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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2021 Navy **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / 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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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	780.597	69.337	46.809	51.853	-	51.853	57.336	57.082	56.612	46.176	Continuing	Continuing
1803: <i>Ship Contract Design</i>	138.822	3.099	1.939	3.863	-	3.863	3.847	3.407	3.471	3.540	Continuing	Continuing
2465: <i>LHA(R) FLT Design and Total Ship Integration</i>	267.841	6.814	2.311	5.961	-	5.961	8.413	7.739	6.291	6.416	Continuing	Continuing
3108: <i>CVN 80 Total Ship Integration</i>	62.392	30.644	23.941	23.093	-	23.093	25.678	26.182	26.706	25.241	Continuing	Continuing
3179: <i>CVN-79 Total Ship Integration</i>	218.377	14.239	14.564	14.756	-	14.756	15.111	15.392	15.697	6.444	Continuing	Continuing
4007: <i>CVN 21 LFT&amp;E</i>	73.370	3.929	4.054	4.180	-	4.180	4.287	4.362	4.447	4.535	Continuing	Continuing
9999: <i>Congressional Adds</i>	19.795	10.612	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.407

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** 333, 223

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

The FY 2021 funding request was reduced by \$3.928 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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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 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	71.062	46.809	61.547	-	61.547
Current President's Budget	69.337	46.809	51.853	-	51.853
Total Adjustments	-1.725	0.000	-9.694	-	-9.694
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.725	0.000			
• Program Adjustments	0.000	0.000	-9.688	-	-9.688
• Rate/Misc Adjustments	0.000	0.000	-0.006	-	-0.006

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

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

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 2019</b>	<b>FY 2020</b>
	4.824	0.000
	5.788	0.000
	10.612	0.000
	10.612	0.000

**Change Summary Explanation**

FY21 - PROJ 3108: Misc Program Adjustments (-2.0M)

FY21 - PROJ 2456: Reduction to Account for the Availability of Prior Year Execution Balances (-3.928M)

FY21 - PROJ 2456: JSF/F-35 test rescheduled from FY 2021 to FY 2022 (-3.572M)

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**Exhibit R-2A, RDT&E Project Justification:** PB 2021 Navy **Date:** February 2020

<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>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
1803: <i>Ship Contract Design</i>	138.822	3.099	1.939	3.863	-	3.863	3.847	3.407	3.471	3.540	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)

Prior year funding included 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)**

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<b>Title:</b> Ship Contract Design	3.099	1.939	3.863	0.000	3.863
<b>Articles:</b>	-	-	-	-	-
<b><i>FY 2020 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 2020.					
<b><i>FY 2021 Base Plans:</i></b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 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 2021.  <b>FY 2021 OCO Plans:</b> N/A  <b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> The FY 2020 to FY 2021 increase is to account for service life extension of CG 47 and HM&E upgrades for CG 47 and DDG Flt IIA as well as machinery control improvements in FY 2021.					
<b>Accomplishments/Planned Programs Subtotals</b>	3.099	1.939	3.863	0.000	3.863

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN 0900: DDG Mod	462.908	566.140	555.605	-	555.605	812.236	951.220	1,015.758	1,128.893	2,303.514	11,079.468
• OPN 0960: CG Mod	268.509	193.990	89.307	-	89.307	86.433	18.867	5.089	5.192	0.000	3,855.913

**Remarks**

**D. Acquisition Strategy**  
Continuing systems and software development for both development models and production machinery control units at Land Based Engineering Sites.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
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 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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/NSWCDD/NSWCPC/NSWCPC/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	Various	Not Specified : Not Specified	8.500	0.000		0.000		0.000		-		0.000	0.000	8.500	-
<b>Subtotal</b>			80.484	0.000		0.000		0.000		-		0.000	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
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 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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
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	SPAWARSYSCEN : 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	COMPTEVFOR : 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	5.209	0.743	Jan 2019	0.457	Jan 2020	0.907	Jan 2021	-		0.907	0.000	7.316	-
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	9.969	0.464	Jan 2019	0.285	Jan 2020	0.565	Jan 2021	-		0.565	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
1319 / 5				PE 0604567N / Ship Contract Design/ Live Fire T&E						1803 / Ship Contract Design					
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	4.916	0.254	Jun 2019	0.156	Jun 2020	0.309	Jun 2021	-		0.309	Continuing	Continuing	Continuing
DDG/CGM Program / Engineering Spt	C/CPFF	John Hopkins University : Laurel, MD	1.622	0.454	Apr 2019	0.279	Apr 2020	0.553	Apr 2021	-		0.553	0.000	2.908	-
ESB	Various	Various : Various	5.276	0.000		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	-
CG Program / Engineering Spt	WR	NSWC/SSES : Philadelphia, PA	1.521	1.184	Jan 2019	0.762	Jan 2020	1.529	Jan 2021	-		1.529	0.000	4.996	-
<b>Subtotal</b>			58.338	3.099		1.939		3.863		-		3.863	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			138.822	3.099		1.939		3.863		-		3.863	Continuing	Continuing	N/A
<b>Remarks</b>															



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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>Proj 1803</b>				
Ship Contract Design: CGM Baseline 4 Mod Design	1	2019	4	2020
Ship Contract Design: CG Class Design	1	2019	4	2025
Ship Contract Design: DDG Technical Insertion 16 Mod Design	1	2019	4	2019
Ship Contract Design: DDG FLT IIA Mod Design	1	2019	2	2019
Ship Contract Design: CG Deliveries (CG 59,61,62,63-73)	1	2019	4	2021
Ship Contract Design: DDGM Deliveries (DDG 61,80,81,84,87)	1	2019	3	2021
Ship Contract Design: DDG Class Design	1	2019	4	2025

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**Exhibit R-2A, RDT&E Project Justification:** PB 2021 Navy **Date:** February 2020

<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> 2465 / LHA(R) FLT Design and Total Ship Integration
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
2465: LHA(R) FLT Design and Total Ship Integration	267.841	6.814	2.311	5.961	-	5.961	8.413	7.739	6.291	6.416	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 with landing craft, helicopters and tilt rotors (MV-22) supported by Joint Strike Fighters (F-35B).

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

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p><b>Title:</b> LHA (R) FLT 0 Design and Total Ship Integration - LHA 6</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2020 Plans:</b> LHA 6 Initiate Follow-on Operational Test and Evaluation (FOT&amp;E).</p> <p><b>FY 2021 Base Plans:</b> Planning for LHA 6 FOT&amp;E event to demonstrate the JSF/F-35B capacity key performance parameter (KPP).</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Decrease due to re-phasing of test requirement.</p>	1.064	0.090	0.035	0.000	0.035
	-	-	-	-	-
<p><b>Title:</b> LHA (R) FLT 1 Design and Total Ship Integration - LHA 8</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2020 Plans:</b> LHA 8 Complete Enterprise Air Search Radar integration efforts. LHA 8 Continue Reliability Maintainability Availability analysis.</p>	5.750	2.221	5.926	0.000	5.926
	-	-	-	-	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
LHA 8 Continue Vulnerability Assessment Report. LHA 8 Continue Operational Test & Evaluation preparation for Operational Assessment.  <b>FY 2021 Base Plans:</b> LHA 8 Continue Reliability Maintainability Availability analysis. LHA 8 Continue Vulnerability Assessment Report. LHA 8 Continue Operational Test & Evaluation preparation for Operational Assessment. LHA 8 Initiate Cybersecurity Developmental Test & Evaluation efforts.  <b>FY 2021 OCO Plans:</b> N/A  <b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Increase supports 1) Cyber: Conduct development and planning to support cyber-survivability testing, conduct system cyber vulnerability testing at land-based test site in order to increase LHA(R) survivability in a cyber-contested environment, and test controls, attacks, kinetic effects to evaluate threats, 2) LFT&E Vulnerability Assessment Report (VAR) Electronic Signatures: Conduct electronic signatures analysis of the LHA 8 reduced island design evaluating the ship's radar detectability by subsurface-to-ship, surface-to-ship, and air-to-ship anti-ship threat missile systems to ensure the ship self defense system countermeasures are adequate. 3) LFT&E VAR Modeling: The VAR effort will increase as the ship's system and subsystem locations, distributed systems and ship structure are entered into the LFTE modeling and simulation tools, and 4) RMA: Create an LHA(R) Flight 1 specific RMA model using new reliability block diagrams, LHA(R) Flight 1 specific Authorized Parts Lists, and extant reliability databases reflecting changes from FLT 0 to include port and starboard main reduction gears, engines, radars, machinery control system, electrical distribution, and combat systems.					
<b>Accomplishments/Planned Programs Subtotals</b>	6.814	2.311	5.961	0.000	5.961

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN/3041: LHA (R) Ships	375.100	650.000	0.000	-	0.000	0.000	1,248.601	1,624.897	0.000	0.000	14,161.512

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
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**D. Acquisition Strategy**

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.

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&C contract option.

LHA 9 Acquisition Strategy is in development.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604567N / Ship Contract Design/ Live Fire T&E				2465 / LHA(R) FLT Design and Total Ship Integration							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	-
<b>Subtotal</b>			151.801	0.000		0.000		0.000		-		0.000	0.000	151.801	N/A
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	6.551	3.316	Dec 2018	1.197	Dec 2019	1.520	Dec 2020	-		1.520	Continuing	Continuing	Continuing
<b>Subtotal</b>			6.551	3.316		1.197		1.520		-		1.520	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	Various	NSWC, USS Secure : Various	4.559	0.000		0.000		2.053	Dec 2020	-		2.053	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	OPTEVFOR/ MCOTEANAVSUP : Norfolk, VA/ Quantico, VA	22.426	1.029	Dec 2018	0.481	Dec 2019	0.706	Dec 2020	-		0.706	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR	NSWC : Various	65.457	2.408	Dec 2018	0.548	Dec 2019	1.562	Dec 2020	-		1.562	Continuing	Continuing	Continuing
Follow-on Operational Test and Evaluation	WR	OPTEVFOR / MCOTEANAVSUP : Norfolk, VA / Quantico, VA	0.000	0.000		0.000		0.035	Dec 2020	-		0.035	Continuing	Continuing	Continuing
<b>Subtotal</b>			92.442	3.437		1.029		4.356		-		4.356	Continuing	Continuing	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<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> 2465 / LHA(R) FLT Design and Total Ship Integration

## LHA Replacement Design and Total Ship Integration

FY	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025							
	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				CFO	PSA			OWLD																			
	LHA8	Lay Keel							RIYD EASR Below Deck				RIYD EASR Above Deck	Launch							Ship Delivery						PSA	OWLD				
	LHA9				LLTM RFP	Pre-Fab Award							LHA 9 Construction Award								BT						PDT&T					
Test & Evaluation		LHA 6 RMA								LHA 6 FOT&E																						
						LHA 9 LLTM Award																										
		LHA 8 Operational Test and Assessment Efforts																														
		LHA 8 Enterprise Air Search Radar Integration																														
		LHA 8 Live Fire Test and Evaluation (including VAR)																														
		LHA 8 RMA																														
Contracts (SCN)					LHA 9 LLTM RFP	LHA 9 Pre-Fab Award							LHA 9 Construction Award																			
					LHA 9 LLTM Award																											

DD&C - Detail Design and Construction	EASR - Enterprise Air Search Radar	FOT&E - Follow-on Operational Test and Evaluation	OWLD - Obligation Work Limiting Date
PSA - Post Shakedown Availability	PDT&T - Post Delivery Test and Trials	AP - Advanced Procurement	LFT&E - Live Fire Test and Evaluation
RIYD - Required In-Yard Date	RMA - Reliability, Maintainability, Availability	RFP - Request for Proposals	VAR - Vulnerability Assessment Report

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2465</b>				
LHA (R) FLT Design and Total Ship Integration	1	2019	4	2025

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy										<b>Date:</b> February 2020		
<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> 3108 / CVN 80 Total Ship Integration			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3108: CVN 80 Total Ship Integration	62.392	30.644	23.941	23.093	-	23.093	25.678	26.182	26.706	25.241	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 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)**

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> Enterprise Radar Suite (ERS)/ Warfare Systems Development and Integration	8.620	5.566	5.000	0.000	5.000
<b>Articles:</b>	-	-	-	-	-
<b>FY 2020 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 Operational Requirements Document (ORD) and maintenance of a new CVN Warfare System architecture. Continue to conduct ship integration studies for Government Furnished Information (GFI) vetting, tracking and delivery. Continue conducting onboard and off-board Electromagnetic Interference / Control (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 Test and Evaluation Master Plan (TEMP); platform impacts & updates					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy			<b>Date:</b> February 2020		
<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> 3108 / <i>CVN 80 Total Ship Integration</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>					
to TEMP; cybersecurity analysis. Continue conducting Reliability, Maintainability, Availability (RMA) and Integrated Logistics Support (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 2021 Base Plans:</b> 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 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 2021 OCO Plans:</b> N/A					
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Decrease due to planned remaining work decreasing.					
<b>Title:</b> CVN 78 Class Design for Affordability (DFA)					
<b>Articles:</b>					
	22.024	18.375	18.093	0.000	18.093
	-	-	-	-	-
<b>FY 2020 Plans:</b> 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.					
<b>FY 2021 Base Plans:</b> Continue conducting and supporting feasibility and tradeoff studies on new and modified shipboard systems and equipment. Identify and resolve Government Furnished Equipment and Contractor Furnished Equipment obsolescence issues to support construction. Continue to discover and assess CVN 78 Class DFA initiatives. Continue development of cost-saving initiatives, business case analyses, and DFA initiatives to continue to drive affordability into the carrier program. Continue performing CVN 80-specific engineering calculations					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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> 3108 / <i>CVN 80 Total Ship Integration</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
and technical analysis in the areas of technical performance measures; system component calculations; environmental safety and health, and human factors engineering; survivability and vulnerability; automation systems software; shock and vibration; and engineered components support.					
<b><i>FY 2021 OCO Plans:</i></b> N/A					
<b><i>FY 2020 to FY 2021 Increase/Decrease Statement:</i></b> Decrease from FY 20 to FY 21 is due to miscellaneous program adjustments.					
<b>Accomplishments/Planned Programs Subtotals</b>	30.644	23.941	23.093	0.000	23.093

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN / 2001: <i>Carrier Replacement Program</i>	930.181	1,062.000	1,068.544	-	1,068.544	1,088.130	1,166.136	1,047.876	2,300.621	0.000	36,949.482
• RDTEN / 0604112N: <i>Project Units 2208, 4004, 9999</i>	81.021	105.756	107.895	-	107.895	98.817	39.537	43.135	24.410	Continuing	Continuing
• OMN / 1B2B: <i>CVN 78 Ford Class Training and Sustainment (12BJ0)</i>	8.880	7.109	5.141	-	5.141	5.732	5.862	5.989	6.108	Continuing	Continuing
• RDTEN / 0604501N: <i>Project Unit 3236 Advanced Radar Technology</i>	20.467	1.933	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	163.942
• OPN / 5664: <i>Surface Training Equipment</i>	7.942	1.412	4.457	-	4.457	2.532	2.418	2.428	2.511	Continuing	Continuing
• SCN 5300: <i>Completion of PR Shpblgd Progr</i>	0.000	0.000	71.000	-	71.000	74.000	0.000	0.000	0.000	0.000	145.000
• SCN / 2004: <i>CVN 81</i>	643.000	1,214.500	1,645.606	-	1,645.606	1,306.988	759.980	666.968	590.969	5,622.684	12,450.695

**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

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy	<b>Date:</b> February 2020
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<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> 3108 / <i>CVN 80 Total Ship Integration</i>
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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 (GFE) 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.

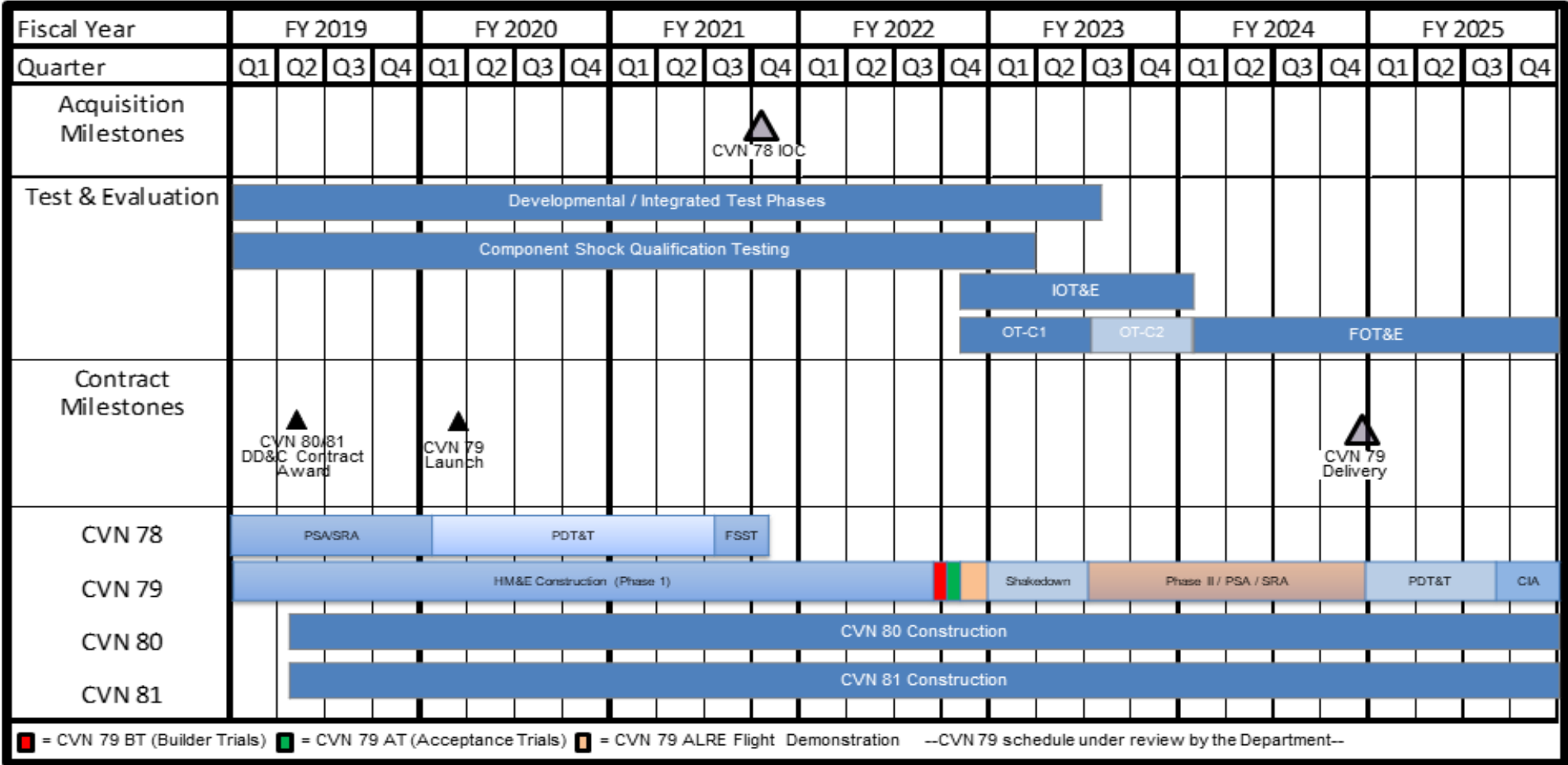
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604567N / Ship Contract Design/ Live Fire T&E				3108 / CVN 80 Total Ship Integration							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	28.486	16.621	Nov 2018	12.545	Nov 2019	10.549	Nov 2020	-		10.549	Continuing	Continuing	Continuing
Advanced Design & Development	C/CPFF	GRYPHON (SEI&T) : IN	2.079	2.500	Nov 2018	0.958	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC DAHLGREN : VA	4.876	3.700	Nov 2018	2.182	Nov 2019	3.050	Nov 2020	-		3.050	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC CARDEROCK : MD	3.533	1.200	Nov 2018	1.919	Nov 2019	1.400	Nov 2020	-		1.400	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC PHILADELPHIA : PA	2.085	0.500	Nov 2018	1.116	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Advanced Design & Development	C/CPFF	NAVSEA SEAPORT : VARIOUS	14.372	2.353	Dec 2018	3.205	Nov 2019	4.100	Nov 2020	-		4.100	Continuing	Continuing	Continuing
Advanced Design & Development	C/BA	NAWCAD PAX RIVER : MD	2.441	1.305	Nov 2018	0.891	Nov 2019	0.890	Nov 2020	-		0.890	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	1.238	0.490	Nov 2018	0.605	Nov 2019	0.801	Nov 2020	-		0.801	Continuing	Continuing	Continuing
Advanced Design & Development	Various	NSRP : VARIOUS	0.000	0.835	Dec 2018	0.000		1.703	Nov 2020	-		1.703	Continuing	Continuing	Continuing
Advanced Design & Development	Various	MISCELLANEOUS : VARIOUS	2.970	1.140	Nov 2018	0.520	Nov 2019	0.600	Nov 2020	-		0.600	Continuing	Continuing	Continuing
<b>Subtotal</b>			62.392	30.644		23.941		23.093		-		23.093	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			62.392	30.644		23.941		23.093		-		23.093	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<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> 3108 / CVN 80 Total Ship Integration

**Gerald R. Ford Class Carriers**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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> 3108 / <i>CVN 80 Total Ship Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3108</b>				
CVN 80 Total Ship Integration	1	2019	4	2025

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy										<b>Date:</b> February 2020		
<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> 3179 / CVN-79 Total Ship Integration			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3179: CVN-79 Total Ship Integration	218.377	14.239	14.564	14.756	-	14.756	15.111	15.392	15.697	6.444	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 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)**

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> CVN-79 Total Ship Integration	14.239	14.564	14.756	0.000	14.756
<b>Articles:</b>	-	-	-	-	-
<b>FY 2020 Plans:</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					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>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).</p> <p><b>FY 2021 Base Plans:</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. Expand development of labor savings initiatives, specifically within Steel Fabrication and Assembly (SFA) area to solidify efficiency and capacity improvements previously identified. Continue to evaluate SFA improvement initiatives for additional areas of applicability in Final Assembly Platen (FAP) and drydock. Refine the acquisition plan for CVN 79 Phase II planning and execution to transition and/or compress Phase I construction work with as many Phase II requirements as able to ease scheduled pressure for 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. 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). The CVN-specific tool will be the Carrier Integration and Test Support System (CIATSS).</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Increase attributable to escalation.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	14.239	14.564	14.756	0.000	14.756

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• SCN / 2001: <i>Carrier Replacement Program</i>	930.181	1,062.000	1,068.544	-	1,068.544	1,088.130	1,166.136	1,047.876	2,300.621	Continuing	Continuing
• RD TEN / 0604112N: <i>Project Units 2208, 4004, 9999</i>	81.021	105.756	107.895	-	107.895	98.817	39.537	43.135	24.410	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy	<b>Date:</b> February 2020
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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> 3179 / CVN-79 Total Ship Integration
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OMN / 1B2B: CVN 78 Ford Class Training and Sustainment (12BJ0)	8.880	7.109	5.141	-	5.141	5.732	5.862	5.989	6.108	Continuing	Continuing
• OPN / 5664: Surface Training Equipment	7.942	1.412	4.457	-	4.457	2.532	2.418	2.428	2.511	Continuing	Continuing
• SCN 5300: Completion of PY Shpbldg Progr	0.000	0.000	71.000	-	71.000	74.000	0.000	0.000	0.000	0.000	145.000
• SCN / 2004: CVN 81	643.000	1,214.500	1,645.606	-	1,645.606	1,306.988	759.980	666.968	590.969	5,622.684	12,450.695

**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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy** **Date:** February 2020

<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> 3179 / CVN-79 Total Ship Integration
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<b>Product Development (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 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>
Total Ship Integration	C/CPAF	HII : VA	101.556	2.094	Nov 2018	5.126	Nov 2019	5.520	Nov 2020	-		5.520	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC CARDEROCK : MD	16.912	1.170	Nov 2018	0.772	Nov 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC DAHLGREN : VA	14.553	2.330	Nov 2018	1.105	Nov 2019	1.450	Nov 2020	-		1.450	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC PHILADELPHIA : PA	2.923	1.170	Nov 2018	0.528	Nov 2019	0.514	Nov 2020	-		0.514	Continuing	Continuing	Continuing
Total Ship Integration	WR	NAWCAD PAX RIVER : MD	7.411	1.153	Nov 2018	0.859	Nov 2019	0.560	Nov 2020	-		0.560	Continuing	Continuing	Continuing
Total Ship Integration	WR	SPAWAR : CA	5.322	0.749	Nov 2018	0.415	Nov 2019	0.486	Nov 2020	-		0.486	Continuing	Continuing	Continuing
Total Ship Integration	C/CPFF	NAVSEA SEAPORT : Various	31.313	2.467	Dec 2018	2.252	Dec 2019	2.495	Nov 2020	-		2.495	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	NIWC LANT : SC	1.139	0.000		0.272	Nov 2019	0.416	Nov 2020	-		0.416	Continuing	Continuing	Continuing
Total Ship Integration	C/CPFF	SAIC : VA	1.445	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Total Ship Integration	Various	NSRP : Various	17.266	0.835	Dec 2018	1.670	Dec 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Total Ship Integration	C/CPFF	GRYPHON (SEI&T) : IN	1.929	0.780	Dec 2018	1.031	Dec 2019	1.090	Nov 2020	-		1.090	Continuing	Continuing	Continuing
Total Ship Integration	MIPR	NIST : Various	0.000	0.000		0.000		1.300	Nov 2020	-		1.300	0.000	1.300	-
Total Ship Integration	WR	NUWC NEWPORT : RI	0.000	0.000		0.000		0.600	Nov 2020	-		0.600	0.000	0.600	-
<b>Subtotal</b>			211.553	12.748		14.030		14.431		-		14.431	Continuing	Continuing	N/A

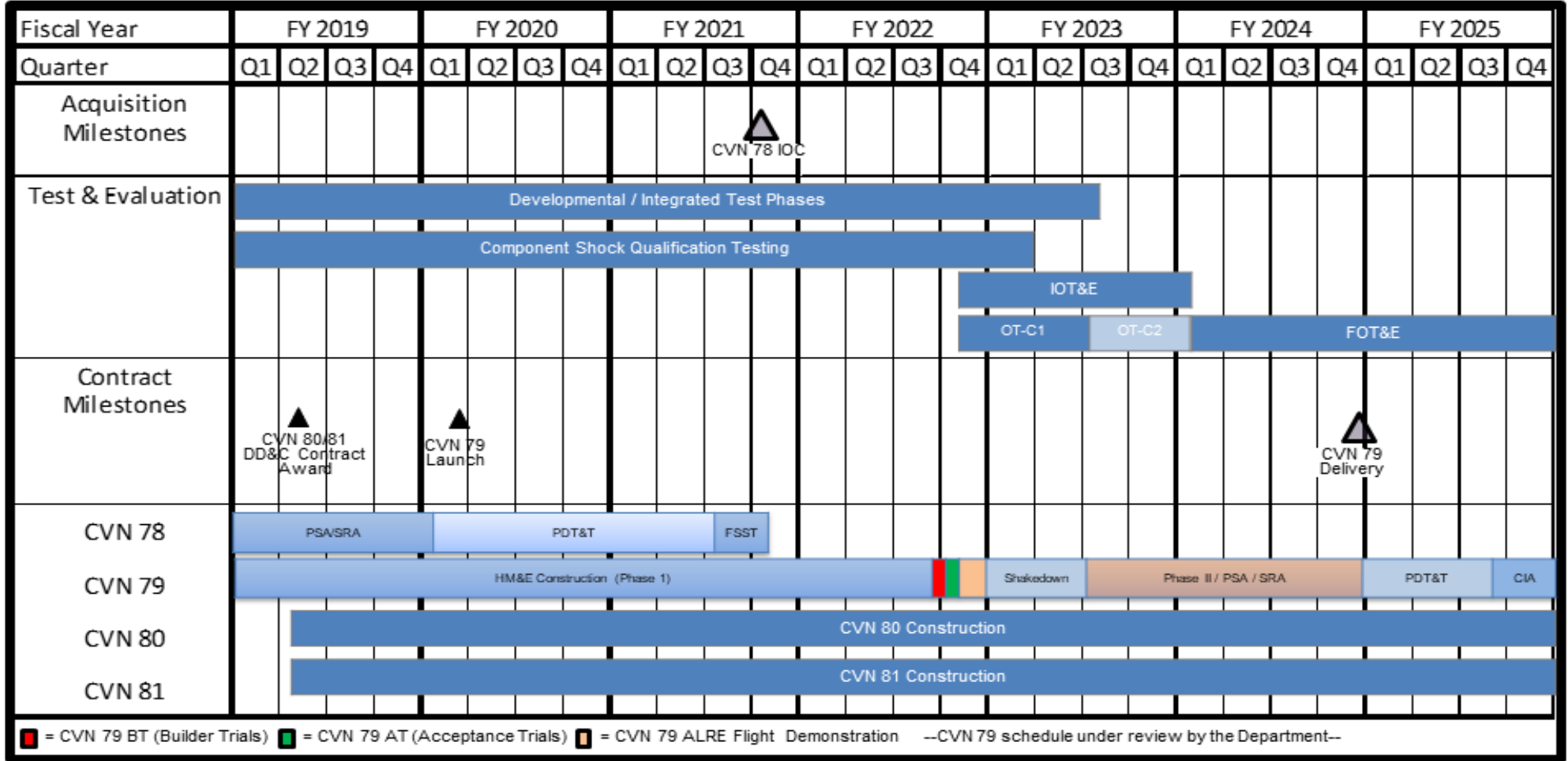
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</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>
Developmental Test & Evaluation	WR	NSWC CARDEROCK : MD	4.721	0.000		0.000		0.000		-		0.000	0.000	4.721	-
Developmental Test & Evaluation	WR	NUWC NEWPORT : RI	0.123	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<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> 3179 / CVN-79 Total Ship Integration

**Gerald R. Ford Class Carriers**



**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3179</b>				
CVN 79 Total Ship Integration	1	2019	4	2025

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy										<b>Date:</b> February 2020		
<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> 4007 / CVN 21 LFT&E			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
4007: CVN 21 LFT&E	73.370	3.929	4.054	4.180	-	4.180	4.287	4.362	4.447	4.535	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 223												

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

This project encompasses Live Fire Test and Evaluation (LFT&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&E. The purpose of LFT&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&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).

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.

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> CVN 21 LFT&E	3.929	4.054	4.180	0.000	4.180
<b>Articles:</b>	-	-	-	-	-
<b>FY 2020 Plans:</b> 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 Survivability Assessment Report (SAR).					
<b>FY 2021 Base Plans:</b> Continue planning for the CVN 78 TSST with the development of the TSST drill guides and implementation sheets. Perform cold checks on CVN 78 in support of TSST planning. Continue table-top exercises of individual TSST scenarios with subject matter experts (SMEs). Finalize the Damage Control section of the FSST Report. Continue survivability modeling improvements, analyses and documentation for the final SAR.					
<b>FY 2021 OCO Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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> 4007 / CVN 21 LFT&E

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
N/A					
<i>FY 2020 to FY 2021 Increase/Decrease Statement:</i> Increase due to refined planned cost.					
<b>Accomplishments/Planned Programs Subtotals</b>	3.929	4.054	4.180	0.000	4.180

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SCN / 2001: Carrier Replacement Program	930.181	1,062.000	1,068.544	-	1,068.544	1,088.130	1,166.136	1,047.876	2,300.621	0.000	36,949.482
• RD TEN / 0604112N: Project Units 2208, 4004, 9999	81.021	105.756	107.895	-	107.895	98.817	39.537	43.135	24.410	Continuing	Continuing
• OMN / 1B2B: CVN 78 Ford Class Training and Sustainment (12BJ0)	8.880	7.109	5.141	-	5.141	5.732	5.862	5.989	6.108	Continuing	Continuing
• OPN / 5664: Surface Training Equipment	7.942	1.412	4.457	-	4.457	2.532	2.418	2.428	2.511	Continuing	Continuing
• SCN 5300: Completion of PY Shpblgdg Progr	0.000	0.000	71.000	-	71.000	74.000	0.000	0.000	0.000	0.000	145.000
• SCN / 2004: CVN 81	643.000	1,214.500	1,645.606	-	1,645.606	1,306.988	759.980	666.968	590.969	5,622.684	12,450.695

**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 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-3, RDT&E Project Cost Analysis: PB 2021 Navy** **Date:** February 2020

<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> 4007 / CVN 21 LFT&E
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Live Fire Test & Evaluation	WR	NSWC Carderock : MD	61.768	2.793	Nov 2018	3.402	Nov 2019	3.194	Nov 2020	-		3.194	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	C/CPAF	HII : VA	11.158	0.860	Nov 2018	0.575	Nov 2019	0.906	Nov 2020	-		0.906	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR	NSWC Dahlgren : VA	0.434	0.075	Nov 2018	0.077	Nov 2019	0.080	Nov 2020	-		0.080	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	C/CPFF	NAVSEA SEAPORT : DC	0.000	0.201	Dec 2018	0.000		0.000		-		0.000	0.000	0.201	-
<b>Subtotal</b>			73.360	3.929		4.054		4.180		-		4.180	Continuing	Continuing	N/A

<b>Management Services (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Defense Acquisition Workforce	TBD	Various : Various	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-
<b>Subtotal</b>			0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	N/A

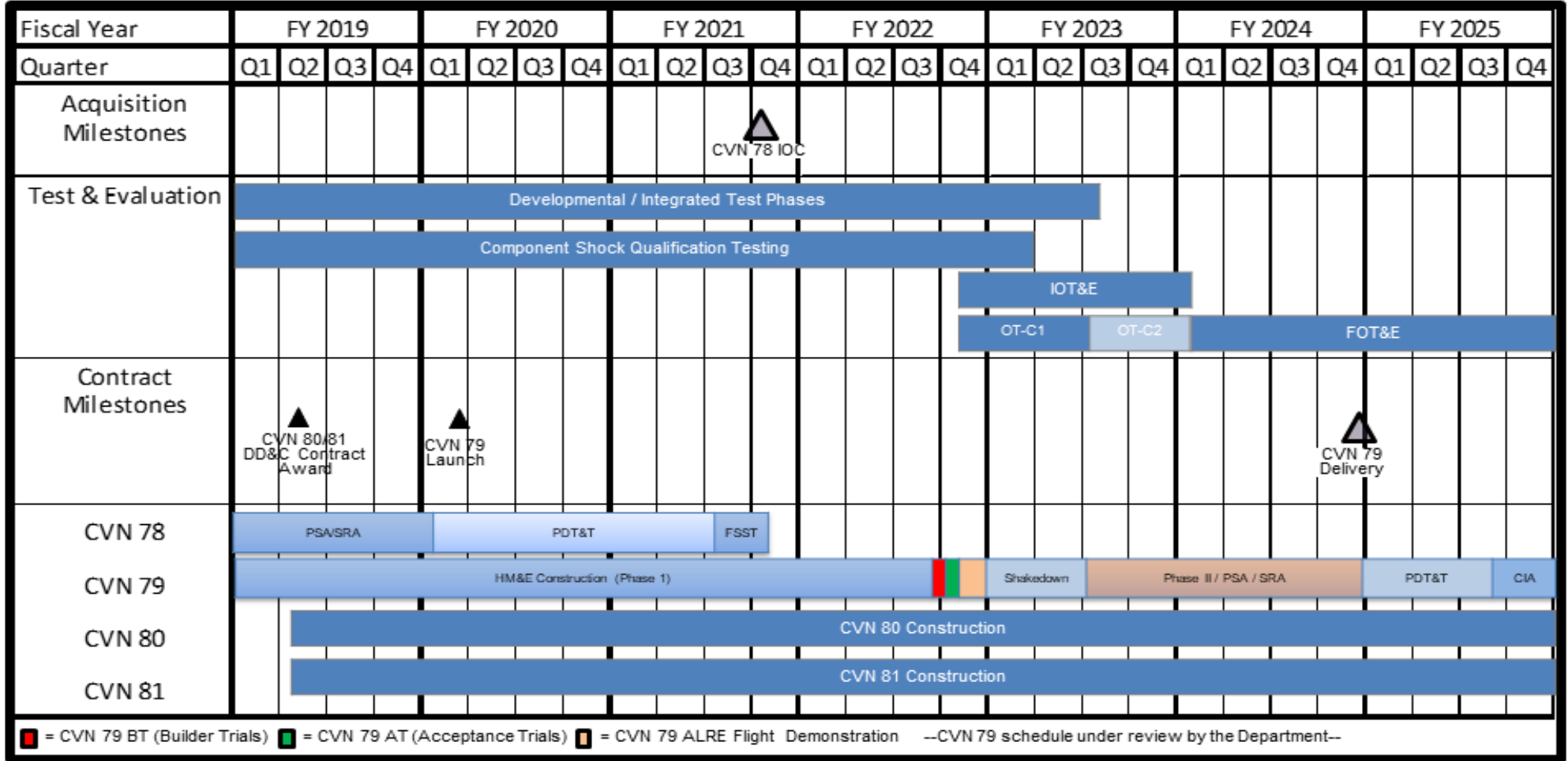
	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		73.370	3.929	4.054	4.180	4.180	Continuing	Continuing	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<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> 4007 / CVN 21 LFT&E

**Gerald R. Ford Class Carriers**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4007</b>				
CVN 21 LFT&E	1	2019	4	2025

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**Exhibit R-2A, RDT&E Project Justification:** PB 2021 Navy **Date:** February 2020

<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
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	19.795	10.612	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.407
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 2019	FY 2020
<p><b>Congressional Add:</b> DDG 51 Advance Degaussing Mine Protection System Retrofit</p> <p><b>FY 2019 Accomplishments:</b> 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.</p> <p><b>FY 2020 Plans:</b> N/A</p>	4.824	0.000
<p><b>Congressional Add:</b> Planning to Support FY 2021 Award of LHA-9</p> <p><b>FY 2019 Accomplishments:</b> Complete technical data package (TDP) to support advanced procurement of long lead time material for LHA 9. Initiate acquisition documentation development to support LHA 9 contract actions.</p> <p><b>FY 2020 Plans:</b> Continue development of complete technical data package for LHA 9 Detail Design and Construction. Continue acquisition documentation development to support LHA 9 contract actions.</p>	5.788	0.000
<b>Congressional Adds Subtotals</b>	10.612	0.000

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

N/A

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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>

**D. Acquisition Strategy**

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

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy** **Date:** February 2020

<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
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<b>Product Development (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</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>			
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	Various : Various	0.000	5.788	Mar 2019	0.000		0.000		-		0.000	0.000	5.788	-
DDG 51 Advance Degaussing Mine Protection System Retrofit	C/CPAF	SUPSHIP/BATH: BATH : ME	0.000	1.074	Jun 2019	0.000		0.000		-		0.000	0.000	1.074	-
DDG 51 Advance Degaussing Mine Protection System Retrofit	WR	NSWC/SSES: Philadelphia : PA	0.000	1.250	Jun 2019	0.000		0.000		-		0.000	0.000	1.250	-
DDG 51 Advance Degaussing Mine Protection System Retrofit	WR	NSWC/ Carderock : MD	0.000	2.500	Jun 2019	0.000		0.000		-		0.000	0.000	2.500	-
<b>Subtotal</b>			19.343	10.612		0.000		0.000		-		0.000	0.000	29.955	N/A

**Remarks**  
PY updated for actuals (PU C295 CVN Cost Reduction Activities).

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</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>			
ESB Operational Test and Evaluation	Various	Not Specified : Not Specified	0.200	0.000		0.000		0.000		-		0.000	0.000	0.200	-
ESB Live Fire Test and Evaluation	Various	Not Specified : Not Specified	0.252	0.000		0.000		0.000		-		0.000	0.000	0.252	-
<b>Subtotal</b>			0.452	0.000		0.000		0.000		-		0.000	0.000	0.452	N/A

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy** **Date:** February 2020

<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
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Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

**Remarks**  
Award dates reflect initial award of incremental execution.

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	19.795	10.612	0.000	0.000	-	0.000	0.000	30.407	N/A

**Remarks**

**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<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>

FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
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

<b>Proj 9999</b>	
Completion of ESB OT/LFTE Testing	██████████
DDG 51 Advance Degaussing Mine Protection System Retrofit	████████████████████
LHA 9 Contract Design/Acquisition Planning	████████████████████

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<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	2019	4	2019
DDG 51 Advance Degaussing Mine Protection System Retrofit	1	2019	4	2020
LHA 9 Contract Design/Acquisition Planning	1	2019	4	2020