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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

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 0603581N / (U)LITTORAL COMBAT SHIP
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1,114.963	80.199	91.416	51.630	-	51.630	40.844	34.092	10.523	6.079	Continuing	Continuing
3096: <i>Littoral Combat Ship</i>	1,114.963	80.199	68.209	28.906	-	28.906	20.772	15.955	9.763	5.276	Continuing	Continuing
4506: <i>LCS Training</i>	0.000	0.000	8.207	22.724	-	22.724	20.072	18.137	0.760	0.803	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	0.000	15.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.000

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 374

A. Mission Description and Budget Item Justification

This Program Element (PE) provides funds for detailed design, development, construction, issue resolution, certification, integration, and testing of the Littoral Combat Ship (LCS). LCS operates with focused-mission packages that deploy manned and unmanned vehicles to execute a variety of missions, including anti-submarine warfare (ASW), surface warfare (SUW), and mine countermeasures (MCM). LCS also possesses inherent capabilities, regardless of the mission package installed, including intelligence, surveillance, and reconnaissance (ISR), maritime interdiction/interception operations (MIO), anti-terrorism/force protection (AT/FP), air warfare self-defense, joint littoral mobility, and logistic support for movement of personnel and supplies. This relatively small, shallow-draft, high-speed surface combatant complements the U.S. Navy's Surface Fleet by operating in environments where it is impossible or undesirable to employ larger deeper-draft, multi-mission ships. LCS can deploy independently to overseas littoral regions or remain on station for extended periods of time either with a battle group or through a forward-basing arrangement. LCS will operate with Carrier Strike Groups, Surface Action Groups, or independently as dictated by the mission and environment. Additionally, LCS can operate cooperatively with the U.S. Coast Guard and Allies.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	86.705	118.416	92.021	-	92.021
Current President's Budget	80.199	91.416	51.630	-	51.630
Total Adjustments	-6.506	-27.000	-40.391	-	-40.391
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-42.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	15.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.100	0.000			
• SBIR/STTR Transfer	-1.406	0.000			
• Program Adjustments	0.000	0.000	-37.031	-	-37.031
• Rate/Misc Adjustments	0.000	0.000	-3.360	-	-3.360

UNCLASSIFIED

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Appropriation/Budget Activity
 1319: *Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)*

R-1 Program Element (Number/Name)
 PE 0603581N / (U)LITTORAL COMBAT SHIP

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

Congressional Add: *LCS Training Courseware*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

FY 2015	FY 2016
0.000	15.000
0.000	15.000
0.000	15.000

Change Summary Explanation

In FY15, \$5.1M was reprogrammed into PE 0604610N to support HAAWC efforts. \$1.406M was reduced for SBIR.

In FY16, in project 3096, the program was reduced by \$3M for system of systems engineering development growth, \$6M for test and evaluation delays and \$3M for support growth, totaling \$12M.

In FY16, \$15M was added for LCS Training Courseware reflected in project 9999 for Congressional Adds.

In FY16, \$30M was transferred to PE 0603599N, project 3086, for Frigate efforts.

In FY17, numerous changes were made to the LCS program in light of the profile change for LCS/FF and the creation of a new Frigate PE. \$39.9M was added to the Frigate project (3086) to the base of \$45M for \$84.9M for the Frigate effort. This \$84.9M was transferred to PE 0603599N, Proj 3086 for the Frigate effort.

\$9.6M was added for Train to Qualify/Train to Certify (T2Q/T2C) effort within project 4506.

Decrease in the LCS PE by \$5.86M was required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

The multitude of changes in FY17, left the PE with a net decrease of \$37M.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP				Project (Number/Name) 3096 / Littoral Combat Ship			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3096: <i>Littoral Combat Ship</i>	1,114.963	80.199	68.209	28.906	-	28.906	20.772	15.955	9.763	5.276	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 374												

A. Mission Description and Budget Item Justification

The RDT&E portion of the LCS Program is comprised of design and development efforts required to field the LCS Class Ships, including integration with the Mission Packages (MCM, ASW and SUW) activities both pre and post delivery. It includes the design and development effort required to support the introduction and deployment of a Flight 0+ baseline (LCS 3/4 and Follow) with incorporation of lessons learned from the design and construction of USS Freedom (LCS 1) and USS Independence (LCS 2). Additionally, it includes design, development, issue resolution, certification and testing efforts required to support the design baseline for the six year block buy in FY10-15. This baseline will include lessons learned from the LCS 1 through LCS 4.

The LCS design and development phases include platform design and development, experimentation, ship system design and integration, hull platform testing, development of Technical Data Packages (TDPs), total ship system engineering and integration, combat systems and warfare systems certification, and planning and conduct of system testing. These efforts include procurement of combat and warfare system elements and/or simulators to support production representative testing in support of design, development, and certification efforts and ordnance in support of testing.

The RDT&E portion of LCS funding is also comprised of formal Developmental and Operational Assessment testing of the LCS Ships and Mission Packages. Test and Evaluation (T&E) will concentrate on verifying integration and interoperability of employed technologies and systems in the LCS seaframe designs and modular mission packages to achieve the mission capabilities and performance requirements as defined in the LCS program's Flight 0 and Flight 0+ Capabilities Development Documents (CDD). T&E functions will include the evaluation of Critical Technical Parameters (CTP), Measures of Effectiveness (MOE), Measures of Suitability (MOS), and Key Performance Parameters (KPP) for the core seaframe and the focused missions.

This program is under review by the Independent Review Team (IRT). The report will be briefed out when available.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: LCS System-of-Systems Development, Engineering & Experimentation	17.900	17.705	17.997	0.000	17.997
Articles:	-	-	-	-	-
Description: Provides for LCS Program systems engineering in support of Flight 0, Flight 0+, the FY10 Block Buy baseline design, and future procurement baseline design, development, certification, and production (including ship system design and integration); combat system and C4I design, integration, and test; aviation (manned and unmanned) integration; modular mine countermeasure (MCM), anti-submarine warfare (ASW), and					

UNCLASSIFIED

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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 3096 / Littoral Combat Ship

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>surface warfare (SUW) mission package (MP) integration; logistics product development; and various systems engineering activities required to perform risk analyses of new design and production technology concepts.</p> <p>FY 2015 Accomplishments: Flight 0 Baseline: Provided systems engineering support for completion of Seaframe and MCM Technical Evaluation (TECHEVAL) and Initial Operational Test and Evaluation (IOT&E) on USS Independence. Continued systems engineering support for ASW capability integration on the USS Freedom variant.</p> <p>Flight 0+ and FY10 Block Buy Baselines: Provided systems engineering support for Seaframe and SUW MP DT, TECHEVAL, and IOT&E Phase I on LCS 4. Provided systems engineering support for Seaframe and MCM MP DT and TECHEVAL on LCS 2. Continued initial engineering support for planning TSST on LCS 4.</p> <p>Provided Seaframe and Mission Systems engineering support to investigate, design, and develop technical solutions for design on both Freedom and Independence Class Ships. Finalized technical and performance baseline for future ship procurements based on systems design and testing execution. Continued conducting studies in support of development of future technical and performance baseline design upgrades.</p> <p>FY 2016 Plans: Flight 0+ and FY10 Block Buy Baselines: Provide systems engineering support for FSST preparation, execution, and partial repair efforts on LCS 5 and LCS 6. Provide systems engineering support for TSST, and post-event analysis and engineering for Seaframe and SUW MP DT and Phase II IOT&E on LCS 4. Provide systems engineering support for Seaframe and MCM MP IOT&E on LCS 2. Provide systems engineering for Air Defense test planning for Self Defense Test Ship testing in support of PRA on the IND Variant.</p> <p>Provide Seaframe and Mission Systems engineering support to investigate, design, and develop technical solutions for design scope on both Freedom and Independence Class Ships. Provide Seaframe and Mission Systems engineering support to certify equipment to include oversight of design changes required for any re-certification. Update technical and performance baseline for future ship procurements based on systems</p>					

UNCLASSIFIED

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
design and testing execution. Continue conducting studies in support of development of future technical and performance baseline design upgrades. FY 2017 Base Plans: Flight 0+ and FY10 Block Buy Baselines: Provide systems engineering support for Seaframe DT on LCS 5 and LCS 6. Complete post-FSST analysis and implement changes based on findings. Provide systems engineering support for Seaframe and ASW MP DT on LCS 7. Provide systems engineering support for Seaframe and SUW MP Incr 3 DT, TECHEVAL, and OT on LCS 3. Provide systems engineering support for Air Defense test planning and execution on the Self Defense Test Ship in support of PRA on the IND Variant. Provide systems engineering support for Air Defense test planning on the Self Defense Test Ship in support of PRA on the FRE Variant. Provide systems engineering support for Air Defense test planning in support of Seaframe PRA testing on the IND Variant. Conduct VTUAV Dynamic Interface testing on LCS 7 and LCS 8. Provide Seaframe and Mission Systems engineering support to investigate, design, and develop technical solutions for design scope on both Freedom and Independence Class Ships. Provide Seaframe and Mission Systems engineering support to certify equipment to include oversight of design changes required for any re-certification. Finalize technical and performance baseline for future ship procurements based on systems design and testing execution. Continue conducting studies in support of development of future technical and performance baseline design upgrades. FY 2017 OCO Plans: N/A					
Title: LCS Total System Training Architecture Articles:	19.230	0.000	0.000	0.000	0.000
Description: LCS is a minimally-manned ship, and the small crew size, combined with LCS's complex mission, does not allow adequate time for shipboard "on-the-job" training to achieve LCS operational availability. Consequently, LCS uses a Train-to-Qualify (T2Q)/Train- to-Certify (T2C) training process in an off-ship/shore-based virtual ship trainer environment, using simulators, and blended training solutions focused on both tactical and equipment operations and maintenance training. When completed, the LCS shore-based training capability will satisfy individual, team, unit, and force training, with an objective of meeting Capability Development Document (CDD) T2Q Key Performance Parameter (KPP) requirements.	-	-	-	-	-

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> RDTE funding for NAWCTSD was provided for Contracting, Research and Engineering, Test and Evaluation, Logistics and Industrial Ops, and Finance management support and travel requirements as the LCS Training System Executive Agent. Funding was provided to continue development and oversight of Immersive Virtual Ship Environment (IVSE) Virtual Reality (VR) Engineering Plant Technician (EPT), Readiness Control Officer (RCO), and Deck courseware for the LCS; and for continued Virtual Ship Training System (VSTS) network and virtual reality lab (VRL) development to support San Diego and Mayport. CSCS was funded as the Training Support Agent (TSA) for fielding LCS 1 and LCS 2 Integrated Tactical Trainers (ITTs) and delivery of instruction. Delivery of instruction tasks included: oversight/management, curriculum maintenance, and oversight of simulator maintenance. Funding was provided for continued LCS training Facility (LTF) in San Diego DoD Information Assurance Certification and Accreditation Package (DIACAP) development/management; and NAVFAC efforts preparing for additional LCS homeports required by the Strategic Laydown Plan.</p> <p><i>FY 2016 Plans:</i> N/A</p> <p><i>FY 2017 Base Plans:</i> N/A</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
<p><i>Title:</i> LCS Test & Evaluation</p> <p align="right"><i>Articles:</i></p>	43.069	50.504	10.909	0.000	10.909
<p><i>Description:</i> Execute formal LCS Developmental Testing and Operational Testing (DT/OT), including Live Fire Test and Evaluation (LFT&E), and procurement of T&E Ordnance. Execute DT and C4I integration and testing; aviation (manned and unmanned) integration; and modular mine countermeasure (MCM), anti-submarine warfare (ASW), and surface warfare (SUW) mission package (MP) integration.</p> <p><i>FY 2015 Accomplishments:</i> Flight 0 Baseline: Completed DT/Rough Water Trials on USS Freedom. Conducted TECHEVAL testing on USS Independence with the MCM MP.</p>	-	-	-	-	-

UNCLASSIFIED

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Flight 0+ Baseline: Completed SUW MP DT, TECHEVAL Phase I, and IOT&E Phase I on LCS 4 with the SUW MP. Completed MCM MP DT and TECHEVAL on LCS 2. Continued planning for Full Ship Shock Trial (FSST) on LCS 5 and LCS 6. Completed Total Ship Survivability Trial (TSST) on LCS 3. Continued planning for TSST on LCS 4. Completed Phase 1 of Multi-Compartment Surrogate testing. Continued planning for Phase 2 of Multi-Compartment Surrogate testing. Continued developing Detailed Design Integrated Survivability Assessment Report (DDISAR) for LCS Freedom and LCS Independence variants. Continued Air Defense test planning for Self Defense Test Ship testing in support of PRA on the IND Variant.</p> <p>FY 2016 Plans: Flight 0+ Baseline: Conduct LCS 4 TSST. Conduct SUW Phase II DT, TECHEVAL and IOT&E on LCS 4. Start Air Defense test execution for Self Defense Test Ship testing in support of PRA on the IND Variant. Plan for and execute LCS 5 and LCS 6 FSST. Complete Phase 2 of Multi-Compartment Surrogate testing. Complete Detailed Design Integrated Survivability Assessment Report (DDISAR) for LCS Freedom variant. Continue developing DDISAR for LCS Independence variant. Begin developing the final Survivability Assessment Report (SAR).</p> <p>FY 2017 Base Plans: Flight 0+ Baseline: Complete Air Defense test execution for Self Defense Test Ship testing in support of PRA on the IND Variant. Start Air Defense test planning on the Self Defense Test Ship in support of PRA on the FRE Variant. Start Air Defense test planning in support of Seaframe PRA testing on the IND Variant. Conduct Vertical Take-off and Landing Unmanned Aerial Vehicle (VTUAV) Dynamic Interface testing on LCS 7 and LCS 8. Complete Seaframe and SUW MP Incr 3 DT, TECHEVAL, and OT on LCS 3. Complete post FSST availability on LCS 5 and LCS 6. Complete ASW DT on LCS 7. Complete DDISAR for LCS Independence variant. Continue developing the final Survivability Assessment Report (SAR).</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	80.199	68.209	28.906	0.000	28.906

UNCLASSIFIED

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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 3096 / Littoral Combat Ship
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 2127: <i>Littoral Combat Ship</i>	1,584.094	1,414.265	1,211.625	-	1,211.625	669.275	906.182	773.697	1,416.067	Continuing	Continuing
• 1600: <i>LCS Common</i>	30.938	23.061	27.840	-	27.840	39.682	23.387	16.504	22.384	718.179	1,252.024
<i>Mission Modules Equipment</i>											
• 5110: <i>Outfitting/Post Delivery</i>	105.869	200.370	178.996	-	178.996	192.624	219.437	122.539	124.989	1,506.200	2,802.689
• 1320: <i>LCS Training Equipment</i>	9.630	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	75.667
• 0944: <i>LCS Class</i>	25.742	39.349	54.518	-	54.518	72.716	63.189	64.349	65.629	0.000	438.961
<i>Support Equipment</i>											
• 1601: <i>LCS MCM Mission Modules</i>	15.270	67.451	57.146	-	57.146	161.605	197.738	103.496	203.284	1,002.735	1,875.439
• 1603: <i>LCS SUW Mission Modules</i>	14.750	35.228	22.466	-	22.466	43.885	40.384	41.306	42.130	322.137	612.068
• 1605: <i>Remote</i>	0.000	53.077	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	53.077
<i>Minehunting System (RMS)</i>											
• 3129: <i>LCS Mission Modules</i>	172.602	203.143	160.058	-	160.058	72.820	54.940	43.170	30.956	Continuing	Continuing
• 1602: <i>LCS ASW Mission Modules</i>	0.000	0.000	31.952	-	31.952	53.465	53.722	54.717	55.812	375.415	625.083
• 1604: <i>LCS In-Service Modernization</i>	0.000	0.000	0.000	-	0.000	51.637	25.518	0.000	0.000	0.000	77.155

Remarks

D. Acquisition Strategy

The LCS program takes an evolutionary approach to acquisition that emphasizes competition as a key to achieving affordability. Initially, two industry teams competed against each other with two distinctly different LCS designs. The decision produced two flights with a vessel from each design: Flight 0 (LCS 1 and LCS 2); and Flight 0+ (LCS 3 and out). The Flight 0+ baseline incorporates lessons learned from the design, construction, and testing of the Flight 0 ships. The Navy conducted a limited competition amongst the existing LCS industry teams or team participants for the award of a contract for the construction of a block buy of up to ten (10) LCS Flight 0+ Class ships, with an objective of competitively awarding a single contract to a single industry team.

By Acquisition Decision Memorandum of December 23, 2010, the USD (AT&L) authorized execution of an alternative acquisition strategy for the FY 2010 through FY 2015 procurement of 20 seaframes through two ten-ship block buy contracts. On December 29, 2010, the Navy awarded two contracts for block buys of up to ten ships, beginning with the award to each contractor of one FY 2010 ship and associated non-recurring engineering, the development of the Technical Data Package (TDP), core class services, and associated data. This was followed by the contractual funding of one ship to each contractor in FY 2011 and two ships each funded in FY 2012 through FY 2014.

On October 17, 2014 USD(AT&L) approved the Navy's plan to procure three ships in FY 2015 and three ships in FY 2016 by modifying the current block buy contracts. The modification to each of the block buy contracts will complete the previously approved 20 ship block buy and add options for the remaining two FY 2016 ships for

UNCLASSIFIED

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a total of 26 LCS. The Navy is developing an FY17 Follow-on Acquisition Strategy. The Navy is currently developing an Acquisition Strategy to support design and procurement of Modified LCSs. The PB 17 procurement profile was changed to reduce the procurement in FY17 to two ships, FY18 to one ship, FY19 to one ship, and FY20 to one ship.

E. Performance Metrics

The LCS Program achieved Milestone A and Program Initiation in May 2004 and Milestone B in February 2011. The LCS program conducts annual Defense Acquisition Board In-Process Reviews (DAB IPRs). The first Seaframe and Mission Module integrated program DAB IPR was conducted in January 2013 and is held in September thereafter.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603581N / (U)LITTORAL COMBAT SHIP				3096 / Littoral Combat Ship							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
LCS 1 & 2 Shore Trainers	C/CPAF	LM, BIW : Various	56.536	0.000		0.000		0.000		-		0.000	0.000	56.536	-
Program Office Support	Various	Various : Various	19.700	0.840	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Training Development - Support	WR	NAWC TSD : Orlando, FL	16.031	7.143	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
LCS1 & LCS2 Bridge Part Task Trainers	SS/FFP	Computer Sciences Corp. (CSC) : Falls Church, VA	4.578	0.000		0.000		0.000		-		0.000	0.000	4.578	-
LCS1 & LCS2 TAO Trainers	C/CPFF	Northrop Grumman Corp. : Falls Church, VA	6.204	0.000		0.000		0.000		-		0.000	0.000	6.204	-
LCS Mission Bay Trainer	C/FFP	Cubic Corp : Orlando, FL	28.283	0.000		0.000		0.000		-		0.000	0.000	28.283	-
Training Development - Support	WR	Various : Various	13.261	0.210	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Training Development - Industry	C/CPAF	Lockheed Martin : Various	13.300	0.000		0.000		0.000		-		0.000	0.000	13.300	-
Training Operations	WR	NSWC DD/CSCS : Various	5.590	0.420	Nov 2014	0.000		0.000		-		0.000	0.000	6.010	-
Distance Support	WR	NAWC TSD : Orlando, FL	4.900	0.000		0.000		0.000		-		0.000	0.000	4.900	-
Virtual Ship Training System (VSTS)	C/FFP	TBD : TBD	9.475	1.100	Mar 2015	0.000		0.000		-		0.000	0.000	10.575	-
Deck IVSE	C/FFP	TBD : TBD	0.000	8.317	Mar 2015	0.000		0.000		-		0.000	0.000	8.317	-
Combat Systems IVSE	C/FFP	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Readiness Control Officer LCS 1 IVSE	C/FFP	Cubic Corp : Orlando, FL	2.472	0.300	Aug 2015	0.000		0.000		-		0.000	0.000	2.772	-
Readiness Control Officer LCS 2 IVSE	C/FFP	Cubic Corp : Orlando, FL	2.503	0.300	Aug 2015	0.000		0.000		-		0.000	0.000	2.803	-
Mission Bay Trainer Haptics IVSE	C/FFP	Cubic Corp : Orlando, FL	4.596	0.000		0.000		0.000		-		0.000	0.000	4.596	-

UNCLASSIFIED

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Engineering Plant Technician (EPT) LCS 1 IVSE	C/FFP	Cubic Corp : Orlando, FL	15.483	0.250	Dec 2014	0.000		0.000		-		0.000	0.000	15.733	-
Engineering Plant Technician (EPT) LCS 2 IVSE	C/FFP	Cubic Corp : Orlando, FL	15.174	0.350	Dec 2014	0.000		0.000		-		0.000	0.000	15.524	-
Class Design Services	SS/CPAF	LM, GD : Various	48.340	0.000		0.000		0.000		-		0.000	0.000	48.340	-
Final Design(Flight 0)	C/CPAF	LM, BIW : Various	175.263	0.000		0.000		0.000		-		0.000	0.000	175.263	-
Flight 0 C41	WR	PEO C41 : Various	5.506	0.000		0.000		0.000		-		0.000	0.000	5.506	-
SH-60B Datalink	C/CPAF	LM, BIW : Various	2.435	0.000		0.000		0.000		-		0.000	0.000	2.435	-
Subtotal			449.630	19.230		0.000		0.000		-		0.000	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 Support	WR	NSWC/DD : Dahlgren, VA	59.519	5.221	Nov 2014	2.892	Feb 2016	3.441	Nov 2016	-		3.441	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC/PC : Panama City, FL	27.536	0.451	Feb 2015	0.132	Feb 2016	0.303	Nov 2016	-		0.303	Continuing	Continuing	Continuing
Government Engineering Support	WR	NUWC : Newport, RI	9.576	0.098	Feb 2015	0.030	Feb 2016	0.376	Nov 2016	-		0.376	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWC AD : Pax River, MD	23.989	1.073	Feb 2015	0.000		0.618	Nov 2016	-		0.618	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC/CR : Crane, IN	17.401	0.321	Feb 2015	0.000		0.100	Nov 2016	-		0.100	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC/PD : Philadelphia, PA	65.788	1.120	Feb 2015	1.093	Feb 2016	1.482	Nov 2016	-		1.482	Continuing	Continuing	Continuing
Government Engineering Support	Various	Government Activities : Various	42.494	5.526	Nov 2014	3.874	Feb 2016	5.366	Nov 2016	-		5.366	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603581N / (U)LITTORAL COMBAT SHIP				3096 / Littoral Combat Ship							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Contractor Engineering Support	C/CPAF	Alion/CSC : Arlington, VA	47.213	1.210	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Contractor Engineering Support	C/CPAF	Various : Various	18.473	0.000		3.768	Mar 2016	2.500	Feb 2017	-		2.500	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC/CD : Bethesda, MD	0.000	2.880	Feb 2015	1.372	Mar 2016	3.811	Nov 2016	-		3.811	0.000	8.063	-
Government Engineering Support	WR	PEO IWS : Various	0.000	0.000		2.886	Mar 2016	0.000		-		0.000	0.000	2.886	-
Government Engineering Support	WR	Various : Various	0.000	0.000		1.658	Dec 2015	0.000		-		0.000	0.000	1.658	-
Subtotal			311.989	17.900		17.705		17.997		-		17.997	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 & Evaluation	C/CPAF	Alion/CSC : Arlington, VA	30.221	1.623	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/PHD : Port Hueneme, CA	51.093	4.285	Oct 2014	1.150	Feb 2016	0.900	Nov 2016	-		0.900	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/PD : Philadelphia, PA	55.901	3.327	Feb 2015	5.684	Feb 2016	1.310	Nov 2016	-		1.310	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/PC : Panama City, FL	15.853	0.475	Oct 2014	0.042	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation	WR	COMOPTEVFOR : Norfolk, VA	12.856	1.278	Nov 2014	0.489	Feb 2016	0.640	Nov 2016	-		0.640	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/COR : Corona, CA	13.787	3.203	Feb 2015	0.426	Feb 2016	0.642	Nov 2016	-		0.642	Continuing	Continuing	Continuing
Test & Evaluation	WR	Government Activities : Various	63.372	5.404	Oct 2014	0.384	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation	C/CPAF	LM/GD/Austal : Various	56.321	7.949	Apr 2015	14.105	May 2016	0.400	Feb 2017	-		0.400	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603581N / (U)LITTORAL COMBAT SHIP				3096 / Littoral Combat Ship							
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 & Evaluation	WR	PEO C4I : Charleston, SC	11.562	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
T&E Ordnance/ Ammunition	WR	PEO IWS : Various	7.537	8.970	Oct 2014	3.047	Mar 2016	2.029	Nov 2016	-		2.029	Continuing	Continuing	Continuing
Test & Evaluation	WR	NAVAIR : Patuxent River, MD	0.000	0.000		2.612	Feb 2016	0.000		-		0.000	0.000	2.612	-
Test & Evaluation	WR	Various : Various	0.000	0.000		6.376	Dec 2015	0.000		-		0.000	0.000	6.376	-
Test & Evaluation	C/CPAF	Austal : Mobile, AL	0.000	0.000		3.294	Dec 2015	0.000		-		0.000	0.000	3.294	-
Test & Evaluation	WR	NAWC/WD : Pt. Mugu, CA	0.000	0.000		1.471	Mar 2016	1.620	Nov 2016	-		1.620	0.000	3.091	-
Test & Evaluation	WR	NSWC/CD : Bethesda, MD	0.000	6.555	Mar 2015	11.424	Mar 2016	3.368	Nov 2016	-		3.368	0.000	21.347	-
Subtotal			318.503	43.069		50.504		10.909		-		10.909	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 Management Support- SEAPORT	C/CPAF	Alion/CSC : Arlington, VA	20.593	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Management Support	Various	Various : Various	12.212	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Management Support - Design	C/CPAF	Various : Arlington, VA	2.036	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			34.841	0.000		0.000		0.000		-		0.000	-	-	-
Project Cost Totals			1,114.963	80.199		68.209		28.906		-		28.906	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

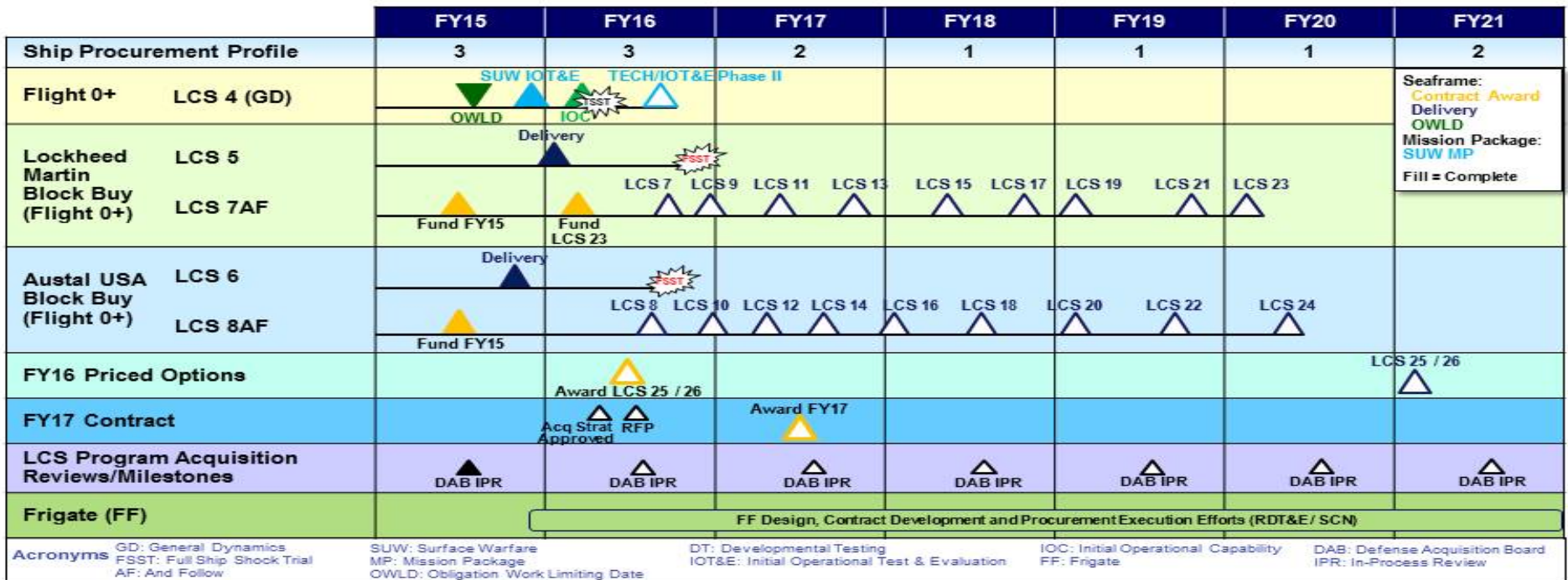
Appropriation/Budget Activity
1319 / 4

R-1 Program Element (Number/Name)
PE 0603581N / (U)LITTORAL COMBAT SHIP

Project (Number/Name)
3096 / Littoral Combat Ship



Littoral Combat Ship Program Schedule



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 3096 / Littoral Combat Ship

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3096				
TECHEVAL- LCS 2: Flight 0: Technical Evaluation(TECHEVAL) with MCM MP	3	2015	4	2015
TECHEVAL Phase I - LCS 4: Flight 0: Technical Evaluation(TECHEVAL) Phase I with SUW MP	4	2015	4	2015
IOT&E Phase I - LCS 4: Flight 0: Initial Operational Test and Evaluation (IOT&E) Phase I with SUW MP	4	2015	4	2015
Post Delivery DT 4- LCS 2: Post Delivery Developmental Testing (DT)	1	2015	1	2015
TSST - LCS 4: Total Ship Survivability Trial (TSST) LCS 4	2	2016	2	2016
FSST - LCS 5: LCS 5 FSST	4	2016	4	2016
FSST - LCS 6: LCS 6 FSST	3	2016	4	2016
DDISAR - Freedom: Detailed Design Integrated Survivability Assessment Report (DDISAR) - Freedom	1	2016	3	2016
DDISAR - Independence: Detailed Design Integrated Survivability Assessment Report (DDISAR) - Independence	3	2016	1	2017
ASW DT - LCS 7: Anti-Submarine Warfare (ASW) Developmental Test (DT) - LCS 7	4	2017	1	2018
TECHEVAL Phase II - LCS 4: Technical Evaluation (TECHEVAL) Phase II with SUW MP	2	2016	3	2016
IOT&E Phase II - LCS 4: Initial Operational Test and Evaluation (IOT&E) Phase II with SUW MP	2	2016	3	2016
SDTS Testing for PRA - IND: Self Defense Test Ship (SDTS) Testing - IND	4	2016	4	2017
LCS SAR: LCS Survivability Assessment Report (SAR)	1	2017	1	2018
Multi-Compartment Surrogate Test: LFT&E Testing	4	2015	4	2016
STDS Testing for PRA - FRE: Self Defense Test Ship (SDTS) Testing - FRE	4	2017	2	2018
Seaframe PRA Testing (IND): Seaframe Probability of Raid Annihilation (PRA) Testing	4	2017	1	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 3096 / Littoral Combat Ship
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
VTUAV Dynamic Interface Testing - LCS 7 & 8: Vertical Take-off and Landing Unmanned Aerial Vehicle (VTUAV) Dynamic Interface Testing	2	2017	2	2017
TECHEVAL Incr 3 - LCS 3: Technical Evaluation (TECHEVAL) Incr 3 with SUW MP - LCS 3	2	2017	4	2017
IOT&E Incr 3 - LCS 3: Initial Operational Test and Evaluation (IOT&E) Incr 3 with SUW MP - LCS 3	2	2017	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 4506 / LCS Training
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
4506: LCS Training	0.000	0.000	8.207	22.724	-	22.724	20.072	18.137	0.760	0.803	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

LCS is a minimally-manned ship, and the small crew does not contain trainee sailors to receive on-the-job training. Consequently, LCS uses a Train-to-Qualify (T2Q)/Train-to-Certify (T2C) training process in an off-ship/shore-based virtual ship trainer environment, using simulators and blended training solutions focused on tactical, equipment operations, and maintenance training. When completely developed and procured, the LCS shore-based training capability will satisfy individual, team, unit, and force training, with an objective of meeting Capability Development Document (CDD) T2Q Key Performance Parameter (KPP) requirements.

RDT&E funds are used to develop advanced Immersive Virtual Ship Environments (IVSE), or Virtual Reality (VR) courseware and associated simulators to achieve the training objectives. Additionally, after fielding these systems and courseware, RDTE funds will be utilized to upgrade training to maintain conformity with LCS configurations and approved operational technical manuals and procedures. RDTE funds are also used to test and evaluate training devices to verify compliance with requirements.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: LCS Total System Training Architecture	0.000	8.207	22.724	0.000	22.724
Articles:	-	-	-	-	-
Description: LCS is a minimally-manned ship, and the small crew does not contain trainee sailors to receive on-the-job training. Consequently, LCS uses a Train-to-Qualify (T2Q)/Train-to-Certify (T2C) training process in an off-ship/shore-based virtual ship trainer environment, using simulators and blended training solutions focused on tactical, equipment operations, and maintenance training. When completely developed and procured, the LCS shore-based training capability will satisfy individual, team, unit, and force training, with an objective of meeting Capability Development Document (CDD) T2Q Key Performance Parameter (KPP) requirements.					
RDT&E funds are used to develop advanced Immersive Virtual Ship Environments (IVSE), or Virtual Reality (VR) courseware and associated simulators to achieve the training objectives. Additionally, after fielding these systems and courseware, RDTE funds will be utilized to upgrade training to maintain conformity with LCS configurations and approved operational technical manuals and procedures. RDTE funds are also used to test and evaluate training devices to verify compliance with requirements.					
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 4506 / LCS Training

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
FY2015 Plans entered in Project Unit 3096.					
<p>FY 2016 Plans: RDTE funding provided to Naval Air Warfare Center Training Systems Division (NAWCTSD) supports program management, contracting, research and engineering, test and evaluation, logistics and industrial ops, finance management support and travel requirements, as the LCS Training System Executive Agent. Funding is provided to develop and oversee IVSE courseware for LCS EPT, RCO, and deck operations; and complete Mission Bay Trainer and VSTS development.</p> <p>This funding ensures support of the LTF San Diego DoD Information Assurance Certification and Accreditation Package (DIACAP), as well as NAVFAC efforts preparing for additional LCS homeports required by the Strategic Laydown Plan.</p> <p>FY 2017 Base Plans: FY16 to FY17 funding increase directly supports the development and completion of various training courseware to provide the fleet with these needed training capabilities as LCS hull deliveries increase. RDTE funding provides Naval Air Warfare Center Training Systems Division (NAWCTSD) program management, contracting, research and engineering, test and evaluation, logistics and industrial ops, finance management support and travel requirements, as the LCS Training System Executive Agent. Funding is provided to oversee completion of IVSE courseware development for LCS deck operations and phase two of IVSE combat systems courseware and VTUAV/MH-60 courseware, oversee performance of the development effort, and provide other functions in support of the LCS Fleet Introduction Program Office (PMS 505). Phase two of IVSE combat system includes the development of 4 courses: Navigation Systems, Radio Communications Subsystem, Search Radar, and Weapon Systems. This funding also supports continued NAVFAC efforts preparing for additional LCS homeports required by the Strategic Laydown plan.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	0.000	8.207	22.724	0.000	22.724

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 1320: LCS Training	0.000	54.851	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 4506 / LCS Training

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• 5664: Surface Training Equipment	0.000	0.000	19.136	19.136	38.272	7.410	23.729	18.369	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Per the combined LCS Navy Training System Plan (NTSP), the LCS core crew training concept will meet Train to Qualify and Train to Certify requirements incrementally, with expected completion in FY19. In the interim, individual qualifications for LCS crew members will be accomplished through a combination of vendor training, existing Navy training, new LCS courses and trainers that are presently online, and Under Instruction (U/I) time aboard LCS ships, prior to reporting for duty. Shore-based training requirements cannot be fully met with the interim LCS training strategy. Full realization will be achieved with the completed standup of the San Diego LCS Training Facility (LTF), which includes the Integrated Tactical Trainers, Bridge, Readiness Control Officer (RCO), Combat Systems and Mission Package Training System (MPTS) part-task trainers, the Common Mission Package Trainer (CMPT), Mission Bay trainer and Virtual Reality Labs to support the Train to Qualify operations and maintenance pipeline courses.

E. Performance Metrics

T2Q will succeed and support mission accomplishment in the long run only if commanders have confidence that the output is valid, reliable, and standardized. To justify that confidence, training outcomes must mirror, and therefore predict, critical mission outcomes. To achieve that result a set of objective, performance-based measures, metrics, and standards is being developed for each watch station and billet requirement. For qualifications to be truly predictive, they must be guaranteed by the application of objective measures that vary little between evaluators. New courses such as the Surface Warfare Officers School (SWOS) LCS Officer of the Deck (OOD), Junior Officer of the Deck (JOOD) and the LCS Shore-Based Trainer Capstone courses have been designed to meet T2Q standards. Ultimately, success of the training acquisition strategy will be objectively validated by accomplishment of PQS by the sailors as determined by the IVSE and achievement of all requirements in the LCS Training Manual (TRAMAN) as assessed by LCS Squadrons and appropriate Afloat Training Groups (ATG).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 4506 / LCS Training
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Deck/Mission Bay Courseware	C/FFP	Cubic : Orlando, FL	0.000	0.000		2.000	Feb 2016	5.000	Feb 2017	-		5.000	0.000	7.000	-
Combat Systems Courseware	C/FFP	Cubic : Orlando, FL	0.000	0.000		0.000		8.800	May 2017	-		8.800	7.800	16.600	-
VSTS	C/FFP	Triton JV, LLC : Orlando, FL	0.000	0.000		0.600	Feb 2016	0.700	Feb 2017	-		0.700	0.000	1.300	-
Training Development - Support	WR	NAWC/TSD : Orlando, FL	0.000	0.000		4.547	Nov 2015	4.901	Nov 2016	-		4.901	Continuing	Continuing	Continuing
VTUAV/MH60	C/FFP	TBD : TBD	0.000	0.000		0.000		1.343	May 2017	-		1.343	6.270	7.613	-
Subtotal			0.000	0.000		7.147		20.744		-		20.744	-	-	-

Remarks
Years prior to FY2016 are reflected in 3096 Project Unit.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Human Systems Integration	WR	NSWC, DD : Dahlgren Virginia	0.000	0.000		0.320	Nov 2016	0.260	Nov 2016	-		0.260	Continuing	Continuing	Continuing
Information Assurance	TBD	TBD : TBD	0.000	0.000		0.400	Feb 2016	0.620	Feb 2017	-		0.620	Continuing	Continuing	Continuing
Fleet Support	TBD	TBD : TBD	0.000	0.000		0.200	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Warfare Center SME	WR	NAVFAC : Washington, DC	0.000	0.000		0.000		0.800	Mar 2017	-		0.800	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.920		1.680		-		1.680	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Program Office Support	C/CPAF	Various : Various	0.000	0.000		0.140	Mar 2016	0.300	Mar 2017	-		0.300	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 4506 / LCS Training
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Subtotal			0.000	0.000		0.140		0.300		-		0.300	-	-	-

Remarks
Years prior to FY2016 are reflected in 3096 Project Unit.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	8.207	22.724	-	22.724	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 4

R-1 Program Element (Number/Name)
PE 0603581N / (U)LITTORAL COMBAT SHIP

Project (Number/Name)
4506 / LCS Training

Proj 4506	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q								
VIRTUAL SHIP TRAINING SYSTEM																																				
VIRTUAL SHIP TRAINING SYSTEM					Development																															
Interactive Virtual Shipboard Environment																																				
DECK IVSE- Development					Development																															
Combat System Courseware Development													Contract Award ▲																							
																	Development																			
VTUAV/MH60 Development													Contract Award ▲																							
																	Development																			
Training Development																																				
Training Development					Training Development - Support																															

2017OSD - 0603581N - 4506

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 4506 / LCS Training

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 4506				
VIRTUAL SHIP TRAINING SYSTEM: VIRTUAL SHIP TRAINING SYSTEM: VSTS Development	1	2016	2	2018
Interactive Virtual Shipboard Environment: DECK IVSE- Development: DECK IVSE- Development	1	2016	4	2018
Interactive Virtual Shipboard Environment: Combat System Courseware Development: Combat System Courseware Contract Award	3	2017	3	2017
Interactive Virtual Shipboard Environment: Combat System Courseware Development: Combat System Courseware Development	3	2017	4	2021
Interactive Virtual Shipboard Environment: VTUAV/MH60 Development: VTUAV/MH60 Contract Award	3	2017	3	2017
Interactive Virtual Shipboard Environment: VTUAV/MH60 Development: VTUAV/MH60 Development	3	2017	4	2020
Training Development: Training Development: Training Development - Support	1	2016	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 9999 / Congressional Adds
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	0.000	15.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

LCS is a minimally-manned ship, and the small crew does not contain trainee sailors to receive on-the-job training. Consequently, LCS uses a Train-to-Qualify (T2Q)/ Train-to-Certify (T2C) training process in an off-ship/shore-based virtual ship trainer environment, using simulators and blended training solutions focused on tactical, equipment operations, and maintenance training. When completely developed and procured, the LCS shore-based training capability will satisfy individual, team, unit, and force training, with an objective of meeting Capability Development Document (CDD) T2Q Key Performance Parameter (KPP) requirements.

RDT&E funds are used to develop advanced Immersive Virtual Ship Environments (IVSE) courseware and associated simulators to achieve the training objectives. Additionally, after fielding these systems and courseware, RDTE funds will be utilized to upgrade training to maintain conformity with LCS.

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

	FY 2015	FY 2016
Congressional Add: LCS Training Courseware	0.000	15.000
FY 2015 Accomplishments: N/A		
FY 2016 Plans: RDTE funding provided to Cubic Corporation via Naval Air Warfare Center Training Systems Division (NAWCTSD) in support of research and engineering, test and evaluation, logistics and industrial ops. Funding is provided to complete student and instructor guides, instructor IVSE system support guides, and phase one of IVSE combat system courseware development. Phase one includes the development of four courses: Command & Control Systems, Electronic Warfare Subsystems (EWS), Global Command & Control Systems (GCCS) and Total Ships Computing Environment (TSCE).		
Congressional Adds Subtotals	0.000	15.000

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 1320: <i>LCS Training</i>	0.000	54.851	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 5664: <i>Surface Training Equipment</i>	0.000	0.000	19.136	19.136	38.272	7.410	23.279	19.369	0.000	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 9999 / Congressional Adds

D. Acquisition Strategy

T2Q will succeed and support mission accomplishment in the long run only if commanders have confidence that the output is valid, reliable, and standardized. To justify that confidence, training outcomes must mirror, and therefore predict, critical mission outcomes. To achieve that result a set of objective, performance-based measures, metrics, and standards is being developed for each watch station and billet requirement. For qualifications to be truly predictive, they must be guaranteed by the application of objective measures that vary little between evaluators. New courses such as the Surface Warfare Officers School (SWOS) LCS Officer of the Deck (OOD), Junior Officer of the Deck (JOOD) and the LCS Shore-Based Trainer Capstone courses have been designed to meet T2Q standards. Ultimately, success of the training acquisition strategy will be objectively validated by accomplishment of PQS by the sailors as determined by the IVSE and achievement of all requirements in the LCS Training Manual (TRAMAN) as assessed by LCS Squadrons and appropriate Afloat Training Groups (ATG).

E. Performance Metrics

T2Q will succeed and support mission accomplishment in the long run only if commanders have confidence that the output is valid, reliable, and standardized. To justify that confidence, training outcomes must mirror, and therefore predict, critical mission outcomes. To achieve that result a set of objective, performance-based measures, metrics, and standards is being developed for each watch station and billet requirement. For qualifications to be truly predictive, they must be guaranteed by the application of objective measures that vary little between evaluators. New courses such as the Surface Warfare Officers School (SWOS) LCS Officer of the Deck (OOD), Junior Officer of the Deck (JOOD) and the LCS Shore-Based Trainer Capstone courses have been designed to meet T2Q standards. Ultimately, success of the training acquisition strategy will be objectively validated by accomplishment of PQS by the sailors as determined by the IVSE and achievement of all requirements in the LCS Training Manual (TRAMAN) as assessed by LCS Squadrons and appropriate Afloat Training Groups (ATG).

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 4

R-1 Program Element (Number/Name)
PE 0603581N / (U)LITTORAL COMBAT SHIP

Project (Number/Name)
9999 / Congressional Adds

Proj 9999	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Interactive Virtual Shipboard Environment																												
Combat Systems Courseware Development																												
Training Development																												
Training Development																												

Contract Award
▲

Development

2017PB - 0603581N - 9999

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603581N / (U)LITTORAL COMBAT SHIP	Project (Number/Name) 9999 / Congressional Adds

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9999				
Interactive Virtual Shipboard Environment: Combat Systems Courseware Development: Combat Systems Courseware Development Contract Award	2	2016	2	2016
Interactive Virtual Shipboard Environment: Combat Systems Courseware Development: Combat Systems Courseware Development	2	2016	4	2017
Training Development: Training Development: Training Development - Support	3	2016	4	2017