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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Navy **Date:** March 2023

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	96.044	7.109	11.567	6.095	-	6.095	5.797	9.375	10.393	9.438	Continuing	Continuing
3216: <i>Tactical Support Center-Integration</i>	65.990	5.936	8.519	4.954	-	4.954	4.682	4.899	4.977	5.070	Continuing	Continuing
4005: <i>In-Service Carrier Systems Development</i>	30.054	1.173	3.048	1.141	-	1.141	1.115	4.476	5.416	4.368	Continuing	Continuing

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

This Program Element (PE) addresses technology areas associated with Command and Control (C2) of the MH-60R/S Seahawk Helicopter, as well as the development of other technologies and enhancements for Aircraft Carrier-based systems.

PROJECT 3216: The AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC) program delivers Anti-Submarine Warfare (ASW) and Surface Warfare (SUW) combat capability to the Aircraft Carrier supporting Aircraft Carrier, Nuclear power (CVN) Tactical Action Office (TAO) and embarked Carrier Strike Group (CSG) Sea Combat Commander. This project provides incremental development to deliver frequent capability updates to the Fleet (Fleet Capability Releases (FCR)), developing, testing, certifying, and fielding improved combat capability and critical cyber-security improvements. The project maintains interoperability with current interfaces and develops interoperability with future interfaces; supports mission data exchange; improves ASW/SUW track/sensor processing and analysis techniques; improves mission planning; improves data recording, reconstruction, and distribution; improves embedded simulation and training capabilities; and implements cyber-security measures to effectively employ overall CVN self-defense capabilities. CV-TSC integrates sensor data from organic Aircraft (MH-60R), organic platform sensors and tracks via Ship Self Defense System (SSDS) Product Line Architecture (PLA) and non-PLA, Link-16 track data, Global Command and Control System (GCCS) Over-the-Horizon (OTH) track data, and environmental and threat databases to assess the threat and assist the TAO and CSG to effectively employ overall CVN self-defense capabilities. Current development efforts are focused on extending non-organic ASW/SUW data sources to provide situational awareness and targets beyond the CSG surveillance area. This includes Minotaur Family of Services (MFoS)/Maritime Targeting Cell - Afloat (MTC-A), Integrated Broadcast Service (IBS) and future Resilient Command & Control, Communication (RC3) data links. CV-TSC generates real-time ASW/SUW information and recommendations, tactical planning and employment of ASW/SUW assets, ASW/SUW sensor data processing and analysis, and distribution of tactically significant data. Aircraft supported include the MH-60R/S Seahawk, and P-8 Poseidon and MQ-4C Triton as future ASW/SUW non-organic supporting platforms.

FY 2024 will focus on completing FCR-6 development, to include MFoS integration (with MTC-A and Geospatial Intelligence Unified Naval Streaming System (GUNSS)) and Technology Insertion 16 (TI-16) integration (with next generation Common Processing System (CPS) and Interface Processor System (IPS)), as well as the initiation of FCR-7 planning.

PROJECT 4005: The In-Service Carrier Systems Development Demonstration and Validation Program develops new technology and enhancements to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture,

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requirements/specification development, technology selection, software development (including software baseline), manpower requirements, Total Ownership Costs (TOC), cyber-security engineering and integration, as well as land-based and shipboard testing of new technologies to improve shipboard operations.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	7.182	11.567	10.085	-	10.085
Current President's Budget	7.109	11.567	6.095	-	6.095
Total Adjustments	-0.073	0.000	-3.990	-	-3.990
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.073	0.000			
• Program Adjustments	0.000	0.000	-4.187	-	-4.187
• Rate/Misc Adjustments	0.000	0.000	0.197	-	0.197

**Change Summary Explanation**

FUNDING CHANGES SINCE THE PREVIOUS PRESIDENT'S BUDGET AT THE OVERALL PE LEVEL:

- FY 2022 decrease of \$-0.073M is the result of the Small Business Innovative Research (SBIR) transfer.
- FY 2024 decrease of \$-3.990M is the net result of the CV-TSC TI-12 and TI-16 obsolescence increase (\$+0.249M), a reprioritization of CV-TSC Minotaur Family of Services (MFoS) hardware funding (\$-2.200M), a general reprioritization of funding to support Aircraft Carrier Wholeness (\$-2.226M), and the incorporation of miscellaneous rate adjustments (\$+0.187M).

PROJECT 3216 - FY 2023 TO FY 2024 BUDGET REQUEST DECREASE:

- FY 2023 (\$8.519M) to FY 2024 (\$4.954M) decrease (\$-3.565M) reflects a reprioritization of funding in FY 2024 for the Minotaur Family of Systems (MFoS) and is consistent with planned program phasing.

PROJECT 3216 - SCHEDULE CHANGES SINCE THE PREVIOUS PRESIDENT'S BUDGET:

- Development: A new continuous development pipeline is reflected, replacing individual development events for each FCR to more accurately depict the current development process.
- FCR-5 and FCR-5A, where FCR-5 was the CVN-79/TI-16 specific engineering release, will now be combined and a single set of certification events will occur in 2Q23 as planned for what was originally FCR-5A. CVN-79/TI-16 delivery is not impacted by this change.

PROJECT 4005 - FY 2023 TO FY 2024 BUDGET REQUEST DECREASE:

- The FY 2023 (\$3.048M) to FY 2024 (\$1.141M) program decrease (\$-1.907M) reflects a decision to re-align the funding

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reprioritization of CVN efforts to fund Carrier Wholeness.		

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Navy										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>				<b>Project (Number/Name)</b> 3216 / <i>Tactical Support Center-Integration</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3216: <i>Tactical Support Center-Integration</i>	65.990	5.936	8.519	4.954	-	4.954	4.682	4.899	4.977	5.070	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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

The AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC) project delivers Anti-Submarine Warfare (ASW) and Surface Warfare (SUW) combat capability to the Aircraft Carrier. This project provides incremental development to deliver frequent capability updates to the Fleet, developing, testing, certifying, and fielding system upgrades and cyber-security patches. The project maintains interoperability with current and future interfaces; supports mission data exchange; improves track/sensor processing and analysis techniques; improves mission planning; improves data recording, reconstruction, and distribution; improves embedded simulation and training capabilities and implements cyber-security measures to effectively employ overall CVN self-defense capabilities. CV-TSC integrates sensor data from off-board aircraft, organic platform sensors, Minotaur multi-sensor fused track data, Link-16 track data, Ship Self Defense System (SSDS) track data (Product Line Architecture (PLA) and non-PLA), Global Command and Control System (GCCS) Over-the-Horizon track data, and environmental and threat databases to assess the threat and assist the Tactical Action Officer (TAO) and Composite Warfare Commander (CWC) to effectively employ overall CVN self-defense capabilities. CV-TSC generates real-time ASW/SUW information and recommendations, tactical planning and employment of ASW/SUW assets, ASW/SUW sensor data processing and analysis, and distribution of tactically significant data. Aircraft supported include MH-60R/S Seahawk, and P-8 Poseidon and MQ-4C Triton as future ASW/SUW systems.

System development is accomplished through the following initiatives:

- 1) Maintaining interoperability with the local CVN warfare systems through current and future interfaces;
- 2) Continuing to support mission data exchange and tactical control with current and future ASW/SUW assets and their mission systems;
- 3) Improving track and sensor processing and analysis techniques as new track and sensor data becomes available;
- 4) Improving mission planning support for the ASW/SUW missions conducted from the CVN;
- 5) Improving data recording, reconstruct, and distribution to meet the decreasing timelines associated with getting tactically significant data to other end users both on and off platform;
- 6) Improving embedded simulation and training capabilities to enable operator proficiencies; and
- 7) Implementing cyber security measures.

Fleet Capability Release 5 (FCR-5) delivers the initial Minotaur Multi-Sensor Fusion integration/interface with CV-TSC and will be fielded on Aircraft Carriers and shore sites. Minotaur Multi-Sensor Fusion is required to provide increased battlespace awareness, and will significantly accelerate the find, fix, and track capabilities within the Maritime Intelligence Surveillance and Reconnaissance & Targeting (MIS&RT) function when CV-TSC is operating in a communications-denied environment.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<b>Title:</b> CV-TSC Development / Integration / Test / Certification	5.936	8.519	4.954	0.000	4.954

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Navy		<b>Date:</b> March 2023
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<b>Articles:</b>	-	-	-	-	-
<p><b>Description:</b> CV-TSC's evolutionary acquisition approach to developing, testing, certifying, and fielding system upgrades and cyber-security patches is implemented through a series of phased Fleet Capability Releases (FCRs).</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Complete Independent Verification and Validation (IV&amp;V) for FCR-5.</li> <li>- Complete certifications required for fielding FCR-5 (Technical Insertion (TI)-16), to include Cybersecurity Risk Management Framework (RMF) Step 6 for Information Assurance (IA) Accreditation, Platform Information Technology (PIT) / Authorization to Operate (ATO), Integrated Shipboard Network System (ISNS) and Consolidated Afloat Network Enterprise Systems (CANES) Certifications, Program Executive Office (PEO) Integrated Warfare Systems (IWS) Element Certification, and Combat System Test (CST).</li> <li>- Begin FCR-6 development to include Common Processing System (CPS) TI-16 Tech Refresh integration (for in-service CVNs), Interface Processor System (IPS) TI-12 requalification, Integrated Bridge System (IBS) improvements, Infrastructure as a Service (IaaS), GUNSS sensor integration improvements, and integrate the MH-60R changes to include a Minotaur interface over the Common Data Link (CDL) Line of Sight (LoS) link.</li> </ul> <p><b>FY 2024 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Complete FCR-6 development to include CPS TI-16 Tech Refresh integration (for in-service CVNs), IPS TI-12 requalification, IBS improvements, IaaS, GUNSS sensor integration improvements, and integrate the MH-60R changes to include a Minotaur interface over the CDL LoS link.</li> <li>- Begin IV&amp;V for FCR-6.</li> <li>- Initiate planning to acquire certifications required for fielding FCR-6, to include: PIT/ATO, ISNS and CANES Certifications, PEO IWS Element Certification, and CST.</li> <li>- Initiate requirements generation and planning of enhancements for FCR-7.</li> <li>- Initiate development and integration of enhancements for FCR-7.</li> </ul> <p><b>FY 2024 OCO Plans:</b> N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> <ul style="list-style-type: none"> <li>- FY 2023 (\$8.519M) to FY 2024 (\$4.954M) decrease (\$-3.565M) reflects a reprioritization of funding in FY 2024 for the Minotaur Family of Systems (MfOS) and is consistent with planned program phasing.</li> </ul>					
<b>Accomplishments/Planned Programs Subtotals</b>	5.936	8.519	4.954	0.000	4.954

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Navy		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 3216 / <i>Tactical Support Center-Integration</i>

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>			<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPN/2176: <i>Undersea Warfare Support Equipment (N98/CV-TSC only)</i>	2.643	2.336	4.263	-	4.263	1.448	0.402	0.410	0.418	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

- CV-TSC utilizes an incremental development approach that aims to deliver capability updates via Fleet Capability Releases (FCRs). This approach allows required capability to be delivered to address emerging Fleet needs and provides frequent opportunities to ensure interoperability is synchronized with the Ship Self Defense System (SSDS) and other critical ship-board systems. The acquisition strategy places heavy emphasis on the use of standardized combat system hardware and software hosting, minimizing the use of custom hardware thereby reducing life-cycle costs.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 3216 / <i>Tactical Support Center-Integration</i>
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
CV-TSC Development / Integration	C/CPFF	Adaptive Methods : VA	5.322	0.486	Feb 2022	0.310	Dec 2022	0.300	Dec 2023	-		0.300	Continuing	Continuing	Continuing
CV-TSC Development / Integration	C/CPFF	JHU/APL : MD	0.250	0.660	Feb 2022	0.770	Dec 2022	0.650	Dec 2023	-		0.650	Continuing	Continuing	Continuing
CV-TSC Development / Integration	WR	NAWC/Pax River : MD	1.595	0.175	Nov 2021	0.140	Nov 2022	0.215	Nov 2023	-		0.215	Continuing	Continuing	Continuing
CV-TSC Development / Integration	WR	NRL : DC	0.325	0.000		0.000		0.000		-		0.000	0.000	0.325	-
CV-TSC Development / Integration	WR	NSWC/Carderock : MD	2.650	0.000		0.000		0.000		-		0.000	0.000	2.650	-
CV-TSC Development / Integration Text	WR	NSWC/Crane : IN	0.000	0.140	Mar 2022	0.165	Nov 2022	0.165	Nov 2023	-		0.165	Continuing	Continuing	Continuing
CV-TSC Development / Integration	WR	NSWC/Dahlgren : VA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	-
CV-TSC Development / Integration	WR	NUWC/Keyport : WA	35.363	3.223	Nov 2021	5.139	Nov 2022	2.222	Nov 2023	-		2.222	Continuing	Continuing	Continuing
CV-TSC Development / Integration	WR	SPAWAR : CA	4.160	0.000		0.000		0.000		-		0.000	0.000	4.160	-
CV-TSC Development / Integration	C/CPFF	VAR* : VAR*	2.883	0.342	Dec 2021	0.970	Dec 2022	0.542	Dec 2023	-		0.542	Continuing	Continuing	Continuing
Boundary Defense Capability Design/ Development	WR	NSWC/Philadelphia : PA	4.046	0.000		0.000		0.000		-		0.000	0.000	4.046	-
Boundary Defense Capability Design/ Development	C/CPFF	VAR* : VAR*	4.495	0.000		0.000		0.000		-		0.000	0.000	4.495	-
<b>Subtotal</b>			61.189	5.026		7.494		4.094		-		4.094	Continuing	Continuing	N/A

**Remarks**  
\* Consists of multiple performing activities with funding for each not greater than \$1M per year.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 4				PE 0603512N / Carrier Systems Development				3216 / Tactical Support Center-Integration							
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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 (DT&E)	WR	NUWC//Keyport : WA	3.298	0.600	Nov 2021	0.610	Nov 2022	0.600	Nov 2023	-		0.600	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NUWC/Newport : RI	0.125	0.100	Mar 2022	0.100	Nov 2022	0.100	Nov 2023	-		0.100	Continuing	Continuing	Continuing
<b>Subtotal</b>			3.423	0.700		0.710		0.700		-		0.700	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support - Acquisition, Business & Finance	C/CPAF	BAE Systems : MD	0.411	0.000		0.000		0.000		-		0.000	0.000	0.411	-
Program Management Support - Acquisition, Business & Finance	C/CPFF	CACI : VA	0.134	0.000		0.000		0.000		-		0.000	0.000	0.134	-
Program Management Support - Acquisition, Business & Finance	C/CPFF	Booz Allen Hamilton : VA	0.041	0.040	Mar 2022	0.130	Dec 2022	0.065	Dec 2023	-		0.065	Continuing	Continuing	Continuing
Program Management Support - Systems Engineering and Technical Assistance (SETA)	C/CPFF	CGI Federal : VA	0.558	0.000		0.000		0.000		-		0.000	0.000	0.558	-
Program Management Support - Systems Engineering and Technical Assistance (SETA)	C/CPFF	KMS Solutions : VA	0.150	0.150	Mar 2022	0.165	Dec 2022	0.075	Dec 2023	-		0.075	Continuing	Continuing	Continuing
Program Office Travel	Allot	NAVSEA PEO IWS5 : DC	0.084	0.020	Oct 2021	0.020	Oct 2022	0.020	Oct 2023	-		0.020	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.378	0.210		0.315		0.160		-		0.160	Continuing	Continuing	N/A



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 3216 / <i>Tactical Support Center-Integration</i>
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Project 3216	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Continuous Fleet Capability Release (FCR) Development	Development																											
CV-TSC Fleet Capability Release (FCR-5) Technical Insertion (TI)-16 Initial MFoS Integration	IV&V (CVN-79)				IV&V																							
					▲ ISNS/CANES △ PIT/ATO △ Element Certification △ CST																							
CV-TSC Fleet Capability Release (FCR-6)									IV&V																			
													▲ ISNS/CANES △ PIT/ATO △ Element Certification △ CST															
CV-TSC Fleet Capability Release (FCR-7)													IV&V															
																	▲ ISNS/CANES △ PIT/ATO △ Element Certification △ CST											
CV-TSC Fleet Capability Release (FCR-8)																					IV&V							
																									▲ ISNS/CANES △ PIT/ATO △ Element Certification △ CST			
CV-TSC Fleet Capability Release (FCR-9)																									IV&V			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2024 Navy</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 3216 / <i>Tactical Support Center-Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>CV-TSC Fleet Capability Release (FCR) Development Pipeline</b>				
CV-TSC Fleet Capability Release (FCR) Development Pipeline	1	2022	4	2028
<b>CV-TSC FCR-5 (Initial Minotaur Integration)</b>				
CV-TSC FCR-5 IV&V (CVN-79/TI-16)	1	2022	2	2022
CV-TSC FCR-5 IV&V	3	2022	1	2023
CV-TSC FCR-5 ISNS / CANES Certification	2	2023	2	2023
CV-TSC FCR-5 PIT/ATO	2	2023	2	2023
CV-TSC FCR-5 Element Certification	2	2023	2	2023
CV-TSC FCR-5 CST	2	2023	2	2023
<b>CV-TSC FCR-6</b>				
CV-TSC FCR-6 IV&V	2	2024	4	2024
CV-TSC FCR-6 ISNS / CANES Certification	1	2025	1	2025
CV-TSC FCR-6 PIT/ATO	1	2025	1	2025
CV-TSC FCR-6 Element Certification	1	2025	1	2025
CV-TSC FCR-6 CST	1	2025	1	2025
<b>CV-TSC FCR-7</b>				
CV-TSC FCR-7 IV&V	4	2025	2	2026
CV-TSC FCR-7 ISNS / CANES Certification	3	2026	3	2026
CV-TSC FCR-7 PIT/ATO	3	2026	3	2026
CV-TSC FCR-7 Element Certification	3	2026	3	2026
CV-TSC FCR-7 CST	3	2026	3	2026
<b>CV-TSC FCR-8</b>				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Navy		<b>Date:</b> March 2023
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CV-TSC FCR-8 IV&V	2	2027	4	2027
CV-TSC FCR-8 ISNS / CANES Certification	1	2028	1	2028
CV-TSC FCR-8 PIT/ATO	1	2028	1	2028
CV-TSC FCR-8 Element Certification	1	2028	1	2028
CV-TSC FCR-8 CST	1	2028	1	2028
<b>CV-TSC FCR-9</b>				
CV-TSC FCR-9 IV&V	4	2028	4	2028

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Navy										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>				<b>Project (Number/Name)</b> 4005 / <i>In-Service Carrier Systems Development</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
4005: <i>In-Service Carrier Systems Development</i>	30.054	1.173	3.048	1.141	-	1.141	1.115	4.476	5.416	4.368	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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

The In-Service Carrier Systems Demonstration and Validation Program develops new technology and enhancements for 11 nuclear powered Aircraft Carriers with nearly 300 systems onboard each vessel. These systems are a combination of historical and new initiatives that deliver an affordable, robust, operator-friendly automated control environment. In order to deter threats and properly integrate all of the systems, the Demonstration and Validation Program segments the testing and upgrades into four areas: system architecture, requirements/specification development, technology selection, cyber-security engineering and integration, and software development. The Demonstration and Validation Program also focuses on the Total Ownership Costs of each system and any equipment obsolescence issues. Initial technologies include the Uninterruptible Power Supply (UPS) Replacements, the Integrated Condition Assessment System (ICAS), the On-Machine I/O development for Low Pressure Air Plants (LPAP) and LPAP Air End Re-design. Demonstration technologies include Advanced Damage Control System (ADCS) software improvements, Input / Output Controller (IOC) Replacement, Fleet wireless Personal Digital Assistant (PDA), Weapons Elevator Laser Positioning System (WELPS), Legacy Steering Interface (LSI) upgrades, Passive Countermeasures System (PCMS) alternate measurement capability, additive manufacturing efforts, and Weapons Elevators Programmable Logic Controller (PLC) redesign.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<b>Title:</b> In-Service Carrier Systems Development	1.173	3.048	1.141	0.000	1.141
<b>Articles:</b>	-	-	-	-	-
<b>FY 2023 Plans:</b> Fiscal Year 2023 plans include continued support to Aircraft Carrier technologies, with emphasis on Additive Manufacturing and the Weapon Elevator Programmable Logic Controller (PLC) Re-design. Modifications, upgrades, and development of systems and software will be ongoing in support of In-Service Aircraft Carrier Modernization and Total Ownership Cost reduction initiatives to address equipment obsolescence. Fiscal Year 2023 also encompasses CYBER Security requirements to include the implementation of the Defense-in-Depth Functional Implementation Architecture (DFIA), the CYBERSAFE program, and risk assessment, development, and testing of the Identify Protect Detect Respond and Recover strategy.					
<b>FY 2024 Base Plans:</b> Fiscal Year 2024 plans include continued support to Aircraft Carrier technologies, with emphasis on Additive Manufacturing and the Weapon Elevator Programmable Logic Controller (PLC) Re-design. Modifications, upgrades, and					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Navy		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 4005 / <i>In-Service Carrier Systems Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
development of systems and software will be ongoing in support of In-Service Aircraft Carrier Modernization and Total Ownership Cost reduction initiatives to address equipment obsolescence.  <b>FY 2024 OCO Plans:</b> N/A  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> The FY 2023 (\$3.048M) to FY 2024 (\$1.141M) program decrease (\$-1.907M) reflects a decision to re-align the funding reprioritization of CVN efforts to fund Carrier Wholeness.					
<b>Accomplishments/Planned Programs Subtotals</b>	1.173	3.048	1.141	0.000	1.141

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

N/A

**Remarks**

**D. Acquisition Strategy**

Investigate, demonstrate, and implement available technologies to deliver a robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment to reduce workload, manpower requirements, and Total Ownership Costs (TOC). Deliver affordable operational upgrades onboard each platform through comparative initiatives and analysis without sacrificing schedule, performance, or requirements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 4005 / <i>In-Service Carrier Systems Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Ship Integration	WR	NSWC : Philadelphia	4.791	0.456	Nov 2021	0.608	Nov 2022	0.300	Nov 2023	-		0.300	0.000	6.155	-
Ship Integration	WR	NSWC : Dahlgren	0.197	0.000		0.000		0.000		-		0.000	0.000	0.197	-
Ship Integration	WR	NSWC : Carderock	0.475	0.000		0.000		0.000		-		0.000	0.000	0.475	-
Ship Integration	WR	DOE : KCNSC	0.000	0.000		0.600	Nov 2022	0.000		-		0.000	0.000	0.600	-
<b>Subtotal</b>			5.463	0.456		1.208		0.300		-		0.300	0.000	7.427	N/A

<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Software Development	WR	NSWC : Philadelphia	8.586	0.100	Nov 2021	0.725	Nov 2022	0.375	Nov 2023	-		0.375	0.000	9.786	-
Program Management Support	WR	NSWC : Philadelphia	3.677	0.100	Nov 2021	0.200	Nov 2022	0.000		-		0.000	0.000	3.977	-
Training Development	WR	NSWC : Philadelphia	1.615	0.100	Nov 2021	0.200	Nov 2022	0.000		-		0.000	0.000	1.915	-
Integrated Logistics Support	WR	NSWC : Philadelphia	1.989	0.100	Nov 2021	0.200	Nov 2022	0.000		-		0.000	0.000	2.289	-
Software Development	WR	NSWC : Dahlgren	0.308	0.000		0.000		0.000		-		0.000	0.000	0.308	-
Program Management Support	WR	NSWC : Dahlgren	0.317	0.000		0.000		0.000		-		0.000	0.000	0.317	-
Program Management Support	WR	NSWC : Carderock	0.257	0.026	Nov 2021	0.265	Nov 2022	0.310	Nov 2023	-		0.310	0.000	0.858	-
<b>Subtotal</b>			16.749	0.426		1.590		0.685		-		0.685	0.000	19.450	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Operational Test & Evaluation (OT&E)	WR	NIWC : Atlantic	0.214	0.000		0.000		0.000		-		0.000	0.000	0.214	-



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Navy		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 4005 / <i>In-Service Carrier Systems Development</i>

**In-Service Carrier Systems Development**

Project 4005	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
CVN78 CL Platform support for Joint Strike fighter	█																											
Additive Manufacturing	█																											
Weapons Elevator PLC Re-design	█																											
Cyber Security Wholeness					█												█											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Navy		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603512N / <i>Carrier Systems Development</i>	<b>Project (Number/Name)</b> 4005 / <i>In-Service Carrier Systems Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4005</b>				
CVN78 CL Platform support for Joint Strike Fighter: CVN78 CL Platform support for Joint Strike fighter	1	2022	3	2022
Additive Manufacturing: Additive Manufacturing	1	2022	4	2028
Weapons Elevator PLC Redesign: Weapons Elevator PLC Redesign	1	2022	4	2024
CYBER Security Wholeness: Cyber Security Wholeness Part I	1	2023	4	2023
CYBER Security Wholeness: Cyber Security Wholeness Part II	1	2026	4	2028