface Control Documentation (ICDs) Complete documentation required for MS B Entrance Criteria. Continue Tactical Subcomponent Risk Reduction Development Efforts. Continue to develop System Architecture for Combat System Integration.					
FY 2019 OCO Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy				Date: February 2018	
Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>		Project (Number/Name) 3401 / <i>Guided Projectile</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO
N/A					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> No significant change from FY 2018 to FY 2019.					
Accomplishments/Planned Programs Subtotals		0.000	15.568	15.529	0.000
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy Leveraging the ONR sponsored Future Naval Capabilities project, SCO activities, and Gov't developed Interface Control Drawings and specification to establish a competitive solicitation for Engineering & Manufacturing Development (E&MD) Phase.					
E. Performance Metrics Quarterly Program Reviews, Monthly Reports, and Periodic Design Reviews.					

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 3401 / Guided Projectile					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Services	WR	NSWC Indian Head : Indian Head, MD	0.000	0.000		0.308	Nov 2017	0.455	Oct 2018	-		0.455	0.000	0.763	-
Projectile Tactical Development	WR	DOTC Competitively Selected Commercial Vendor : Picatinny, NJ	0.000	0.000		5.375	Dec 2017	6.581	Oct 2018	-		6.581	0.000	11.956	-
CSEA Integration	C/CPFF	Lockheed Martin : Minneapolis, MN	0.000	0.000		1.000	Nov 2017	1.068	Oct 2018	-		1.068	0.000	2.068	-
Subtotal			0.000	0.000		6.683		8.104		-		8.104	0.000	14.787	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Services	WR	NSWC DD : Dahlgren, VA	0.000	0.000		4.825	Oct 2017	5.150	Oct 2018	-		5.150	0.000	9.975	-
Analysis of Alternatives	C/CPFF	CACI : Arlington, VA	0.000	0.000		2.000	Nov 2017	0.000		-		0.000	0.000	2.000	-
Government Engineering Services	WR	COTF/MCOTEA : Norfolk, VA	0.000	0.000		0.290	Nov 2017	0.290	Oct 2018	-		0.290	0.000	0.580	-
Program Support Services	C/CPFF	MITRE : McLean, VA	0.000	0.000		0.350	Nov 2017	0.450	Oct 2018	-		0.450	0.000	0.800	-
Program Support Services	C/CPFF	JHU/APL : Baltimore, MD	0.000	0.000		0.300	Oct 2017	0.300	Oct 2018	-		0.300	0.000	0.600	-
Subtotal			0.000	0.000		7.765		6.190		-		6.190	0.000	13.955	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IWS 3.0 Support	C/CPFF	TMB, CACI, Alion : Arlington, VA	0.000	0.000		1.120	Oct 2017	1.235	Oct 2018	-		1.235	0.000	2.355	-
Subtotal			0.000	0.000		1.120		1.235		-		1.235	0.000	2.355	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy											Date: February 2018		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 3401 / Guided Projectile				
	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		15.568		15.529		-		15.529	0.000	31.097	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy	Date: February 2018
--	----------------------------

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

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
<i>Proj 3401</i>																												
Risk Reduction Studies																												
Technical Studies/Risk Reduction effort																												
System Engineering Plan (SEP) Development																												
Test & Evaluation Mastr Plan (TEMP) Development																												
Milestone B Decision																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 3401 / <i>Guided Projectile</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 3401</i>				
Risk Reduction Studies	1	2017	4	2018
Technical Studies/Risk Reduction effort	1	2017	4	2019
System Engineering Plan (SEP) Development	1	2017	2	2018
Test & Evaluation Mastr Plan (TEMP) Development	1	2017	1	2019
Milestone B Decision	4	2019	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>				Project (Number/Name) 9999 / <i>Congressional Adds</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	11.606	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.606
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
The objective is to demonstrate a 5-inch guided projectile capable of conducting Naval Surface Fire Support missions to a range of not less than 26 nautical miles (nmi). Priority consideration will be given to mature designs capable of achieving qualification for fleet introduction in the near term.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018
Congressional Add: Fly Off Competition	11.606	0.000
FY 2017 Accomplishments: -Select qualified vendors via a Broad Agency Announcement. -Award multiple contracts. -Obtain prototype projectiles. -Conduct land-based demonstration testing of guided munitions. -Review data and document results. FY 2018 Plans: N/A		
Congressional Adds Subtotals	11.606	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
Competitively select qualified vendors to conduct demonstrations.

E. Performance Metrics
Flight Test Readiness Reviews & Test Reports.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603795N / Land Attack Tech				Project (Number/Name) 9999 / Congressional Adds					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Production of test flight hardware	C/FFP	TBD : TBD	0.000	8.090	Feb 2018	0.000		0.000		-		0.000	0.000	8.090	-
Subtotal			0.000	8.090		0.000		0.000		-		0.000	0.000	8.090	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Navy Tech Team	WR	NSWC, IH : Picatinny Arsenal, NJ	0.000	0.669	Dec 2017	0.000		0.000		-		0.000	0.000	0.669	-
Subtotal			0.000	0.669		0.000		0.000		-		0.000	0.000	0.669	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Range Test Support	WR	NSWC DD : Dahlgren, VA	0.000	0.206	Jan 2018	0.000		0.000		-		0.000	0.000	0.206	-
Test Range	WR	White Sands Missile Range : WhiteSands, NM	0.000	2.641	Jan 2018	0.000		0.000		-		0.000	0.000	2.641	-
Subtotal			0.000	2.847		0.000		0.000		-		0.000	0.000	2.847	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	11.606		0.000		0.000		-		0.000	0.000	11.606	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy	Date: February 2018
--	----------------------------

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
--	---	--

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Proj 9999																												
Broad Agency Announcement (BAA)																												
Demonstration Testing Contract Award																												
Hardware Preparation and Test Planning																												
Guided Flight Test Series																												
Conduct Test Analysis and Document Results																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603795N / <i>Land Attack Tech</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 9999</i>				
Broad Agency Announcement (BAA)	4	2017	1	2018
Demonstration Testing Contract Award	2	2018	2	2018
Hardware Preparation and Test Planning	2	2018	4	2018
Guided Flight Test Series	4	2018	4	2018
Conduct Test Analysis and Document Results	4	2018	4	2018