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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy										Date: March 2019		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604311N / LPD-17 Class Systems Integration							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	34.101	0.665	0.939	0.640	-	0.640	0.945	0.916	0.844	0.861	Continuing	Continuing
2283: LPD-17 Class System Integration	34.101	0.665	0.939	0.640	-	0.640	0.945	0.916	0.844	0.861	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The FY 2020 funding request was reduced by \$0.223M to account for the availability of prior year execution balances.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	0.689	0.939	0.863	-	0.863
Current President's Budget	0.665	0.939	0.640	-	0.640
Total Adjustments	-0.024	0.000	-0.223	-	-0.223
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.024	0.000			
• Program Adjustments	0.000	0.000	-0.223	-	-0.223
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

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PE 0604311N: *LPD-17 Class Systems Integration*  
Navy

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy										Date: March 2019		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604311N / <i>LPD-17 Class Systems Integration</i>				Project (Number/Name) <i>2283 / LPD-17 Class System Integration</i>			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2283: <i>LPD-17 Class System Integration</i>	34.101	0.665	0.939	0.640	-	0.640	0.945	0.916	0.844	0.861	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)

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<b>Title:</b> Systems Engineering/Integration	0.665	0.939	0.640	0.000	0.640
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> Continued Naval Expeditionary Warfare Systems Engineering efforts and integration efforts for unique LPD 17 Class systems, including efforts to resolve obsolescence issues impacting the LPD-17 class.					
<b>FY 2019 Plans:</b> <ul style="list-style-type: none"> <li>- Continue to conduct Environmental Qualification Testing for new systems installed on LPD 28 such as, commercial motors, pumps and tankless water heaters.</li> <li>- Complete USMC weapons stowage studies, and complete engineering design drawings.</li> <li>- Complete SBIR Transparent Armored Window Phase II and transition to Phase III.</li> <li>- Continue SBIR projects for LPD 17 Class Ships. Initiate Phase I projects and transition to Phase II or III.</li> <li>- Complete SSDG Lube Oil &amp; Fuel Oil Filter class designs.</li> <li>- Complete Fiber Optic Cable Plat monitoring system via SBIR Phase III acquisition.</li> </ul>					

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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>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>						
		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
- Initiate energy savings study for Caterpillar Ship Service Diesel Generator (CAT SSDG) engine electronic fuel injection.  <b>FY 2020 Base Plans:</b> - Continue environmental qualification testing for new systems and continue with the CAT SSDG engine savings project. - Continue energy savings design and testing for CAT SSDG engine electronic fuel injection. - Continue to investigate HME Obsolescence issues for LPD-28 and LPD-29.  <b>FY 2020 OCO Plans:</b> N/A  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Decrease of \$0.299M from FY 2019 to FY 2020 meets program requirements.						
<b>Accomplishments/Planned Programs Subtotals</b>		0.665	0.939	0.640	0.000	0.640
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>Remarks</b>						
<b>D. Acquisition Strategy</b>						
Continue developmental sole source efforts, improve quality and cost savings engineering studies.						
<b>E. Performance Metrics</b>						
N/A						

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy												Date: March 2019			
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)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Systems Engineering and Integration	WR	NSWC Crane : Crane, IN	13.236	0.000		0.000		0.000		-		0.000	0.000	13.236	-
Systems Engineering and Integration	C/CPFF	Raytheon Comp : San Diego, CA	2.432	0.000		0.000		0.000		-		0.000	0.000	2.432	-
LSD(X) Systems Integration (Next Gen.)	C/CPFF	CSC, Alion Science : Washington, DC	0.549	0.000		0.000		0.000		-		0.000	0.000	0.549	-
LSD(X) Systems Integration (Next Gen.)	WR	NSWC Carderock, NSWC Dahlgren : NSWC Beth, MD; NSWC Dahlgren, VA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	-
DAWF	Various	Various : Various	0.005	0.000		0.000		0.000		-		0.000	0.000	0.005	-
Systems Engineering and Integration	C/CPFF	Huntington Ingalls Industries : Pascagoula, MS	0.987	0.242	Dec 2017	0.939	Dec 2018	0.640	Dec 2019	-		0.640	Continuing	Continuing	Continuing
Systems Engineering and Integration	WR	NSWC, Philadelphia : Philadelphia, PA	1.015	0.000		0.000		0.000		-		0.000	0.000	1.015	-
Systems Engineering and Integration	C/CPFF	ULTRA Communications : Vista, CA	0.285	0.150	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Small Business Innovative Research	TBD	TBD : TBD	0.000	0.038	Aug 2018	0.000		0.000		-		0.000	0.000	0.038	-
Systems Engineering and Integration	Various	ICI : TBD	0.000	0.235	May 2018	0.000		0.000		-		0.000	0.000	0.235	-
Subtotal			18.609	0.665		0.939		0.640		-		0.640	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
OT&E/Interoperability	WR	OPTEVFOR : Norfolk, VA	15.492	0.000		0.000		0.000		-		0.000	0.000	15.492	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2020 Navy												<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 1319 / 5						<b>R-1 Program Element (Number/Name)</b> PE 0604311N / <i>LPD-17 Class Systems Integration</i>				<b>Project (Number/Name)</b> 2283 / <i>LPD-17 Class System Integration</i>				

  

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
<b>Subtotal</b>			15.492	0.000		0.000		0.000		-		0.000	0.000	15.492	N/A

  

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	34.101	0.665	0.939	0.640	-	0.640	Continuing	Continuing	N/A

  

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2020 Navy</b>			<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 1319 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0604311N / <i>LPD-17 Class Systems Integration</i>		<b>Project (Number/Name)</b> 2283 / <i>LPD-17 Class System Integration</i>	

Fiscal Year	2018				2019				2020				2021				2022				2023				2024			
Quarter	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
Fiber Optic Monitoring																												
Future Obsol. issue resolution																												
Deliveries																												

LPD 28

LPD 29

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2283				
Fiber Optic Monitoring	4	2018	4	2019
Future Obsol. Issue Resolution	1	2018	4	2024
Delivery (LPD 28)	4	2021	4	2021
Delivery (LPD 29)	4	2023	4	2023