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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 0604567N / Ship Contract Design/ Live Fire T&E							
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	728.968	65.857	71.062	46.809	-	46.809	61.547	55.036	55.612	56.726	Continuing	Continuing
1803: Ship Contract Design	135.011	3.811	3.111	1.939	-	1.939	4.033	3.850	3.411	3.477	Continuing	Continuing
2465: LHA(R) FLT Design and Total Ship Integration	259.734	8.135	6.841	2.311	-	2.311	13.462	6.060	6.177	6.300	Continuing	Continuing
3108: CVN 80 Total Ship Integration	30.231	32.161	31.563	23.941	-	23.941	25.105	25.703	26.218	26.745	Continuing	Continuing
3179: CVN-79 Total Ship Integration	201.980	16.397	14.536	14.564	-	14.564	14.770	15.133	15.432	15.743	Continuing	Continuing
3369: Hybrid Electric Drive	13.218	0.982	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.200
4007: CVN 21 LFT&E	69.451	3.919	4.011	4.054	-	4.054	4.177	4.290	4.374	4.461	Continuing	Continuing
9999: Congressional Adds	19.343	0.452	11.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.795
Program MDAP/MAIS Code: Project MDAP/MAIS Code(s): 333, 223												
A. Mission Description and Budget Item Justification												
The FY 2020 funding request was reduced by \$1.251 million to account for the availability of prior year execution balances.												
This Program Element (PE) directly supports the Navy's Shipbuilding Plan by providing for the development of engineering, programmatic and acquisition documentation including ship specifications (including performance specifications) and contractual documentation associated with acquisition of Navy ships. This PE also supports the Congressionally mandated Live Fire Test and Evaluation (LFT&E) program for new ship designs.												
Contract Design has traditionally been the engineering development of the technical and contractual definition of the ship design (including ship specifications and drawings) to a level of detail sufficient for shipbuilders to make a sound estimate of the construction cost and schedule. Additionally, the contract design package developed under this PE has provided the technical baseline from which the Navy selects the shipbuilder who then develops the detail design package required to support the construction and eventual delivery of the ship. This PE also supports the development of design methodologies/tools which facilitate and optimize the transition from ship design documents to efficient production of new ships and ship conversions, and supports engineering planning and ship affordability studies.												
Under Acquisition Reform for new design ships, traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering Integrated Product and Process Development (IPPD) process extending through and after contract award. This serves to maintain the focus of multi-discipline teams consisting of the government,												

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<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>
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shipbuilder, system programs, and suppliers. Government/Industry Integrated Product Team(s) (IPTs) will utilize the IPPD process to develop the design in an Integrated Product and Data Environment (IPDE). The design approach is part of an acquisition strategy that is based on commercial practices and incorporates a phased technical definition.

<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	67.166	60.062	59.688	-	59.688
Current President's Budget	65.857	71.062	46.809	-	46.809
Total Adjustments	-1.309	11.000	-12.879	-	-12.879
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	11.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.779	0.000			
• Program Adjustments	0.000	0.000	-12.526	-	-12.526
• Rate/Misc Adjustments	0.002	0.000	-0.353	-	-0.353
• Congressional Add Adjustments	0.468	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Maritime Prepositioning Force (Future) - Transfer from NDSF*

Congressional Add: *DDG 51 Advance Degaussing Mine Protection System Retrofit*

Congressional Add: *Planning to Support FY 2021 Award of LHA-9*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

<b>FY 2018</b>	<b>FY 2019</b>
0.452	0.000
0.000	5.000
0.000	6.000
0.452	11.000
0.452	11.000

**Change Summary Explanation**

FY18:

PROJ 9999 CONG ADD for Maritime Prepositioning Force (Future): Transfer from NDSF (+\$0.468M)

FY19:

PROJ 9999 CONG ADD for DDG 51 Advance Degaussing Mine Protection System Retrofit (+\$5.000M)

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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	
1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)	PE 0604567N / Ship Contract Design/ Live Fire T&E	
PROJ 9999 CONG ADD for Planning to Support FY 2021 Award of LHA-9 (+\$6.000M)		
FY20:		
PROJ 1803 FY 2020 funding request was reduced by \$1.251 million to account for the availability of prior year execution balances.		
PROJ 2465 rephased \$7.535M from FY 2020 to FY 2021 due to the delay of the F-35B Follow-on Operational Test and Evaluation (FOT&E) event.		

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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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>				Project (Number/Name) 1803 / <i>Ship Contract Design</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
1803: <i>Ship Contract Design</i>	135.011	3.811	3.111	1.939	-	1.939	4.033	3.850	3.411	3.477	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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

DDG Modernization:

The major effort is the engineering development of the technical and contractual definition of the ship's design (e.g. ship specifications and drawings), with sufficient details for the planning yard to make a sound estimate of cost and schedule. It also serves as the technical definition from which the planning yard develops the detailed design and testing package required to build and test the ship. It provides the Navy with a digital, ship design knowledge base, including lessons learned, required to ensure that a proper development, analysis and evaluation can be conducted of any current or future planned.

Another area this project funds is the development of specific Navy ship criteria and standards for newly developed technologies. Additionally, as new laws are passed, new safety regulations and environmental criteria are developed and other legal/Congressional requirements identified, this project funds the translation into Navy ship design criteria and standards. This project also funds the translation of the traditional Ship Specifications into performance-based criteria, which supports the development of design methodologies/tools which facilitate and optimize the transition from ship design documents to ship alterations. This project also supports ship survivability studies, superstructure integrity analysis, developmental and operational testing, gun weapon system software integration and next generation Machinery Control System (MCS) software integration.

Expeditionary Sea Base (ESB) (formerly MLP AFSB)

Funds the performance specification development and Dynamic Interface Testing for various airframes as part of the ESB Special Operations Forces (SOF) Backfit.

**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> Ship Contract Design	2.199	3.111	1.939	0.000	1.939
<b>Articles:</b>	-	-	-	-	-
<b><i>FY 2019 Plans:</i></b> Continue ship design and alteration development for service life extension and HM&E network upgrades in CG 47 and for DDG 51 Flt IIA ship design to include development of structural reliability and other alterations to include machinery control systems improvements in FY 19.					
<b><i>FY 2020 Base Plans:</i></b>					

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<b>Appropriation/Budget Activity</b> 1319 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0604567N / Ship Contract Design/ Live Fire T&E		<b>Project (Number/Name)</b> 1803 / Ship Contract Design							
<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>					
Continue ship design and alteration development for service life extension and HM&E network upgrades in CG 47 and for DDG 51 Flt IIA ship design to include development of structural reliability and other alterations to include machinery control systems improvements in FY 20.											
<b>FY 2020 OCO Plans:</b> N/A											
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> The FY 2020 funding request was reduced to account for the availability of prior year execution balances.											
<b>Title:</b> ESB		1.612	0.000	0.000	0.000	0.000					
<b>Articles:</b>		-	-	-	-	-					
<b>FY 2019 Plans:</b> N/A											
<b>FY 2020 Base Plans:</b> N/A											
<b>FY 2020 OCO Plans:</b> N/A											
<b>Accomplishments/Planned Programs Subtotals</b>		3.811	3.111	1.939	0.000	1.939					
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPN 0900: DDG Mod	592.644	462.908	566.140	-	566.140	555.525	812.338	1,042.482	1,107.075	2,558.665	10,388.593
• OPN 0960: CG Mod	299.088	268.509	193.990	-	193.990	135.490	54.116	5.079	5.180	0.000	3,850.890
<b>Remarks</b>											
<b>D. Acquisition Strategy</b> Continuing systems and software development for both development models and production machinery control units at Land Based Engineering Sites.											
<b>E. Performance Metrics</b> CG:											

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>	<b>Project (Number/Name)</b> 1803 / <i>Ship Contract Design</i>
<p>Aluminum sensitization study to determine the lifetime until sensitization for aluminum alloys and stress and buckling analysis of the CG 47 Class ship structure, and develop proposed fatigue fixes in the high stress areas to produce a technical report with modifications or improvements to the ship that may be necessary to preclude cracking in the areas of concern. Evaluation of composite patch and development of composite patch installation procedures as a method for repairing cracks. Development of ultrasonic impact treatment guidance as a method for repairing cracks. Evaluation of different coating that can prevent cracking and different aluminum alloys that are sensitization resistant. Additionally, review and track distributed services margins, predict future system loads, develop technical reports and make recommendation to ensure reaching hull service life.</p> <p>DDG Modernization: Efforts for DDG Mod include design and development for next generation MCS software integration.</p> <p>ESB: Completion of Certification Testing including Dynamic Interface Testing.</p>		

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 1803 / Ship Contract Design					
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
CG Mod Electronics Systems Eng	C/CPAF	Lockheed : Martin, Moorestown, NJ	17.413	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DON Energy Initiative - OEM	C/FPIF	L-3 Maritime Systems : Leesburg, VA	34.857	0.000		0.000		0.000		-		0.000	0.000	34.857	-
DON Energy Initiative	WR	NSWC/SSES : Philadelphia, PA	3.629	0.000		0.000		0.000		-		0.000	0.000	3.629	-
Engineering Development and Design	Various	COTF/NAVAIR/NSWCCD/NSWCDD/NSWCPC/NSWCPCPD/NSWCSSSES : DC/MD/PA/CA	1.085	0.000		0.000		0.000		-		0.000	0.000	1.085	-
Preliminary and Contract Design	C/FPIF	NASSCO : San Diego, CA	6.500	0.000		0.000		0.000		-		0.000	0.000	6.500	-
Hybrid Electric Drive	C/CPIF	L-3 Maritime Systems : Leesburg, VA	6.911	0.000		0.000		0.000		-		0.000	0.000	6.911	-
Hybrid Electric Drive	C/CPAF	Rolls Royce : Walpole, MA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	-
Hybrid Electric Drive	C/CR	General Atomics : San Diego, CA	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	-
Hybrid Electric Drive	C/CPAF	Herren Engineering : Alexandria, VA	0.600	0.000		0.000		0.000		-		0.000	0.000	0.600	-
Hybrid Electric Drive	C/CPAF	Syntek : Arlington, VA	0.099	0.000		0.000		0.000		-		0.000	0.000	0.099	-
Hybrid Electric Drive	WR	NSWC/SSES : Philadelphia, PA	0.750	0.000		0.000		0.000		-		0.000	0.000	0.750	-
Hybrid Electric Drive	TBD	Not Specified : Not Specified	8.500	0.000		0.000		0.000		-		0.000	0.000	8.500	-
Subtotal			80.484	0.000		0.000		0.000		-		0.000	Continuing	Continuing	N/A

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<b>Appropriation/Budget Activity</b> 1319 / 5						<b>R-1 Program Element (Number/Name)</b> PE 0604567N / Ship Contract Design/ Live Fire T&E						<b>Project (Number/Name)</b> 1803 / Ship Contract Design			
<b>Support (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
DDG/CGM Program / Engineering Spt	WR	NSWC/DD : Dahlgren, VA	4.376	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DDGM Program/ Engineering Spt	Various	SUPSHIP/BATH : Bath, ME	3.331	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DDG/CGM Program / Engineering Spt	C/CPAF	CSC/BAE : Hampton, VA	4.713	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DDG/CGM Program / Engineering Spt	WR	SPAWARSSYSCEN : Charleston, SC	2.004	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CGM Program / Engineering Spt	WR	NRL : Washington, DC	0.617	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CGM Program / Engineering Spt	C/CPAF	JJMA/ALION : Washington, DC	2.947	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DDG/CGM Program / Engineering Spt	C/CPAF	Lockheed Martin : Moorestown, NJ	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
DDG/CGM Program / Engineering Spt	WR	NSWC/PHD : Port Hueneme, CA	2.889	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Logistics Support	C/CPFF	CSC : Washington DC	0.085	0.000		0.000		0.000		-		0.000	0.000	0.085	-
CGM/DDG Program / Engineering Spt	WR	COMPTVEFOR : Norfolk, VA	0.420	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DDGM/HED Program / Engineering Spt	WR	NSWC/SSES : Philadelphia, PA	4.900	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DDGM Program / Engineering Spt	WR	NSWC/SSES : Philadelphia, PA	4.682	0.527	Jan 2018	0.746	Jan 2019	0.457	Jan 2020	-		0.457	0.000	6.412	-
HED Program / Engineering Spt	WR	NSWC/SSES : Philadelphia, PA	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
HED	C/CPAF	L-3 Maritime Systems : Leesburg, VA	1.048	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CG Program / Engineering Spt	WR	NSWC/BETHESDA : Bethesda, MD	9.640	0.329	Jan 2018	0.466	Jan 2019	0.285	Jan 2020	-		0.285	Continuing	Continuing	Continuing



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Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E						Project (Number/Name) 1803 / Ship Contract Design			
Support (\$ 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
CG Program / Engineering Spt	Various	SUPSHIP/ PASCAGOULA : Pascagoula, MS	4.736	0.180	Jun 2018	0.255	Jun 2019	0.156	Jun 2020	-		0.156	Continuing	Continuing	Continuing
CG Program / Engineering Spt	WR	NSWC/SSSES : Philadelphia, PA	0.681	0.840	Jan 2018	1.189	Jan 2019	0.762	Jan 2020	-		0.762	0.000	3.472	-
DDG/CGM Program / Engineering Spt	C/CPFF	John Hopkins University : Laurel, MD	1.300	0.322	Apr 2018	0.455	Apr 2019	0.279	Apr 2020	-		0.279	0.000	2.356	-
ESB	Various	Various : Various	3.663	1.613	Jun 2018	0.000		0.000		-		0.000	0.000	5.276	-
NAVSEA Boundary Defense Capability	Various	Various : Various	1.995	0.000		0.000		0.000		-		0.000	0.000	1.995	-
Subtotal			54.527	3.811		3.111		1.939		-		1.939	Continuing	Continuing	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
Project Cost Totals			135.011	3.811		3.111		1.939		-		1.939	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy													Date: March 2019																											
Appropriation/Budget Activity 1319 / 5													R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E								Project (Number/Name) 1803 / Ship Contract Design																			
Proj 1803													FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
Ship Contract Design													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
													CGM Baseline 4 Mod Design																											
													CG Class Design																											
													DDG Technical Insertion 16 Mod Design																											
													DDG FLT IIA Mod Design																											
													CG Deliveries (CG 59,61,62,63-73)																											
													DDGM Deliveries (DDG 61,80,81,84,87)																											
													DDG Class Design																											
													ESB SOF Testing (incl Dynamic Interface Testing)																											
													ESB FOT&E																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>	<b>Project (Number/Name)</b> 1803 / <i>Ship Contract Design</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 1803</i></b>				
Ship Contract Design: CGM Baseline 4 Mod Design	1	2018	4	2020
Ship Contract Design: CG Class Design	1	2018	4	2024
Ship Contract Design: DDG Technical Insertion 16 Mod Design	1	2018	4	2019
Ship Contract Design: DDG FLT IIA Mod Design	1	2018	2	2019
Ship Contract Design: CG Deliveries (CG 59,61,62,63-73)	1	2018	4	2021
Ship Contract Design: DDGM Deliveries (DDG 61,80,81,84,87)	1	2018	3	2021
Ship Contract Design: DDG Class Design	1	2018	4	2024
Ship Contract Design: ESB SOF Testing (incl Dynamic Interface Testing)	1	2018	4	2018
Ship Contract Design: ESB FOT&E	1	2018	2	2018

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Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 2465 / LHA(R) FLT Design and Total Ship 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
2465: LHA(R) FLT Design and Total Ship Integration	259.734	8.135	6.841	2.311	-	2.311	13.462	6.060	6.177	6.300	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 333												
A. Mission Description and Budget Item Justification												
This project provides the contract design, development and testing efforts for the Amphibious Assault Ship Replacement Program LHA(R). The LHA(R) is a ship construction program designed to: (1) provide a functional replacement for the Amphibious Assault Ships which reached the end of their extended service lives (2) be a key platform in the Amphibious Readiness Group (ARG) of the future and (3) provide for an affordable and sustainable amphibious ship development program. LHA(R) ships will provide forward presence and power projection as an integral part of Joint, inter-agency, and multi-national maritime expeditionary forces. Additionally, LHA(R) will be designed to operate for sustained periods in transit to and operations in an Amphibious Objective Area to include the embarkation, deployment, and landing of a Marine Landing Force in an assault by helicopters and tilt rotors (MV-22) supported by Joint Strike Fighters (F-35B).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: LHA (R) FLT 0 Design and Total Ship Integration - LHA 6								1.295	1.064	0.090	0.000	0.090
Articles:								-	-	-	-	-
FY 2019 Plans:												
LHA 6 Complete LHA Class Reliability Maintainability and Availability (RMA).												
FY 2020 Base Plans:												
N/A												
FY 2020 OCO Plans:												
N/A												
FY 2019 to FY 2020 Increase/Decrease Statement:												
Decrease due to rephasing requirements for the F-35B Follow-on Operational Test and Evaluation (FOT&E) event to FY 2021.												
Title: LHA (R) FLT 1 Design and Total Ship Integration - LHA 8								6.840	5.777	2.221	0.000	2.221
Articles:								-	-	-	-	-
FY 2019 Plans:												
LHA 8 Initiate Reliability Maintainability Availability (RMA) analysis.												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>		<b>Project (Number/Name)</b> 2465 / <i>LHA(R) FLT Design and Total Ship Integration</i>							
<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>					
LHA 8 Continue Vulnerability Assessment Report. LHA 8 Continue Enterprise Air Search Radar integration efforts. LHA 8 Continue Operational Test & Evaluation preparation for Operational Assessment.  <b><i>FY 2020 Base Plans:</i></b> LHA 8 Complete Enterprise Air Search Radar integration efforts. LHA 8 Continue Reliability Maintainability Availability analysis. LHA 8 Continue Vulnerability Assessment Report. LHA 8 Continue Operational Test & Evaluation preparation for Operational Assessment.  <b><i>FY 2020 OCO Plans:</i></b> N/A  <b><i>FY 2019 to FY 2020 Increase/Decrease Statement:</i></b> Decrease primarily associated with Enterprise Air Search Radar ramping down to final test analysis and refinement of drawings, and, reduction of test requirements.											
<b>Accomplishments/Planned Programs Subtotals</b>		8.135	6.841	2.311	0.000	2.311					
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN/3041: <i>LHA (R) Ships</i>	1,725.127	375.100	0.000	-	0.000	0.000	0.000	170.602	1,617.834	1,937.964	14,366.692
<b>Remarks</b>											
<b>D. Acquisition Strategy</b>											
LHA 6 Advanced Procurement and Long Lead Time Material was awarded on a sole source basis to Huntington Ingalls Inc., formerly Northrop Grumman Shipbuilding, on 15 July 2005; LHA 6 Detail Design and Construction (DD&C) was awarded on 1 June 2007. The Advance Procurement and Long Lead Time Material efforts were subsumed by the Fixed Price Incentive, Firm Target DD&C contract.  LHA 7 Advanced Procurement and Long Lead Time Material was awarded on a sole source basis to Huntington Ingalls Inc., formerly Northrop Grumman Shipbuilding, on 30 June 2010; LHA 7 DD&C was awarded on 31 May 2012. The Advanced Procurement and Long Lead Time Material efforts were subsumed by the Fixed Price Incentive, Firm Target DD&C contract.											

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>	<b>Project (Number/Name)</b> 2465 / <i>LHA(R) FLT Design and Total Ship Integration</i>
<p>LHA 8 Planning, Advanced Engineering and Procurement of Long Lead Time Material (LLTM) for an LHA Replacement (LHA(R)) Flight 1 Amphibious Assault Ship was awarded on a competitive basis to Huntington Ingalls Inc. on 30 June 2016. The option for LHA 8 Detail Design and Construction was awarded on 16 June 2017. The Planning, Advanced Engineering and Procurement of Long Lead Time Material (LLTM) efforts were subsumed into this Fixed Price Incentive, Firm Target DD&amp;C contract option.</p> <p>LHA 9 Acquisition Strategy is in development.</p> <p><b><u>E. Performance Metrics</u></b></p> <p>Successfully achieve Initial Operational Capability, successfully complete Operational Test and Milestone Reviews.</p>		

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 2465 / LHA(R) FLT Design and Total Ship 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
Ship Design	WR	NSWC : Various	97.905	0.000		0.000		0.000		-		0.000	0.000	97.905	-
Ship Design	C/CPFF	HII : Pascagoula, MS	5.009	0.000		0.000		0.000		-		0.000	0.000	5.009	-
Ship Design	C/CPFF	Various : Various	44.087	0.000		0.000		0.000		-		0.000	0.000	44.087	-
Special Studies	WR	NSWC : Panama City, FL	4.800	0.000		0.000		0.000		-		0.000	0.000	4.800	-
Subtotal			151.801	0.000		0.000		0.000		-		0.000	0.000	151.801	N/A
Support (\$ 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
Technical Engineering Services	Various	NSWC : Various	2.300	4.251	Dec 2017	3.316	Dec 2018	1.197	Dec 2019	-		1.197	Continuing	Continuing	Continuing
Subtotal			2.300	4.251		3.316		1.197		-		1.197	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
Developmental Test & Evaluation	MIPR	JITC : Fort Huachuca, AZ	4.559	0.000		0.000		0.000		-		0.000	0.000	4.559	-
Operational Test & Evaluation	WR	OPTEVFOR/ MCOTEA/NAVSUP : Norfolk, VA/ Quantico, VA	21.381	1.045	Dec 2017	1.029	Dec 2018	0.481	Dec 2019	-		0.481	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR	NSWC : Various	62.672	2.785	Dec 2017	2.408	Dec 2018	0.548	Dec 2019	-		0.548	Continuing	Continuing	Continuing
Follow-on Operational Test and Evaluation	WR	OPTEVFOR / MCOTEA : Norfolk, VA / Quantico, VA	0.000	0.000		0.000	Dec 2018	0.000	Dec 2019	-		0.000	0.000	0.000	-
Subtotal			88.612	3.830		3.437		1.029		-		1.029	Continuing	Continuing	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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 2465 / LHA(R) FLT Design and Total Ship Integration					
Management Services (\$ 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
Program Management	C/CPFF	Various : Various	16.247	0.054	Dec 2017	0.083	Dec 2018	0.080	Dec 2019	-		0.080	Continuing	Continuing	Continuing
Travel	Various	NAVSEA Travel : Washington, DC	0.763	0.000	Dec 2017	0.005	Dec 2018	0.005	Dec 2019	-		0.005	Continuing	Continuing	Continuing
Defense Acquisition Workforce	Various	Various : Various	0.011	0.000		0.000		0.000		-		0.000	0.000	0.011	-
Subtotal			17.021	0.054		0.088		0.085		-		0.085	Continuing	Continuing	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
Project Cost Totals			259.734	8.135		6.841		2.311		-		2.311	Continuing	Continuing	N/A
Remarks															



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PE 0604567N: Ship Contract Design/ Live Fire T&E  
Navy

Date: March 2019

1319 / 5

**R-1 Program Element (Number/Name)**  
PE 0604567N / *Ship Contract Design/ Live*  
*Fire T&E*

**Project (Number/Name)**  
2465 / LHA(R) FLT Design and Total Ship  
Integration

## LHA Replacement Design and Total Ship Integration

FY		FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
QTR		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Program Milestones	LHA7						Ship Delivery			PDT&T				PSA															
	LHA8			Start Fab		Lay Keel								RIYD EASR Below Deck			RIYD EASR Above Deck	Launch				BT			Ship Delivery				
	LHA9									Technical Data Package & Contract Prep							RFP				AP Contract				LHA 9 DD&C Award				
Test & Evaluation	LHA 6 OT&E																												
	LHA 6 VAR																												
	LHA 6 Reliability Maintainability and Availability (RMA)																												
	LHA 6 FOT&E																												
	LHA 8 Operational Test and Assessment Efforts																												
	LHA 8 Enterprise Air Search Radar (EASR) Integration																												
	LHA 8 Live Fire Test and Evaluation (including VAR)																												
	LHA 8 RMA																												
Contracts (SCN)	LHA 9 RFP																												
	LHA 9 AP Contract Award																												

DD&C - Detail Design and Construction

PSA - Post Shakedown Availability

RIYD - Required In-Yard Date

EASR - Enterprise Air Search Radar

PDT&T - Post Delivery Test and Trials

RMA - Reliability, Maintainability, Availability

FOT&E - Follow-on Operational Test and Evaluation

AP - Advanced Procurement

RFP - Request for Proposals

OWLD - Obligation Work Limiting Date

LFT&E - Live Fire Test and Evaluation

VAR - Vulnerability Assessment Report

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E	Project (Number/Name) 2465 / LHA(R) FLT Design and Total Ship Integration

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2465				
LHA (R) FLT Design and Total Ship Integration	1	2018	4	2024

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3108 / CVN 80 Total Ship 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
3108: CVN 80 Total Ship Integration	30.231	32.161	31.563	23.941	-	23.941	25.105	25.703	26.218	26.745	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 223												
A. Mission Description and Budget Item Justification												
Development and related testing of CVN 78 Class aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 80. This project transitions the minimum sustaining technologies required to address obsolescence, critical survivability shortfalls as identified in CVN 78 Class testing, future requirements, and technologies which did not mature in time to support the CVN 78 or CVN 79. All systems developed in this project have the potential to support emerging requirements and other promising system technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to maintain aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to support CVN 80 procurement, including, but not limited to engineering support, programmatic and program support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Enterprise Radar Suite (ERS)  Articles:								8.967	8.620	5.566	0.000	5.566
								-	-	-	-	-
FY 2019 Plans: Continue conducting / preparing risk reduction studies / reports, to include management of a risk / opportunity database to support decision making. Continue conducting technology assessment studies. Continue execution of Requirements Engineering and Architecture, including maintaining a radar specification traceability matrix to the CVN ORD and maintenance of a new CVN Warfare System architecture. Continue to conduct ship integration studies for GFI vetting, tracking and delivery. Continue conducting onboard and off-board Electromagnetic Interference / Control (EMI / EMC) studies due to the new radar sensor suite. Continue analyzing / performing integrated topside design due to new radar sensor suite. Continue conducting power interface trade studies based upon radar prime power requirement and conduct trade studies to analyze platform power against transformer design and platform power against cost of ship modification. Continue conducting system integration studies related to the TEMP; platform impacts & updates to TEMP; cybersecurity analysis;												

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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 0604567N / Ship Contract Design/ Live Fire T&E		Project (Number/Name) 3108 / CVN 80 Total Ship Integration		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
and ISP updates supporting Net Ready KPP. Continue conducting RMA and ILS studies, to include trade studies and identification of investment opportunities / requirements. Continue preparing / updating acquisition support documents and cost estimates. Continue operation of the Integrated Product Team to include vendor, shipbuilder and Government. Participate in Preliminary and Critical Design Reviews of Warfare System elements.  <b>FY 2020 Base Plans:</b> Continue conducting / preparing risk reduction studies / reports, to include management of a risk / opportunity database to support decision making. Continue to maintain a radar specification traceability matrix to the CVN ORD and maintenance of a new CVN Warfare System architecture. Continue to conduct ship integration studies for GFI vetting, tracking and delivery. Continue conducting onboard and off-board EMI / EMC studies due to new the radar sensor suite. Continue analyzing / performing integrated topside design due to the new radar sensor suite. Continue conducting power interface trade studies based upon radar prime power requirement and conduct trade studies to analyze platform power against transformer design and platform power against cost of ship modification. Start ERS integration testing with the Combat System. Continue conducting system integration studies related to the TEMP; platform impacts & updates to TEMP; cybersecurity analysis. Continue conducting RMA and ILS studies, to include trade studies and identification of investment opportunities / requirements. Continue preparing / updating acquisition support documents and cost estimates. Continue operation of the Integrated Product Team to include vendor, shipbuilder and Government.  <b>FY 2020 OCO Plans:</b> N/A  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Decrease due to planned phasing of requirements.						
Title: CVN 78 Class Design for Affordability (DFA)  <b>Articles:</b>  <b>FY 2019 Plans:</b> Continue conducting or supporting feasibility and tradeoff studies on new and modified shipboard systems and equipment. Continue to discover and assess CVN 78 Class DFA initiatives. Continue development of cost-saving initiatives, game changers, business case analyses, and DFA initiatives to continue to drive affordability into the carrier program. Continue performing CVN 80-specific engineering calculations and technical analysis in the areas of technical performance measures; system component calculations; environmental safety and		23.194 -	22.943 -	18.375 -	0.000 -	18.375 -

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3108 / CVN 80 Total Ship Integration						
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
health, and human factors engineering; survivability and vulnerability; automation systems software; shock and vibration; and engineered components support.														
FY 2020 Base Plans: Continue conducting and supporting feasibility and tradeoff studies on new and modified shipboard systems and equipment for FORD Class carriers. Continue to discover and assess FORD Class DFA initiatives. Continue development and implementation of cost-saving initiatives, game changers, business case analyses, and DFA initiatives that continue to drive affordability into the carrier program. Continue performing CVN 80-specific engineering calculations and technical analysis. Continue to support prototyping efforts for iDS transformation.														
FY 2020 OCO Plans: N/A														
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease due to planned phasing of requirements.														
Accomplishments/Planned Programs Subtotals										32.161	31.563	23.941	0.000	23.941
C. Other Program Funding Summary (\$ in Millions)														
Line Item	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			
• SCN / 2001: Carrier Replacement Program	4,130.704	1,573.181	2,347.000	-	2,347.000	2,644.700	2,323.613	1,929.000	1,718.000	Continuing	Continuing			
• SCN / 5300: Completion of Prior Year Shipbuilding Programs	20.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,394.860			
• RD TEN / 0604112N: Project Units 2208, 4004, 9999	82.549	83.121	121.310	-	121.310	99.418	72.213	69.704	54.440	Continuing	Continuing			
• OMN / 1B2B: CVN 78 Ford Class Training and Sustainment (12BJ0)	20.748	8.971	7.264	-	7.264	5.317	5.612	5.742	5.866	Continuing	Continuing			
• RD TEN / 0604501N: Project Unit 3236 Advanced Radar Technology	64.690	23.552	1.933	-	1.933	0.000	0.000	0.000	0.000	Continuing	Continuing			
• OPN / 5664: Surface Training Equipment	12.010	7.942	1.412	-	1.412	4.715	2.796	2.773	2.834	Continuing	Continuing			
• OPN / 0981: Equipment Modernization	0.000	32.900	8.561	-	8.561	5.849	10.699	5.210	0.883	Continuing	Continuing			

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3108 / CVN 80 Total Ship Integration			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• OMN / 1B5B: CVN 78 Modernization	0.000	0.000	6.440	-	6.440	1.784	5.366	17.578	32.224	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The CVN 80 is the third ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class Carriers. The CVN 80 is a modified repeat of the CVN 78, which features a new nuclear propulsion and electrical generation / distribution system, electromagnetic aircraft launching system, advanced arresting gear system, electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war-fighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability / flexibility, increased operational availability, and increased flexibility to support future upgrades.											
CVN 80 will use late integration of Government-Furnished Equipment to provide the latest combat system and C4I suite applications within the planned system baseline. CVN 80 will improve upon processes used on CVN 78 and CVN 79 to gain efficiencies during the CVN 80 Construction Preparation and Construction periods.											
E. Performance Metrics											
Successfully initiate the following tasks: 1) Development of risk impact statements, 2) Radar specification and traceability to test documents, 3) Development and maintenance of new CVN Warfare System architecture database, and 4) Development of FORD Class affordability initiatives to incorporate into the CVN 80 design and CVN 79 production as applicable.											

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3108 / CVN 80 Total Ship 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
Advanced Design & Development	C/CPAF	HII : VA	14.097	14.389	Nov 2017	17.540	Nov 2018	12.545	Nov 2019	-		12.545	Continuing	Continuing	Continuing
Advanced Design & Development	C/CPFF	GRYPHON (SEI&T) : IN	0.956	1.123	Apr 2018	2.500	Nov 2018	0.958	Nov 2019	-		0.958	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC DAHLGREN : VA	2.317	2.559	Nov 2017	3.700	Nov 2018	2.182	Nov 2019	-		2.182	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC CARDEROCK : MD	1.283	2.250	Nov 2017	1.200	Nov 2018	1.919	Nov 2019	-		1.919	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC PHILADELPHIA : PA	0.776	1.309	Nov 2017	0.500	Nov 2018	1.116	Nov 2019	-		1.116	Continuing	Continuing	Continuing
Advanced Design & Development	C/CPFF	NAVSEA SEAPORT : VARIOUS	6.206	8.166	Jan 2018	2.353	Dec 2018	3.205	Nov 2019	-		3.205	Continuing	Continuing	Continuing
Advanced Design & Development	C/BA	NAWCAD PAX RIVER : MD	1.396	1.045	Nov 2017	1.305	Nov 2018	0.891	Nov 2019	-		0.891	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NAWCAD LAKEHURST : NJ	0.312	0.000		0.000		0.000		-		0.000	0.000	0.312	-
Advanced Design & Development	WR	SPAWAR : VARIOUS	0.528	0.710	Nov 2017	0.490	Nov 2018	0.605	Nov 2019	-		0.605	Continuing	Continuing	Continuing
Advanced Design & Development	Various	NSRP : VARIOUS	0.000	0.000		0.835	Dec 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Advanced Design & Development	Various	MISCELLANEOUS : VARIOUS	2.360	0.610	Dec 2017	1.140	Nov 2018	0.520	Nov 2019	-		0.520	Continuing	Continuing	Continuing
Subtotal			30.231	32.161		31.563		23.941		-		23.941	Continuing	Continuing	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
Project Cost Totals			30.231	32.161		31.563		23.941		-		23.941	Continuing	Continuing	N/A
Remarks															

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**Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy**

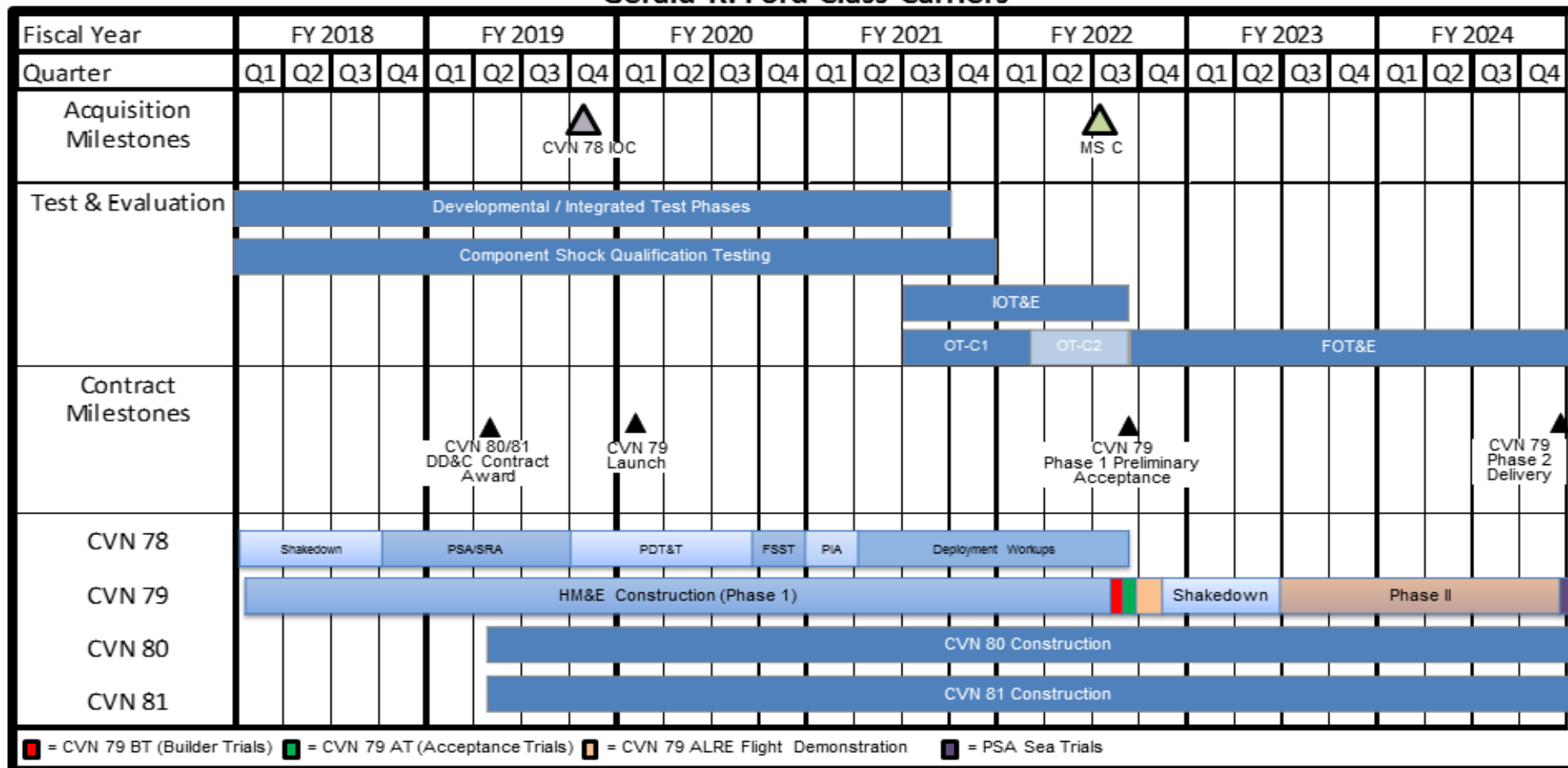
**Date:** March 2019

**Appropriation/Budget Activity**  
1319 / 5

**R-1 Program Element (Number/Name)**  
PE 0604567N / Ship Contract Design/ Live  
Fire T&E

**Project (Number/Name)**  
3108 / CVN 80 Total Ship Integration

**Gerald R. Ford Class Carriers**





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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E	Project (Number/Name) 3108 / CVN 80 Total Ship Integration

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3108				
CVN 80 Total Ship Integration	1	2018	4	2024

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3179 / CVN-79 Total Ship 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
3179: CVN-79 Total Ship Integration	201.980	16.397	14.536	14.564	-	14.564	14.770	15.133	15.432	15.743	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 223												
A. Mission Description and Budget Item Justification												
Development and related testing of CVN 78 Class aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 79. This project transitions the minimum sustaining technologies required to address obsolescence, critical survivability shortfalls as identified in CVN 78 Class testing, future requirements, and technologies which did not mature in time to support the CVN 78. All systems developed in this project have the potential to support emerging requirements and other promising systems technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to maintain aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to develop the contract data package necessary to support CVN 79 procurement, including, but not limited to, engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment. In addition, this project focuses on significant procurement and life cycle cost reduction compared to the first ship of the class. Cost reductions are sought, developed and implemented in the areas of design, labor and material.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: CVN-79 Total Ship Integration  Articles:								16.397	14.536	14.564	0.000	14.564
								-	-	-	-	-
FY 2019 Plans: Continue to address design, equipment and system changes between CVN 78 and CVN 79 to identify candidate equipment and / or systems that may require FOT&E. Continue to address design and construction issues based on the results of CVN 78 testing and initial operations. Continue to manage fact-of-life obsolescence changes on government-furnished equipment systems, challenges encountered on contractor-furnished equipment and material analysis. Continue to perform throughput analysis on Facility investments (Shop Lathe, Panel Line, Weather Covers, Outfitting Hall & Dry Dock) and Non-Touch Labor to solidify cost improvements. Continue CVN 79 Phase II study to develop and refine the strategy to efficiently transition from Phase I construction to Phase II and final delivery of CVN 79.												
FY 2020 Base Plans:												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>		<b>Project (Number/Name)</b> 3179 / <i>CVN-79 Total Ship Integration</i>	

<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>
Continue to address design and construction issues based on the results of CVN 78 testing and initial operations. Continue to manage fact-of-life obsolescence changes on government-furnished equipment systems, challenges encountered on contractor-furnished equipment and material analysis. Complete development of labor savings initiatives, specifically within Steel Fabrication and Assembly (SFA) area to solidify efficiency and capacity improvements previously identified. Evaluate SFA improvement initiatives for additional areas of applicability in Final Assembly Platen (FAP) and drydock. Continue additional CVN 79 Phase II study to develop and refine the strategy to efficiently transition from Phase I construction to Phase II and final delivery of CVN 79. Refine system integration and testing strategies for implementation in CVN 79 testing program to support on time 2022 preliminary acceptance of CVN 79 by evaluating improvements needed to capitalize on CVN 78 lessons learned. Develop and implement a tailored Integrated Test Plan for CVN 79 and CVN 80 leveraging the Submarine Integration and Test Support System (SIATSS) used by Virginia Class Submarine program to manage Alteration Installation Team (AIT)- conducted testing. This CVN-specific tool will be known as the Carrier Integration and Test Support System (CIATSS).					
<b><i>FY 2020 OCO Plans:</i></b> N/A					
<b><i>FY 2019 to FY 2020 Increase/Decrease Statement:</i></b> Increase due to minor rate adjustments.					
<b>Accomplishments/Planned Programs Subtotals</b>	16.397	14.536	14.564	0.000	14.564

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN / 2001: <i>Carrier Replacement Program</i>	4,130.704	1,573.181	2,347.000	-	2,347.000	2,644.700	2,323.613	1,929.000	1,718.000	Continuing	Continuing
• SCN / 5300: <i>Completion of Prior Year Shipbuilding Programs</i>	20.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,394.860
• RDTEN / 0604112N: <i>Project Units 2208, 4004, 9999</i>	82.549	83.121	121.310	-	121.310	99.418	72.213	69.704	54.440	Continuing	Continuing
• OMN / 1B2B: <i>CVN 78 Ford Class Training and Sustainment (12BJ0)</i>	20.748	8.971	7.264	-	7.264	5.317	5.612	5.742	5.866	Continuing	Continuing
• OPN / 5664: <i>Surface Training Equipment</i>	12.010	7.942	1.412	-	1.412	4.715	2.796	2.773	2.834	Continuing	Continuing

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3179 / CVN-79 Total Ship Integration			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• OPN / 0981: Equipment Modernization	0.000	32.900	8.561	-	8.561	5.849	10.699	5.210	0.883	Continuing	Continuing
• CVN 78 Modernization: CVN 78 Modernization	0.000	0.000	6.440	-	6.440	1.784	5.366	17.578	32.224	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The CVN 78 is the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. The CVN 78 class will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system (EMALS), advanced arresting gear (AAG) system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war fighting benefits will be realized: increased sortie generation rate, improved ship self-defense capability, increased launch and recovery capability / flexibility, increased operational availability, and increased flexibility to support future upgrades.											
E. Performance Metrics											
Successfully complete system development efforts for designated new and modified shipboard system, including developmental test and evaluation documents. Successfully complete design related activities associated with integration of new and modified shipboard systems into the ship, including developmental test and evaluation documentation. Successfully perform system design and analysis studies. Successfully support design integration and analysis. Successfully complete or support feasibility and tradeoff studies on new and modified shipboard systems, technologies, and proposed modifications. Studies shall include requirements and engineering analysis; identification of subsystem, integration, and logistics impacts; cost estimates; analysis of construction schedule impacts; and conduct / support of shipchecks. Successfully provide Manpower Workload Analysis associated with design and policy activities, and with integration of new and modified system/equipment. Successfully complete the development of multiple Business Case Analyses (BCAs) that demonstrate technology, process, requirements and / or infrastructure improvements that will reduce the man hours (or equivalent material costs) for CVN 79 Construction.											

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3179 / CVN-79 Total Ship 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
Total Ship Integration	C/CPAF	HII : VA	95.336	6.220	Nov 2017	2.094	Nov 2018	5.126	Nov 2019	-		5.126	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC CARDEROCK : MD	16.067	0.845	Nov 2017	1.170	Nov 2018	0.772	Nov 2019	-		0.772	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC DAHLGREN : VA	13.343	1.210	Dec 2017	2.627	Nov 2018	1.105	Nov 2019	-		1.105	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC PHILADELPHIA : PA	2.345	0.578	Nov 2017	1.170	Nov 2018	0.528	Nov 2019	-		0.528	Continuing	Continuing	Continuing
Total Ship Integration	WR	NAWCAD PAX RIVER : MD	6.470	0.941	Nov 2017	1.153	Nov 2018	0.859	Nov 2019	-		0.859	Continuing	Continuing	Continuing
Total Ship Integration	WR	SPAWAR : CA	4.867	0.455	Nov 2017	0.749	Nov 2018	0.415	Nov 2019	-		0.415	Continuing	Continuing	Continuing
Total Ship Integration	C/CPFF	NAVSEA SEAPORT : Various	28.847	2.466	Nov 2017	2.467	Dec 2018	2.252	Dec 2019	-		2.252	Continuing	Continuing	Continuing
Total Ship Integration	C/CPAF	RAYTHEON : MA	9.784	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Total Ship Integration	WR	SSC CHARLESTON : SC	0.841	0.298	Jan 2018	0.000		0.272	Nov 2019	-		0.272	0.000	1.411	-
Total Ship Integration	C/CPFF	SAIC : VA	1.445	0.000		0.000		0.000		-		0.000	0.000	1.445	-
Total Ship Integration	Various	NSRP : Various	15.596	1.670	Mar 2018	0.835	Dec 2018	1.670	Dec 2019	-		1.670	Continuing	Continuing	Continuing
Total Ship Integration	C/CPFF	GRYPHON (SEI&T) : IN	0.800	1.129	Nov 2017	0.780	Dec 2018	1.031	Dec 2019	-		1.031	Continuing	Continuing	Continuing
Subtotal			195.741	15.812		13.045		14.030		-		14.030	Continuing	Continuing	N/A
Remarks															
- HII increased to resolve technical issues that have resulted from CVN 78 post-delivery tests.															
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
Developmental Test & Evaluation	WR	NSWC CARDEROCK : MD	4.721	0.000		0.000		0.000		-		0.000	0.000	4.721	-

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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 0604567N / Ship Contract Design/ Live Fire T&E						Project (Number/Name) 3179 / CVN-79 Total Ship Integration			
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
Developmental Test & Evaluation	WR	NUWC NEWPORT : RI	0.123	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWC DAHLGREN : VA	0.921	0.341	Nov 2017	1.137	Nov 2018	0.311	Nov 2019	-		0.311	Continuing	Continuing	Continuing
Developmental Test & Evaluation	TBD	MISCELLANEOUS : TBD	0.017	0.014	Nov 2017	0.124	Dec 2018	0.013	Dec 2019	-		0.013	Continuing	Continuing	Continuing
Operational Test & Evaluation	C/CPFF	FLC : VA	0.276	0.230	Dec 2017	0.230	Nov 2018	0.210	Nov 2019	-		0.210	Continuing	Continuing	Continuing
Subtotal			6.058	0.585		1.491		0.534		-		0.534	Continuing	Continuing	N/A
Management Services (\$ 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
Defense Acquisition Workforce	Various	Various : Misc	0.181	0.000		0.000		0.000		-		0.000	0.000	0.181	-
Subtotal			0.181	0.000		0.000		0.000		-		0.000	0.000	0.181	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
Project Cost Totals			201.980	16.397		14.536		14.564		-		14.564	Continuing	Continuing	N/A
Remarks															

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**Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy**

**Date:** March 2019

**Appropriation/Budget Activity**

1319 / 5

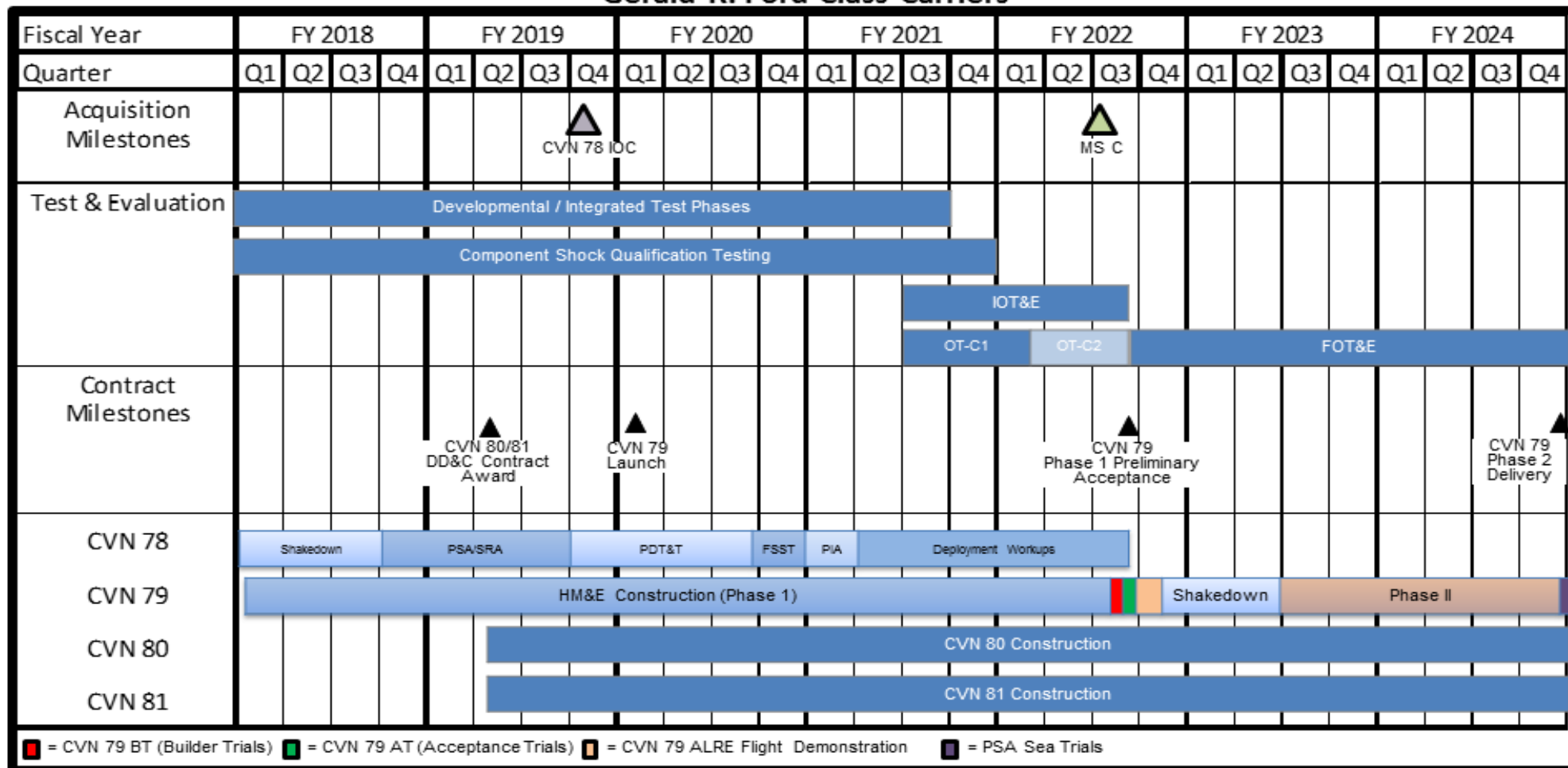
**R-1 Program Element (Number/Name)**

PE 0604567N / Ship Contract Design/ Live Fire T&E

**Project (Number/Name)**

3179 / CVN-79 Total Ship Integration

**Gerald R. Ford Class Carriers**



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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E	Project (Number/Name) 3179 / CVN-79 Total Ship Integration

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3179				
CVN 79 Total Ship Integration	1	2018	4	2024



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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3369 / Hybrid Electric Drive			
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
3369: Hybrid Electric Drive	13.218	0.982	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.200
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project includes the DON Energy Initiative related to the DDG 51 Hybrid Electric Drive to reduce DDG 51 Class ship energy consumption and increase mission effectiveness through longer time on station. This project supports propulsion at low ship speeds without the need for LM 2500 main engines. Fuel savings from the Hybrid Electric Drive system will be achieved by utilizing fewer gas turbines for propulsion and ship service power generation while also loading gas turbines generators at a more efficient operating load. Provides critical foundation for SECNAV and CNO objectives to achieve greater Navy-wide energy security. The HED program has been truncated to two installations. The operational data collected from the two ships from a deployment cycle (usage/energy savings/efficiencies) will determine future installations.												
Note: FY 2014 and prior year funding is resourced under project 1803 in this program element.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
<b>Title:</b> DON Energy Initiative  <b>Articles:</b>  <b>Description:</b> This project is a DON Energy Initiative related to the DDG 51 Hybrid Electric Drive (HED) to reduce DDG 51 Class ship energy consumption and increase mission effectiveness through longer time on station.  <b>FY 2019 Plans:</b> Program has been cancelled.  <b>FY 2020 Base Plans:</b> N/A  <b>FY 2020 OCO Plans:</b> N/A								0.982	0.000	0.000	0.000	0.000
								-	-	-	-	-
Accomplishments/Planned Programs Subtotals								0.982	0.000	0.000	0.000	0.000

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3369 / Hybrid Electric Drive			
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
			<u>FY 2020</u>	<u>FY 2020</u>	<u>FY 2020</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Complete</u>	<u>Total Cost</u>
• OPN 0140: Hybrid Electric Drive (HED)	6.331	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	46.585	105.643
<b>Remarks</b>											
<b>D. Acquisition Strategy</b>											
The HED program has been truncated to two installations. The operational data collected from the two ships from a deployment cycle (usage/energy savings/ efficiencies) will determine future installations.											
<b>E. Performance Metrics</b>											
Completion of Engineering Development Model (EDM) and complete fielding of First Article (FA) including contract award, design, manufacturing, and delivery. Completion of Factory Acceptance Test (FAT) and performance testing in Land Based Engineering Site (LBES). Commencement, completion, delivery and installation of Low Rate Initial Production (LRIP) units. Achieve fuel efficiency and increase on-station time.											

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 3369 / Hybrid Electric Drive					
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
DON Energy Initiative - OEM	C/FPIF	L-3 Maritime Systems : Leesburg, VA	3.133	0.282	Jan 2018	0.000		0.000		-		0.000	0.000	3.415	-
Subtotal			3.133	0.282		0.000		0.000		-		0.000	0.000	3.415	N/A
Support (\$ 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
HED - DON Energy Initiative -OEM	WR	NSWC/SSSES : Philadelphia, PA	9.460	0.700	Dec 2017	0.000		0.000		-		0.000	0.000	10.160	-
HED - DON Energy Initiative -OEM	Various	SUPSHIP BATH : Bath, ME	0.325	0.000		0.000		0.000		-		0.000	0.000	0.325	-
HED - DON Energy Initiative -OEM	Various	SYNTEK TECHNOLOGIES : Arlington, VA	0.300	0.000		0.000		0.000		-		0.000	0.000	0.300	-
Subtotal			10.085	0.700		0.000		0.000		-		0.000	0.000	10.785	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
Project Cost Totals			13.218	0.982		0.000		0.000		-		0.000	0.000	14.200	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy												Date: March 2019																	
Appropriation/Budget Activity 1319 / 5												R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E								Project (Number/Name) 3369 / Hybrid Electric Drive									
Proj 3369		FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
		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
Hybrid Electric Drive																													
Hybrid Electric Drive		Hybrid Electric Drive																											
																												</	

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E	Project (Number/Name) 3369 / Hybrid Electric Drive

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3369				
Hybrid Electric Drive: Hybrid Electric Drive: Hybrid Electric Drive	1	2018	4	2018

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>				<b>Project (Number/Name)</b> 4007 / <i>CVN 21 LFT&amp;E</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
4007: <i>CVN 21 LFT&amp;E</i>	69.451	3.919	4.011	4.054	-	4.054	4.177	4.290	4.374	4.461	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 223												
<p><b>A. Mission Description and Budget Item Justification</b></p> <p>This project encompasses Live Fire Test and Evaluation (LFT&amp;E) efforts for the CVN 78 Class. Title 10, US Code, Section 2366, CVN 21 Operational Requirements Document (ORD) and the CVN 78 Class Test and Evaluation Master Plan (TEMP) 1610 prescribe requirements for LFT&amp;E. The purpose of LFT&amp;E is to evaluate covered systems in a realistic combat environment before proceeding beyond low-rate initial production. Since the application of the survivability testing required by 10 USC 2366 to a CVN 78 Class ship would be unreasonably expensive and impractical, the Secretary of Defense waived the live fire testing requirement in 2004 and submitted a certification of that determination to Congress. The CVN 78 Class LFT&amp;E Management Plan details the testing, modeling and simulation, and engineering analyses that are being used to determine whether CVN 78 Class ships will be able to survive and carry out their missions against the threat weapons identified in the Surface Ship Capstone System Threat Assessment Report (CSTAR) that are likely to be encountered in combat. The results of these tests and analyses are documented in periodic Vulnerability Assessment Reports (VARs).</p> <p>The CVN 78 Class VAR 3 was completed in the summer of 2007 and the CVN 78 Class VAR 4 is scheduled to be completed in FY 18.</p>												
<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>	
<b>Title:</b> CVN 21 LFT&E							3.919	4.011	4.054	0.000	4.054	
<b>Articles:</b>							-	-	-	-	-	
<p><b>FY 2019 Plans:</b></p> <p>Complete the analyses for the analytical bridge studies and complete the report. Continue planning for the CVN 78 Total Ship Survivability Trial (TSST) with the development of the TSST drill guides and implementation sheets. Perform a cold check on CVN 78 in support of TSST planning. Continue analyses and documentation for the final SAR.</p>												
<p><b>FY 2020 Base Plans:</b></p> <p>Continue planning for the CVN 78 TSST with the development of the TSST drill guides and implementation sheets. Perform a cold check on CVN 78 in support of TSST planning. Continue analyses and documentation for the final SAR.</p>												
<p><b>FY 2020 OCO Plans:</b></p>												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>				<b>Project (Number/Name)</b> 4007 / CVN 21 LFT&E			
<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>			
N/A											
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Increase due to inflation.											
<b>Accomplishments/Planned Programs Subtotals</b>				3.919	4.011	4.054	0.000	4.054			
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN / 2001: <i>Carrier Replacement Program</i>	4,130.704	1,573.181	2,347.000	-	2,347.000	2,644.700	2,323.613	1,929.000	1,718.000	Continuing	Continuing
• SCN / 5300: <i>Completion of Prior Year Shipbuilding Programs</i>	20.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,394.860
• RDTEN / 0604112N: <i>Project Units 2208, 4004, 9999</i>	82.549	83.121	121.310	-	121.310	99.418	72.213	69.704	54.440	Continuing	Continuing
• OMN / 1B2B: <i>CVN 78 Ford Class Training and Sustainment (12BJ0)</i>	20.748	8.971	7.264	-	7.264	5.317	5.612	5.742	5.866	Continuing	Continuing
• OPN / 5664: <i>Surface Training Equipment</i>	12.010	7.942	1.412	-	1.412	4.715	2.796	2.773	2.834	Continuing	Continuing
• OPN / 0981: <i>Equipment Modernization</i>	0.000	32.900	8.561	-	8.561	5.849	10.699	5.210	0.883	Continuing	Continuing
• OMN / 1B5B: <i>CVN 78 Modernization</i>	0.000	0.000	6.440	-	6.440	1.784	5.366	17.578	32.224	Continuing	Continuing
<b>Remarks</b>											
<b>D. Acquisition Strategy</b> The CVN 78 is the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system (EMALS), advanced arresting gear (AAG) system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war fighting benefits will be realized: increased sortie generation rate, improved ship self-defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.											

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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 0604567N / Ship Contract Design/ Live Fire T&E	Project (Number/Name) 4007 / CVN 21 LFT&E
<b>E. Performance Metrics</b> Complete: (1) the adjudication of final comments and updates to the CVN 78 Class LFT&E Management Plan, Revision B and route for signature; (2) the refinement of the CVN 78 structural FEM, in support of the Analytical Bridge analyses; and (3) the analyses and documentation for VAR 4 and route for signature.		



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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 4007 / CVN 21 LFT&E					
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
Live Fire Test & Evaluation	WR	NSWC Carderock : MD	58.431	3.337	Oct 2017	2.897	Nov 2018	3.402	Nov 2019	-		3.402	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	C/CPAF	HII : VA	10.651	0.507	Apr 2018	0.950	Nov 2018	0.575	Nov 2019	-		0.575	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR	NSWC Dahlgren : VA	0.359	0.075	Jun 2018	0.082	Nov 2018	0.077	Nov 2019	-		0.077	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	C/CPFF	NAVSEA SEAPORT : DC	0.000	0.000		0.082	Dec 2018	0.000		-		0.000	0.000	0.082	-
Subtotal			69.441	3.919		4.011		4.054		-		4.054	Continuing	Continuing	N/A
Management Services (\$ 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
Defense Acquisition Workforce	TBD	Various : Various	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-
Subtotal			0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	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
Project Cost Totals			69.451	3.919		4.011		4.054		-		4.054	Continuing	Continuing	N/A
Remarks															

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**Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy**

**Date:** March 2019

**Appropriation/Budget Activity**

1319 / 5

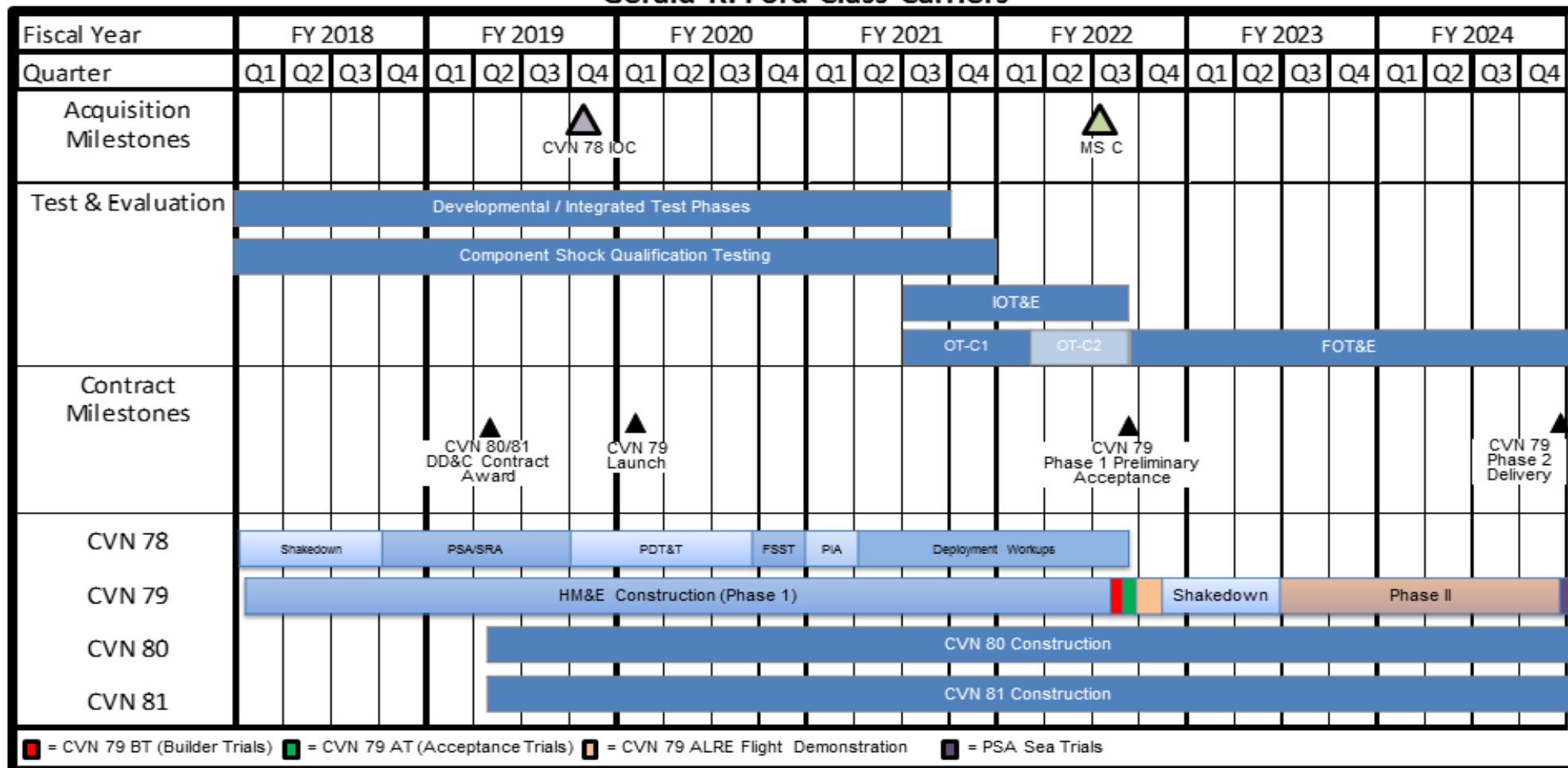
**R-1 Program Element (Number/Name)**

PE 0604567N / Ship Contract Design/ Live Fire T&E

**Project (Number/Name)**

4007 / CVN 21 LFT&E

**Gerald R. Ford Class Carriers**



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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / Ship Contract Design/ Live Fire T&E	Project (Number/Name) 4007 / CVN 21 LFT&E

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 4007				
CVN 21 LFT&E	1	2018	4	2024

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 9999 / Congressional Adds			
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
9999: Congressional Adds	19.343	0.452	11.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.795
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
These projects provide for the Congressional add to Maritime Prepositioning Force (Future), DDG 51 Advance Degaussing Mine Protection System Retrofit, and Planning to Support FY 2021 Award of LHA-9.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019			
Congressional Add: Maritime Prepositioning Force (Future) - Transfer from NDSF								0.452	0.000			
FY 2018 Accomplishments: Performed tracking execution of Test and Evaluation schedule to Test and Evaluation Master Plan (TEMP) - Completed Initial Operational Test and Evaluation (IOT&E) Phase 2 for Expeditionary Sea Base (ESB) - Completed Total Ship Survivability Trial (TSST) and Final Survivability Assessment Report (FSAR) for Expeditionary Sea Base (ESB) Live Fire Test and Evaluation (LFT&E).												
FY 2019 Plans: Completion of Operational Testing and final test report.												
Congressional Add: DDG 51 Advance Degaussing Mine Protection System Retrofit								0.000	5.000			
FY 2018 Accomplishments: N/A												
FY 2019 Plans: To study the technical feasibility and impacts to existing space and arrangements in order to determine the most cost-effective degaussing solution that meets current signature requirements. This study will allow for developed and prototype Advanced Degaussing (ADG) designs to be matured and optimized for the DDG 51 Class for both retrofit and new construction ships (forward fit). These funds will develop and validate an Advanced Degaussing design and degaussing loop arrangement to be approved by the technical community; as well as cost and schedule to back fit either a High-Temperature Superconducting Degaussing Coil System (HTS) or copper system.												
Congressional Add: Planning to Support FY 2021 Award of LHA-9								0.000	6.000			
FY 2018 Accomplishments: N/A												
FY 2019 Plans: Complete technical data package (TDP) to support advanced procurement of long lead time material for LHA 9.												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>	

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>
Initiate acquisition documentation development to support LHA 9 contract actions.		
<b>Congressional Adds Subtotals</b>	0.452	11.000

**C. Other Program Funding Summary (\$ in Millions)**  
 N/A

**Remarks**

**D. Acquisition Strategy**  
 Supplement the current maritime prepositioning force and to provide in theater capability to support resupplying a Maritime Expeditionary Brigade.

**E. Performance Metrics**  
 Annual Program Review

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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 0604567N / Ship Contract Design/ Live Fire T&E				Project (Number/Name) 9999 / Congressional Adds					
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
CVN Total Ship Integration	C/CPAF	HII : VA	16.838	0.000		0.000		0.000		-		0.000	0.000	16.838	-
CVN Total Ship Integration	C/CPFF	AT Kearney : DC	1.709	0.000		0.000		0.000		-		0.000	0.000	1.709	-
CVN Total Ship Integration	WR	NSWC Carderock : MD	0.350	0.000		0.000		0.000		-		0.000	0.000	0.350	-
CVN Total Ship Integration	WR	NSWC Philadelphia : PA	0.446	0.000		0.000		0.000		-		0.000	0.000	0.446	-
LHA 9 Contract Design/ Acquisition Planning	Various	Not Specified : Not Specified	0.000	0.000		6.000	Mar 2019	0.000		-		0.000	0.000	6.000	-
DDG 51 Advance Degaussing Mine Protection System Retrofit	C/CPAF	SUPSHIP/BATH: BATH : ME	0.000	0.000		1.250	Jun 2019	0.000		-		0.000	0.000	1.250	-
DDG 51 Advance Degaussing Mine Protection System Retrofit	WR	NSWC/SSES: Philadelphia : PA	0.000	0.000		1.250	Jun 2019	0.000		-		0.000	0.000	1.250	-
DDG 51 Advance Degaussing Mine Protection System Retrofit	WR	NSWC/ Carderock : MD	0.000	0.000		2.500	Jun 2019	0.000		-		0.000	0.000	2.500	-
Subtotal			19.343	0.000		11.000		0.000		-		0.000	0.000	30.343	N/A
Remarks															
PY updated for actuals (PU C295 CVN Cost Reduction Activities).															
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
ESB Operational Test and Evaluation	Various	Not Specified : Not Specified	0.000	0.200	Jun 2018	0.000		0.000		-		0.000	0.000	0.200	-
ESB Live Fire Test and Evaluation	Various	Not Specified : Not Specified	0.000	0.252	Jun 2018	0.000		0.000		-		0.000	0.000	0.252	-
Subtotal			0.000	0.452		0.000		0.000		-		0.000	0.000	0.452	N/A

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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 0604567N / Ship Contract Design/ Live Fire T&E					<b>Project (Number/Name)</b> 9999 / Congressional Adds					

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>Remarks</b> Award dates reflect initial award of incremental execution.															
			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>			19.343	0.452		11.000		0.000		-		0.000	0.000	30.795	N/A
<b>Remarks</b>															

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**Appropriation/Budget Activity**  
1319 / 5

**R-1 Program Element (Number/Name)**  
PE 0604567N / Ship Contract Design/ Live  
Fire T&E

**Project (Number/Name)**  
9999 / Congressional Adds

[illegible]

2020PB - 0604567N - 9999



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</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 0604567N / <i>Ship Contract Design/ Live Fire T&amp;E</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 9999</b>				
Completion of ESB OT/LFTE Testing	1	2018	4	2019
DDG 51 Advance Degaussing Mine Protection System Retrofit	1	2019	4	2020
LHA 9 Contract Design/Acquisition Planning	1	2019	4	2020