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 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604311N *I LPD-17 Class Systems Integration*							
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	31.268	1.175	0.376	0.747	-	0.747	0.767	0.785	0.804	0.821	Continuing	Continuing
2283: *LPD-17 Class System Integration*	31.268	1.175	0.376	0.747	-	0.747	0.767	0.785	0.804	0.821	Continuing	Continuing
Program MDAP/MAIS Code: 542												

A. Mission Description and Budget Item Justification

The LPD 17 Class ships are functional replacements for 41 ships of four classes of amphibious ships. These new ships embark, transport, and land elements of Marine landing forces in an assault by helicopters, landing craft, and amphibious vehicles. Tactics, techniques, and tools for naval expeditionary warfare continue to evolve. The LPD 17 Class configuration must continue to adapt to this evolutionary process, because these ships are expected to be in service until almost 2050. The LPD 17 design includes system configurations that reduce operating and support costs and facilitate operational performance improvements. System engineering and integration efforts that began in FY97 will develop further reductions in life cycle costs and will integrate performance upgrades in a rapid, affordable manner. Possible research and development investigations include improvements in Hull, Mechanical and Electrical systems, advanced sensors, advanced computers, advanced command and control software, advanced information system technologies, and ship based logistics support. Cost reduction and improved performance will be accomplished through sustained modeling and simulation efforts, resolutions of equipment obsolescence issues, prototype development, continued personnel reduction efforts, system performance tradeoff evaluations, and naval expeditionary warfare system engineering. Feedback from the Fleet for integrating system configurations will be accomplished through Naval Surface Warfare Centers (Philadelphia, Dahlgren, Port Hueneme, Panama City). These efforts will result in well defined specifications and drawings in system in system integration design packages that provide technical baseline for follow on ship procurements.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	1.214	0.376	0.751	-	0.751
Current President's Budget	1.175	0.376	0.747	-	0.747
Total Adjustments	-0.039	-	-0.004	-	-0.004
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.001	-			
• SBIR/STTR Transfer	-0.039	-			
• Rate/Misc Adjustments	0.001	-	-0.004	-	-0.004

Change Summary Explanation

FY 2014 and FY 2016 reductions reflect SBIR transfer and other Rate/Misc adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604311N / *LPD-17 Class Systems Integration*	Project (Number/Name) 2283 / *LPD-17 Class System Integration*	

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
2283: *LPD-17 Class System Integration*	31.268	1.175	0.376	0.747	-	0.747	0.767	0.785	0.804	0.821	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The LPD 17 Class ships are functional replacements for 41 ships of four classes of amphibious ships. These new ships embark, transport, and land elements of Marine landing forces in an assault by helicopters, landing craft, and amphibious vehicles. Tactics, techniques, and tools for naval expeditionary warfare continue to evolve. The LPD 17 Class configuration must continue to adapt to this evolutionary process, because these ships are expected to be in service until almost 2050. The LPD 17 design includes system configurations that reduce operating and support costs and facilitate operational performance improvements. System engineering and integration efforts that began in FY97 will develop further reductions in life cycle costs and will integrate performance upgrades in a rapid, affordable manner. Possible research and development investigations include improvements in Hull, Mechanical and Electrical systems, advanced sensors, advanced computers, advanced command and control software, advanced information system technologies, and ship based logistics support. Cost reduction and improved performance will be accomplished through sustained modeling and simulation efforts, resolutions of equipment obsolescence issues, prototype development, continued personnel reduction efforts, system performance tradeoff evaluations, and naval expeditionary warfare system engineering. Feedback from the Fleet for integrating system configurations will be accomplished through Naval Surface Warfare Centers (Philadelphia, Dahlgren, Port Hueneme, Panama City). These efforts will result in well defined specifications and drawings in system in system integration design packages that provide technical baseline for follow on ship procurements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Systems Engineering/Integration	1.175	0.376	0.747	-	0.747
Articles:	-	-	-	-	-
Description: Continued Naval Expeditionary Warfare Systems Engineering efforts and integration efforts for unique LPD 17 Class systems, including efforts to resolve obsolescence issues impacting the class.					
FY 2014 Accomplishments: Continued Reliability and Obsolescence studies for Mission Systems such as Hanger Aviation Bridge Crane, Improved Flight Deck Ramp Closures, and CPP control wiring issues. Environmental Qualification Testing (EQT) is also required for new Electromagnetic Pulse/Electromagnetic Interference (EMP/EMI) cable, and multiple Raytheon provided systems such as Ship Wide Area Network (SWAN) and Integrated Voice Network (IVN).					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Investigated integration of SWAN Hull, Mechanical, and Electrical (HM&E) as a part of Consolidated Afloat Networks and Enterprise Services (CANES) install on the LPD-17 Class. Had the ability to complete High Efficiency Small-Capacity (HES-C) Air Conditioning Plant Prototype Development,SSDG Cylinder Blow Down Valve Shock Testing, Pronghorn Air Conditioning Plant Chlorination System Prototype Installation and Testing,Reefer Temperature Sensor Replacement Studies (Obsolescence Issue),SWAN HM&E Network Design, LPD 17 Class Liquid Load Effects on Main Propulsion Diesel Engine/Main Reduction Gear Alignment Studies, and LPD 17 Class Acceleration/UNREP Emergency Breakaway Studies.					
FY 2015 Plans: Environmental Qualification Testing and Information Assurance of ISE (SWAN, ECS, HM&E Network) and machinery obsolescence issues. HM&E machinery control system network integration. Propulsion System (MPDE, MRG, shafting) installation improvements and foundation and coupling analysis and testing. Refrigeration Plant Switch Calibration and Testing. Development of a new Advanced Variable Speed Drive unit to control the HES-C A/C Plants that will be installed on LPD 17 Class ships LPD 26 and LPD 27(and potentially other Navy platforms).					
FY 2016 Base Plans: Continued Environmental Qualification Testing and Information Assurance of ISE (SWAN, ECS, HM&E Network) and machinery obsolescence issues. Development of Fiber Optic Cable Plant Monitoring System and shipboard testing. Continued SWAN and HM&E Network integration. Propulsion System installation and foundation analysis and testing.					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continued effort of development of a new Advanced Variable Speed Drive unit to control the HES-C A/C Plants that will be installed on LPD 17 Class ships LPD 26 and LPD 27(and potentially other Navy platforms). There will also be HM&E system reliability improvement designs from the LPD 17 Class Strike Team. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.175	0.376	0.747	-	0.747

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
• SCN/5300: *Completion of Prior Year Shipbuilding Programs*	-	-	61.593	-	61.593	45.060	-	-	-	-	1,996.753
• SCN/3036: *LPD-17*	-	1,054.096	550.000	-	550.000	-	-	-	-	-	17,554.527

Remarks

D. Acquisition Strategy

FY14 and out: continue developmental sole source efforts

E. Performance Metrics

LPD-17 Class ships will conduct Environmental Qualification Testing (EQT) and Information Assurance (IA) certification.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

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
Systems Engineering and Integration	WR	NSWC Crane : Crane, IN	13.236	-		-		-		-		-	-	13.236	-
Systems Engineering and Integration	C/CPFF	Raytheon Company : San Diego, CA	1.886	0.400	Jan 2014	0.146	Dec 2014	0.400	Dec 2015	-		0.400	Continuing	Continuing	Continuing
LSD(X) Systems Integration (Next Gen.)	C/CPFF	CSC, Alion Science : Washington, DC	0.549	-		-		-		-		-	-	0.549	-
LSD(X) Systems Integration (Next Gen.)	WR	NSWC Carderock, NSWC Dahlgren : NSWC Beth, MD; NSWC Dahlgren, VA	0.100	-		-		-		-		-	-	0.100	-
DAWF	Various	Various : Various	0.005	-		-		-		-		-	-	0.005	-
Systems Engineering and Integration	C/CPFF	Huntington Ingalls Industries : Pascagoula, MS	0.000	0.097	Jun 2014	0.100	Dec 2014	0.128	Dec 2015	-		0.128	-	0.325	-
Systems Engineering and Integration	WR	NSWC, Philadelphia : Philadelphia, PA	0.000	0.678	Jun 2014	0.130	Nov 2014	0.219	Nov 2015	-		0.219	Continuing	Continuing	Continuing
Systems Engineering and Integration	WR	NSWC, Port Hueneme : Port Hueneme, CA	0.000	-		-		-		-		-	-	-	-
		Subtotal	15.776	1.175		0.376		0.747		-		0.747	-	-	-

Remarks

key attributors to growth between FY 15 and FY 16 are efforts associated with the development and testing of the Fiber Optic Cable Plant (FOCP) Monitoring System and HM&E system reliability improvement designs from the LPD 17 Class Strike Team in FY 16. In addition, in FY 16 there will be continued efforts in the HES-C A/C Plant Variable Speed Drive, Environmental Qualification Testing of IS systems, and the continued support Of the class SWAN and HM&E machinery control network integration and Information Assurance.

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
OT&E/Interoperability	WR	OPTEVFOR : WR	15.492	-		-		-		-		-	-	15.492	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

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	15.492	-		-		-		-		-	-	15.492	-

	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	31.268	1.175		0.376		0.747		-		0.747	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

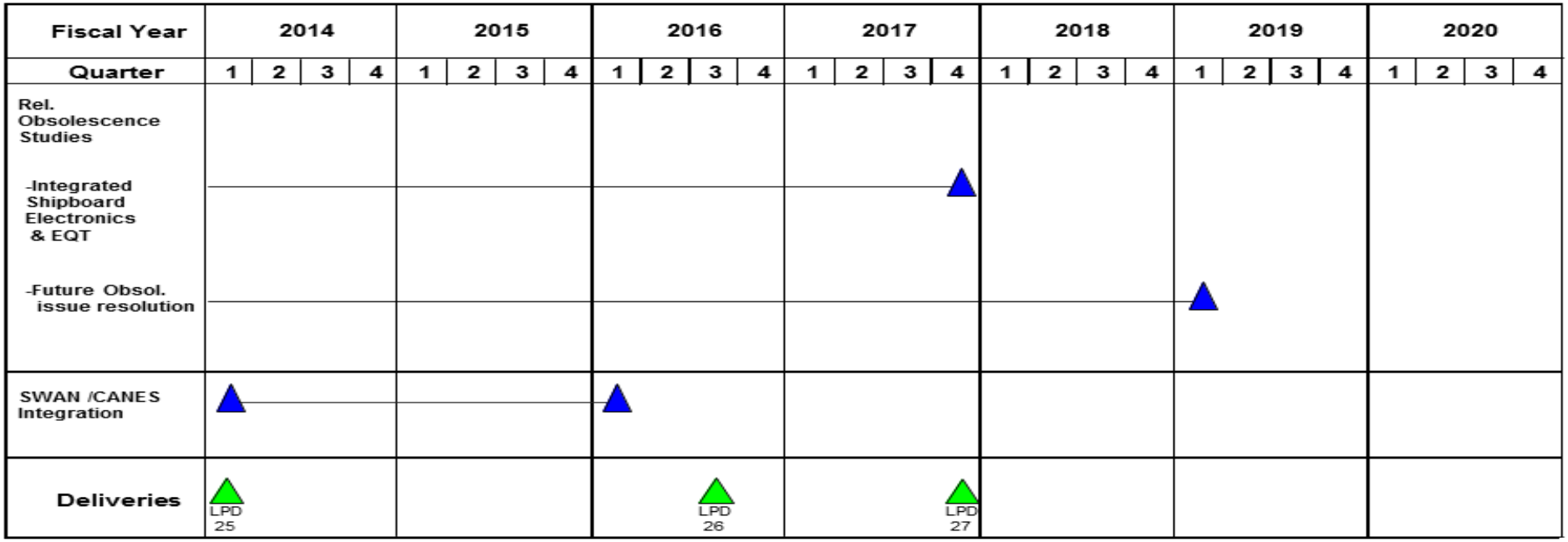

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2283				
Delivery (LPD 25)	1	2014	1	2014
Delivery (LPD 26)	3	2016	3	2016
Delivery (LPD 27)	4	2017	4	2017
SWAN/CANES Integration	1	2014	1	2016
Rel. Obsolescence Studies: Integrated Shipboard Electronics & EQT	1	2014	4	2017
Rel. Obsolescence Studies: Future Obsol. Issue Resolution	1	2014	1	2019