Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy											Date: February 2015	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0204413N *I Amphibious Tactical Supt Units*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	24.328	4.534	4.609	11.335	-	11.335	8.900	2.111	1.629	1.662	Continuing	Continuing
2231: *SC(X)(R)*	24.328	4.534	4.027	11.335	-	11.335	8.900	2.111	1.629	1.662	Continuing	Continuing
2909: *Amphibious Lighterage Development*	0.000	-	0.582	-	-	-	-	-	-	-	-	0.582

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, new torque meter design for LCAC ETF40B engines, Marine Rotor Active Balancing System (MRABS), and LCAC fuel efficiency initiatives.

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. SC(X)(R) will provide similar payload, range, speed, and interoperability. Procurement is currently scheduled to begin in FY18.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	4.382	4.609	11.026	-	11.026
Current President's Budget	4.534	4.609	11.335	-	11.335
Total Adjustments	0.152	-	0.309	-	0.309
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.162	-			
• SBIR/STTR Transfer	-0.010	-			
• Program Adjustments	-	-	0.366	-	0.366
• Rate/Misc Adjustments	-	-	-0.057	-	-0.057

Change Summary Explanation

The FY 2016 funding request was reduced by $1.334 million to account for the availability of prior year execution balances and increased $1.700 million to address SC(X)(R) RDTEN Design and Development efforts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy	Date: February 2015
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0204413N *I Amphibious Tactical Supt Units*

FY 2014 program adjustment reflects an increase of $0.162 million to begin the definition of requirements and Analysis of Alternatives (AoA) which would enable the LCAC to transport and perform at-sea launch of legacy and future United States Marine Corps (USMC) vehicles and SBIR transfer of $0.010 million.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / *Amphibious Tactical Supt Units*	Project (Number/Name) 2231 / *SC(X)(R)*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
2231: *SC(X)(R)*	24.328	4.534	4.027	11.335	-	11.335	8.900	2.111	1.629	1.662	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, new torque meter design for LCAC ETF40B engines, Marine Rotor Active Balancing System (MRABS), and LCAC fuel efficiency initiatives.

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. SC(X)(R) will provide similar payload, range, speed, and interoperability. Procurement is currently scheduled to begin in FY18.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: LCAC RDT&E,N and LCU Replacement	4.534	4.027	11.335	-	11.335
Articles:	-	-	-	-	-
FY 2014 Accomplishments: FY14 LCAC: Performed full-scale testing of composite vehicle ramps and underway testing of composite propulsion shafting (entire drive train); researched and tested improved bow thruster bearings to achieve increased reliability; initiated the definition of requirements, AoA, and feasibility study in support of the launch of USMC vehicles from an LCAC. FY14 SC(X)(R): Completed Materiel Solution Analysis and the AoA; continued requirements documentation development; conducted Software Specification Review (SSR); initiated preliminary design / contract design; began development of Test and Evaluation Master Plan (TEMP).					
FY 2015 Plans: FY15 LCAC: Perform full-scale testing of all-in-one LCAC power supply capable of charging craft batteries, powering 28VD electronics and providing 60Hz 115VAC power; develop technologies to prevent moisture intrusion into craft windows; develop auxiliary power unit controller to improve visibility and equipment reliability.					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2231 / *SC(X)(R)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
FY15 SC(X)(R): Complete requirements documentation; continue preliminary design / contract design and TEMP development; conduct System Functional Review (SFR) and Preliminary Design Review (PDR); initiate Life Cycle Sustainment Plan (LCSP) development; begin integrated developmental / operational testing; Capability Development Document (CDD) approval. ***FY 2016 Base Plans:*** FY16 LCAC: Improve the reliability of the LCAC main engine fuel shutoff valve and harden main engines against marine corrosion. FY16 SC(X)(R): Complete preliminary design and contract design. Transition from Preliminary Design into Contract Design requires a sub system level of detail and most significantly a design that supports the development of a specification for a Gate 4, Requirement Decision Point (RDP), and System Functional Review (SFR). The design development phase requires the stand up and frequent meeting/support to OSD Integrated Product Teams including systems engineering, acquisition, test, logistics and cost in preparation for MS B. The contract design effort will explore innovative and cost saving concepts such as flexible infrastructure, incorporation of commonality products, and a common design environment. Continue participation by Shipbuilders to support affordability trade-offs and informing a producible design. Milestone B documents will be developed and refined. Continue TEMP and LCSP development Continue integrated developmental and operational testing. Conduct Early Operational Assessment (EOA). ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	4.534	4.027	11.335	-	11.335

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2231 / *SC(X)(R)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• OPN 0970: *Amphibious Tactical Support Units*	14.431	7.158	20.965	-	20.965	3.237	5.445	4.141	5.707	Continuing	Continuing
• SCN 5139: *LCAC SLEP*	80.987	40.485	80.738	-	80.738	82.777	-	-	-	85.054	1,506.232
• SCN 5100: *SC(X)(R) Procurement*	-	-	-	-	-	-	33.842	63.663	64.497	Continuing	Continuing

Remarks

D. Acquisition Strategy

Technology Transition - RDT&E efforts commenced in FY06. Multiple contracts and Field Activities are involved through FY20 to complete the various projects.

E. Performance Metrics

FY14 LCAC: Performed full-scale testing of composite vehicle ramps and underway testing of composite propulsion shafting (entire drive train); researched and tested improved bow thruster bearings to achieve increased reliability; initiated the definition of requirements, AoA, and feasibility study in support of the launch of USMC vehicles from an LCAC.

FY14 SC(X)(R): Completed Materiel Solution Analysis and the AoA; continued requirements documentation development; conducted SSR; initiated preliminary design / contract design; began development of the TEMP.

FY15 LCAC: Perform full-scale testing of all-in-one LCAC power supply capable of charging craft batteries, powering 28VD electronics and providing 60Hz 115VAC power; develop technologies to prevent moisture intrusion into craft windows; develop auxiliary power unit controller to improve visibility and equipment reliability.

FY15 SC(X)(R): Complete requirements documentation; continue preliminary design / contract design and TEMP development; conduct SFR and PDR; initiate LCSP development; begin integrated developmental / operational testing; CDD approval.

FY16 LCAC: Improve the reliability of the LCAC main engine fuel shutoff valve and harden main engines against marine corrosion.

FY16 SC(X)(R):

Complete preliminary design and contract design.

Transition from Preliminary Design into Contract Design requires a sub system level of detail and most significantly a design that supports the development of a specification for a Gate 4, Requirement Decision Point (RDP), and System Functional Review (SFR). The design development phase requires the stand up and frequent meeting/support to OSD Integrated Product Teams including systems engineering, acquisition, test, logistics and cost in preparation for MS B. The contract design effort

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2231 / *SC(X)(R)*

will explore innovative and cost saving concepts such as flexible infrastructure, incorporation of commonality products, and a common design environment. Continue participation by Shipbuilders to support affordability trade-offs and informing a producible design. Milestone B documents will be developed and refined.

Continue TEMP and LCSP development

Continue integrated developmental and operational testing.

Conduct Early Operational Assessment (EOA).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / *Amphibious Tactical Supt Units*	Project (Number/Name) 2231 / *SC(X)(R)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Development	WR	NSWC CD : Philadelphia, PA	8.325	-		-		-		-		-	-	8.325	-
Systems Engineering	WR	NSWC CD : Philadelphia, PA	3.229	0.913	Feb 2014	1.196	Feb 2015	1.252	Feb 2016	-		1.252	3.296	9.886	-
SC(X)(R)	Various	Various : Various	2.091	2.382	Apr 2014	1.407	Mar 2015	8.591	Mar 2016	-		8.591	7.087	21.558	-
		Subtotal	13.645	3.295		2.603		9.843		-		9.843	10.383	39.769	-

Remarks

*The key events driving the increase in funding between FY15 and FY16 are the following SC(X)(R) efforts: Transition from Preliminary Design (PD) to Contract Design (CD) efforts. CD efforts translate the engineering findings and decisions 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. Additionally, the FY16 Product Development funds will support the Test & Evaluation planning, Life Cycle Sustainment Plan (LCSP) development, integrated developmental and operational testing, conduct Early Operational Assessment (EOA), continue document develop for combined Milestone B/C, involve industry in design development through trade studies, and begin prototyping systems efforts.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NSWC PCD : Panama City, FL	6.340	1.037	Apr 2014	1.159	Mar 2015	1.214	Mar 2016	-		1.214	3.195	12.945	-
SC(X)(R)	Various	Various : Various	0.565	-		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	6.905	1.037		1.159		1.214		-		1.214	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental T&E	WR	Various : Various	0.287	-		-		-		-		-	-	0.287	-
Operational T&E	WR	NSWC PCD : Panama City, FL	0.777	0.156	Mar 2014	0.205	Mar 2015	0.215	Mar 2016	-		0.215	0.565	1.918	-
Test Assets	WR	NSWC PCD : Panama City, FL	0.850	-		-		-		-		-	-	0.850	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / *Amphibious Tactical Supt Units*	Project (Number/Name) 2231 / *SC(X)(R)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	1.914	0.156		0.205		0.215		-		0.215	0.565	3.055	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	WR	Various : Various	0.726	-		-		-		-		-	-	0.726	-
Program Mangement Support	WR	NSWC PCD : Panama City, FL	1.063	0.046	Apr 2014	0.060	Apr 2015	0.063	Apr 2016	-		0.063	0.165	1.397	-
Travel	WR	NAVSEA : Not Specified	0.064	-		-		-		-		-	-	0.064	-
DAWDF	MIPR	OSD : Not Specified	0.011	-		-		-		-		-	-	0.011	-
		Subtotal	1.864	0.046		0.060		0.063		-		0.063	0.165	2.198	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	24.328	4.534		4.027		11.335		-		11.335	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2231 / *SC(X)(R)*

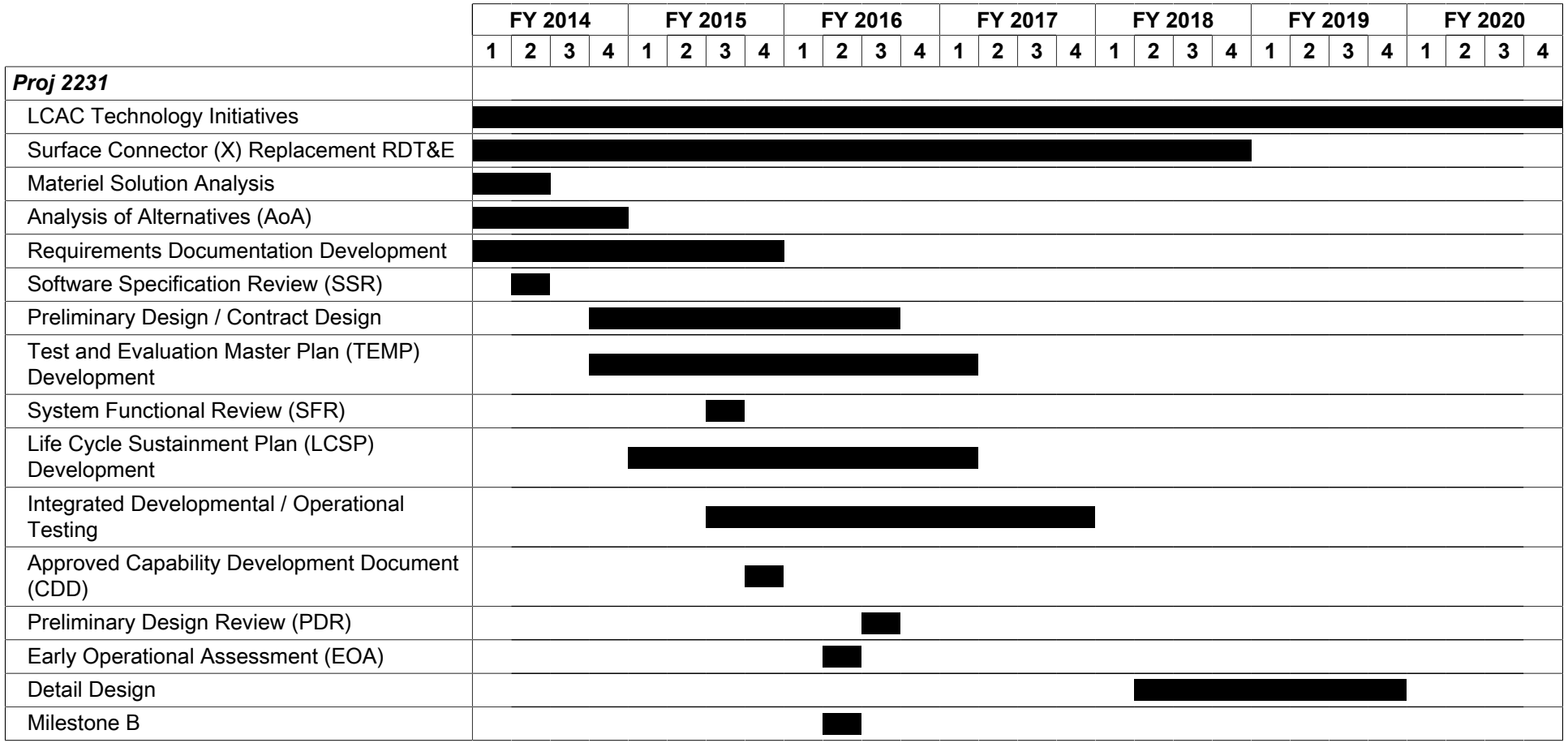

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2231 / *SC(X)(R)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2231				
LCAC Technology Initiatives	1	2014	4	2020
Surface Connector (X) Replacement RDT&E	1	2014	4	2018
Materiel Solution Analysis	1	2014	2	2014
Analysis of Alternatives (AoA)	1	2014	4	2014
Requirements Documentation Development	1	2014	4	2015
Software Specification Review (SSR)	2	2014	2	2014
Preliminary Design / Contract Design	4	2014	3	2016
Test and Evaluation Master Plan (TEMP) Development	4	2014	1	2017
System Functional Review (SFR)	3	2015	3	2015
Life Cycle Sustainment Plan (LCSP) Development	1	2015	1	2017
Integrated Developmental / Operational Testing	3	2015	4	2017
Approved Capability Development Document (CDD)	4	2015	4	2015
Preliminary Design Review (PDR)	3	2016	3	2016
Early Operational Assessment (EOA)	2	2016	2	2016
Detail Design	2	2018	4	2019
Milestone B	2	2016	2	2016

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
2909: *Amphibious Lighterage Development*	-	-	0.582	-	-	-	-	-	-	-	-	0.582
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Sealift support amphibious vehicle which will be the Lighter Amphibious Resupply Cargo, 5 ton (LARC-V) Replacement, provides amphibious equipment and personnel transport and 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: New Accomplishment/Planned Program Entry	-	0.582	-	-	-
Articles:	-	-	-	-	-
FY 2014 Accomplishments: New Start Project not funded for FY14 "Technology investigation unfunded outyear requirement".					
FY 2015 Plans: Commence Technology Investigation in FY15, NAVFAC HQ, NAVFAC field activity and other agencies are involved in this effort. Research for the propulsion systems and human interface with replacement near shore amphibious initiatives.					
FY 2016 Base Plans: N/A					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	0.582	-	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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 begin development of a replacement amphibious vehicle to support OPLAN and Required Operational Capability/Potential Operation Environment (ROC/POE) requirements of the NBGs and UCTs. Technology Investigation to commence in FY15, Naval Facilities Engineering Command (NAVFAC)HQ, NAVFAC field activity and other agencies are involved in this effort.

E. Performance Metrics

FY15:
15 Oct 2014 Award Engineering and Manufacturing Development (EMD) contract
15 Dec 2014 Award Low Rate Initial Production (LRIP) contract

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2909 / *Amphibious Lighterage Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Amphibious Vehicle Replacement	WR	Engineering Expeditionary Warfare Center (EXWC) : Port Hueneme, CA	0.000	-		0.582	Jan 2015	-		-		-	-	0.582	0.900
		Subtotal	0.000	-		0.582		-		-		-	-	0.582	0.900

Remarks

RDTEN funding is required to begin development of a replacement amphibious vehicle to support OPLAN and Required Operational Capability/Potential Operation Environment (ROC/POE) requirements of the NBGs and UCTs.

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		0.582		-		-		-	-	0.582	0.900

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2909 / *Amphibious Lighterage Development*

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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 2909																												
Development of acquisition and design requirements for Amphibious Vehicle Replacement					[redacted]																							

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204413N / *Amphibious Tactical Supt Units*	**Project (Number/Name)** 2909 / *Amphibious Lighterage Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2909				
Development of acquisition and design requirements for Amphibious Vehicle Replacement	1	2015	1	2016