Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0204413N / *Amphibious Tactical Supt Units*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	35.084	11.330	13.929	3.940	-	3.940	1.898	1.244	1.286	1.313	Continuing	Continuing
2231: *LCAC / LCU 1700*	34.502	11.330	10.536	1.650	-	1.650	1.185	1.244	1.286	1.313	Continuing	Continuing
2909: *Amphibious Lighterage Development*	0.582	0.000	3.393	2.290	-	2.290	0.713	0.000	0.000	0.000	0.000	6.978

A. Mission Description and Budget Item Justification

Landing Craft Air Cushion (LCAC) Technology Transition: Provides for research and development efforts on LCAC Future Naval Capabilities to transfer technologies to functional uses on current LCACs. Current technology initiatives include sustainability/readiness/performance analyses, LCAC communication improvements, development and qualification of Full Authority Digital Engine Controller (FADEC) for LCAC engines, compliance with Cybersecurity policy regulations, and LCAC fuel efficiency initiatives.

LCU 1700 (formerly Surface Connector X Replacement (SC(X)(R))): Replacement program for the current Landing Craft Utility (LCU) 1610 class craft - a class of craft that has significantly exceeded its 20-year planned service life. LCU 1700 will provide similar payload, range, speed, and interoperability. Contract award is planned for 2017.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	11.335	13.929	1.646	-	1.646
Current President's Budget	11.330	13.929	3.940	-	3.940
Total Adjustments	-0.005	0.000	2.294	-	2.294
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.005	0.000			
• Program Adjustments	0.000	0.000	2.500	-	2.500
• Rate/Misc Adjustments	0.000	0.000	-0.206	-	-0.206

Change Summary Explanation

FY 2018 net increase of $2.294 million is to support continued development of the Amphibious Support Craft Vehicle.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / *Amphibious Tactical Supt Units*	Project (Number/Name) 2231 / *LCAC / LCU 1700*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2231: *LCAC / LCU 1700*	34.502	11.330	10.536	1.650	-	1.650	1.185	1.244	1.286	1.313	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Landing Craft Air Cushion (LCAC) Technology Transition: Provides for research and development efforts on LCAC Future Naval Capabilities to transfer technologies to functional uses on current LCACs. Current technology initiatives include sustainability/readiness/performance analyses, LCAC communication improvements, development and qualification of Full Authority Digital Engine Controller (FADEC) for LCAC engines, compliance with Cybersecurity policy regulations, and LCAC fuel efficiency initiatives.

LCU 1700 (formerly SC (X)(R)): Replacement program for the current Landing Craft Utility (LCU) 1610 class craft - a class of craft that has significantly exceeded its 20-year planned service life. LCU 1700 will provide similar payload, range, speed, and interoperability. Contract award is planned for 2017.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: LCAC RDT&E,N and LCU 1700	11.330	10.536	1.650	0.000	1.650
Articles:	-	-	-	-	-
FY 2016 Accomplishments: FY16 LCAC: Developed technologies to prevent moisture intrusion into craft windows; developed auxiliary power unit controller to improve visibility and equipment reliability. Improved the reliability of the LCAC and hardened main engines against marine corrosion. Addressed electronic charting requirements and met Windows operating system IA requirements. Completed development of LCAC equipment and procedures which maximized the sea state in which Marine Amphibious Assault Vehicles (ACVs) can be launched from a waterborne LCAC. FY16 LCU 1700: Transitioned from Preliminary Design (PD) to Contract Design (CD). CD efforts are the next iteration of shipbuilding design, requiring significantly greater detail in order to support the effective translation of the engineering decisions and findings from the PD into a biddable technical package, including specifications and contract guidance drawings which will allow the shipbuilders to develop competitive bids once the Request for Proposal (RFP) is released. Conducted supporting trade studies with Industry input, component or system prototype testing and modeling and simulation as needed to support the Contract Design (CD) effort. These efforts will be part of the integrated Developmental/Operational Testing approach.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2231 / *LCAC / LCU 1700*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continued use of Integrated Product Teams to support development of the Test and Evaluation Master Plan (TEMP) and Life Cycle Sustainment Plan (LCSP), and initiated development of the Acquisition Strategy and other supporting Milestone documentation. ***FY 2017 Plans:*** FY17 LCAC: Improve reliability and maintainability of the LCAC HM&E systems including testing a composite ramp to reduce maintenance and repair costs, software development and testing to improve powertrain performance, redesigning hydraulic flex lines as well as bow thruster bearings to extend MTBF, and developing and testing new methods for well deck lifting procedures. Develop updates to meet Windows 10 Operating System IA requirements and cybersecurity needs. Complete mandated migration to electronic charting. Address C4N obsolescence, usability and maintenance issues. FY17 LCU 1700: Provide risk reduction to the LCU 1700 design by continuing development in the following areas: perform hydrodynamic testing, to include self-propelled and maneuvering tests model tests and flow channel optimization of propulsor and rudders; modeling and simulation analysis, to include finite element analysis (FEA) and computational fluid dynamics (CFD); demonstrate full scale system level prototyping, utilizing LCU 1610 craft; and assessment of Windows 10 Operating System, IA requirements, and cybersecurity needs. These efforts will be part of the integrated Developmental/Operational Testing approach. Continue use of Integrated Product Teams to support development of the Test and Evaluation Master Plan (TEMP) and Life Cycle Sustainment Plan (LCSP). Continue development of Milestone documentation supporting a combined MS B/C. ***FY 2018 Base Plans:*** FY18 LCAC: Improve reliability and maintainability of the LCAC HM&E systems to address safety concerns, reduce maintenance and repair costs, and address obsolescence issues; efforts may include testing new battery charger (VIPUR), bow thruster bearing prototype evaluation, investigating new tools/procedures to improve deep skirt maintenance. Complete the technical data package for Windows 10 updates to SBC4 and LMSS stations in accordance with DoD directives and Cybersecurity requirements; additionally, efforts will include seeking Platform IT RMF accreditation as a result of directives to implement additional Cybersecurity controls required under RMF. Complete the technical data package for electronic navigation on LCAC; in accordance with OPNAVINST 9420.2A, landing must meet electronic navigation requirements including the processing and display of DNCs and ENCs.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2231 / *LCAC / LCU 1700*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY18 LCU 1700: Conduct risk reduction efforts and special studies/analyses which support opportunities for Life Cycle/Total Ownership Cost (TOC) reductions for the class and may address producibility improvements, increased reliability, and/or improved ease of maintenance for components or systems. Additionally, efforts will include seeking Platform IT RMF accreditation as a result of the directives to implement additional Cybersecurity controls required under RMF. Continue use of Integrated Product Teams to support updates of the initial Test and Evaluation Master Plan (TEMP), Life Cycle Sustainment Plan (LCSP), Program Protection Plan (PPP), and other program documentation. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	11.330	10.536	1.650	0.000	1.650

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN 0970: *LCAC*	15.125	3.090	5.507	-	5.507	24.190	5.795	20.881	21.301	0.000	196.193
• SCN 5139: *LCAC SLEP*	80.738	1.774	0.000	-	0.000	23.723	0.000	0.000	0.000	0.000	1,363.920
• SCN 5100: *LCU 1700*	34.000	34.000	31.850	-	31.850	41.752	86.596	88.331	90.076	287.782	694.387

Remarks

D. Acquisition Strategy

Technology Transition - RDT&E efforts commenced in FY06. Multiple contracts and Field Activities are involved through FY21 to complete the various projects.

E. Performance Metrics

LCAC: Continue to improve the reliability, maintainability, and security of the LCAC.

LCU 1700: Continue risk reduction efforts and complete milestone (MS) documentation in support of a combined MS B/C.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / *Amphibious Tactical Supt Units*	Project (Number/Name) 2909 / *Amphibious Lighterage Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2909: *Amphibious Lighterage Development*	0.582	0.000	3.393	2.290	-	2.290	0.713	0.000	0.000	0.000	0.000	6.978
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Amphibious Support Craft Vehicle (ASCV) which will be the Lighter Amphibious Resupply Cargo, 5 ton (LARC-V) Replacement, provides amphibious equipment and personnel transport as well as near shore salvage and diving capability. It is a vital piece of equipment required for the execution of the Naval Beach Group (NBG) and Underwater Construction Team (UCT) missions.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: LARC-V Replacement	0.000	3.393	2.290	0.000	2.290
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Conduct scale modeling, prototype development and testing, and prepare draft solicitation package for low rate initial production (LRIP) craft in FY 19.					
FY 2018 Base Plans: Continue prototype development, stability testing, contract scope development and operational assessment of the replacement craft and initiate fabrication of production representative samples.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	3.393	2.290	0.000	2.290

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2909 / *Amphibious Lighterage Development*

D. Acquisition Strategy

RDT&E funding is required to develop a replacement amphibious vehicle to support OPLAN and Required Operational Capability/Potential Operating Environment (ROC/POE) requirements of the Naval Beach Groups and Underwater Construction Teams. Technology investigation began in FY15. Requirements documentation and analysis of alternatives and other such efforts are largely being accomplished with in house resources. Design and initial production efforts will be accomplished via a competitive award contract.

E. Performance Metrics

Quarterly Program Reviews are conducted with the performer to include funds status discussion, schedule review.