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

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</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	3,995.899	129.919	122.719	122.834	-	122.834	160.049	80.581	49.808	40.813	Continuing	Continuing
0545: <i>TOMAHAWK</i>	3,314.276	0.000	0.000	0.000	-	0.000	36.038	5.300	0.000	0.000	0.000	3,355.614
4032: <i>NAV/COMMS</i>	9.259	0.000	0.000	2.969	-	2.969	21.060	14.000	8.000	1.500	Continuing	Continuing
4033: <i>M-Code</i>	63.906	11.147	8.059	26.301	-	26.301	4.443	3.272	0.052	0.054	Continuing	Continuing
4034: <i>Maritime Strike</i>	467.916	73.679	75.101	54.371	-	54.371	70.411	30.137	19.487	19.878	Continuing	Continuing
4035: <i>JMEWS</i>	88.446	36.825	22.616	22.012	-	22.012	9.736	9.387	3.207	0.169	Continuing	Continuing
4036: <i>TTWCS TMPC PPPI</i>	52.096	8.268	16.943	17.181	-	17.181	18.361	18.485	19.062	19.212	Continuing	Continuing

A. Mission Description and Budget Item Justification

Funds support development of the Tomahawk Weapons System (TWS) encompassing Tactical Tomahawk upgrades including baseline improvements into the Block V missile All-Up Round (AUR), Tactical Tomahawk Weapons Controls System (TTWCS), Theater Mission Planning Center (TMPC) upgrades and other missile system improvements to maintain pace with threats. The TWS provides a long range cruise missile attack capability against fixed and mobile targets. Tomahawk is capable of being deployed from both submarines and surface ships and significantly increases the total capability of joint forces.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Operational Systems Development because it includes development efforts to upgrade systems that have been fielded or have received approval for Full Rate Production (FRP) and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	132.181	132.719	72.666	-	72.666
Current President's Budget	129.919	122.719	122.834	-	122.834
Total Adjustments	-2.262	-10.000	50.168	-	50.168
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-10.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.813	0.000			
• SBIR/STTR Transfer	-4.074	0.000			
• Program Adjustments	0.000	0.000	49.453	-	49.453
• Rate/Misc Adjustments	-0.001	0.000	0.715	-	0.715

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Change Summary Explanation Financial: Overall funding increase driven by multiple factors; added funding for PU 4032 NAV/COMMS, funding increase in M-Code driven by delay in receipt of ASIC chips from USAF shifting costs into FY 2024 and decrease in MST funding is primarily due to reductions in software and hardware development as the program approaches IOC. PU 4032: Added funding in FY 2024 - FY 2028 for NAV/COMMS. Schedule: PU 4032: New schedule for FY 2024 - FY 2028 PU 4034: Flight Readiness Review updated name to be Flight Test Readiness Review (FTRR) and dates went from 1Q 2023 to 3Q 2023 Ready for Quick Reaction Assessment renamed to be ITRR KP Initial Fielding renamed to be Fleet Release MS C updated from 1Q 2025 to 4Q 2024 MST Seeker Kit LRP 3 Contract Award from 1Q 2023 to 3Q 2023 Add MST Seeker Kit LRP 4 Contract Award MST Seeker Kit FRP 1 Contract Award 1Q 2024 to 2Q 2026 SPIL Designed & Dev updated from 1Q 2022- 1Q 2023 to 1Q 2022-3Q 2024 SPIL QRA Runs updated to be SPIL Development Runs 3Q 2024-4Q 2024 to 3Q 2024-3Q 2024 Add SPIL Runs for Record (RfR) 3Q 2024-1Q 2025 Add SoSTE Update & Analysis from 1Q 2021 4Q 2022 to 1Q 2021- 3Q 2024 SoSTE Development Runs updated to be FOT&E Development Runs updated from 4Q 2021-2Q 2024 to 3Q 2024-3Q 2024 Updated SoSTE QRA Runs to be FOT&E Runs for Record (RfR) and dates updated from 3Q 2023-4Q 2024 to 3Q 2024-1Q 2025 Add Mission Base Capability Testing (MBCT) 1 Add Mission Base Capability Testing (MBCT) 2 She-Hulk from 3Q 2023 to 2Q 2024 Thor from 2Q 2024 to 4Q 2024 SEMS Builds for final DT/QRA from 1Q 2024-2Q 2024 to 3Q 2024-4Q 2024 Remove FOT&E and replaced to reflect four independent test events: FOT&E 1, FOT&E 2, FOT&E 3, FOT&E 4 Remove IOT&E due to MST being an ACAT I subprogram Component & SKR Level Qual Testing updated from 2Q 2021-2Q 2023 to 3Q 2023-2Q 2024 Missile Level Qual Testing updated from 4Q 2022-4Q 2023 to 3Q 2023-4Q 2024		

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<p>SW & Sim Dev & Test updated from 1Q 2021-1Q 2024 to 1Q 2021-3Q 2024 Add Ultra Upgrade REMOVE TTWCS v5.6.1.X: and sub-components LRP 1 SKR Del updated from 1Q 2024-1Q 2024 to 1Q 2024-2Q 2024 LRP 3 SKR Del update from 2Q 2024- 2Q 2025 to 4Q 2024-4Q 2025</p> <p>PU 4035: JMEWS Milestone C moved from 3Q FY 2024 to 2Q FY 2025 JMEWS Recert Cut-In moved 4Q FY 2025 to 3Q FY 2026 JMEWS EMD Contract extended to 2Q FY 2025 JMEWS Transition to Production moved from 1Q FY 2024 through 1Q FY 2025 to 3Q FY 2024 through 3Q FY 2025 JMEWS CA LRIP 1 moved from 3Q FY 2024 to 2Q FY 2025 JMEWS LRIP 1 Deliveries moved from 3Q FY 2025 through 3Q FY 2026 to 2Q FY 2026 through 2Q FY 2027 JMEWS CA LRIP 2 moved from 2Q FY 2025 to 2Q FY 2026 JMEWS LRIP 2 Deliveries moved from 3Q FY 2026 through 3Q FY 2027 to 2Q FY 2027 through 2Q FY 2028 JMEWS SVR moved from 1Q FY 2024 to 4Q FY 2024 JMEWS PRR moved from 3Q FY 2024 to 1Q FY 2025</p> <p>PU 4036: TMPC 7.0 IOC moved from 4Q FY 2023 to 4Q FY 2024 TMPC 7.0 PAT & DT/OT split to Land Attack PAT DT/OT & Maritime PAT DT/OT TMPC 7.0 Land Attack PAT DT/OT added to 4Q FY 2022 to 2Q FY 2024 TMPC 7.0 Maritime PAT DT/OT added to 3Q FY 2023 to 1Q FY 2025 TMPC 8.0 JMEWS PDR moved from 4Q FY 2023 to 3Q FY 2023 TMPC 8.0 JMEWS OTRR moved from 1Q FY 2026 to 3Q FY 2026 Removed TTWCS v5.6.1.x IOC and replaced to reflect three milestones: TTWCS v5.6.1.0 Fleet Release (Land Attack) 2Q 2024 TTWCS v5.6.1.1 Fleet Release (MST) 1Q 2025 TTWCS v5.6.1.x Fleet Release (MCODE) 4Q 2025 TTWCS v7.X IOC renamed to TTWCS v7.X Fleet Release and moved from 1Q 2027 to 4Q 2027 TTWCS v7.X Design from 4Q 2022-2Q 2023 to 3Q 2023-1Q 2024 TTWCS v7.X SW Dev & Integration from 4Q 2022-3Q 2026 to 2Q 2024-4Q 2025</p>		

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TACTOM Preplanned Product Improvement (P3I) Cyber Improvements from 1Q 2023-4Q 2027 to 1Q 2023-4Q 2028 TTWCS v5.6.1.X DT/OT from 1Q 2022-2Q 2025 to 1Q 2022- 3Q 2024 Added TTWCS 5.6.1 FB 4Q 2024-2Q 2025 TTWCS v7.X DT/OT from 1Q 2023-2Q 2026 to 1Q 2024-3Q 2026 JMEWS OT added in 4Q FY 2026		

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy										Date: March 2023		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>				Project (Number/Name) 0545 / TOMAHAWK			
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
0545: TOMAHAWK	3,314.276	0.000	0.000	0.000	-	0.000	36.038	5.300	0.000	0.000	0.000	3,355.614
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tomahawk Weapons System (TWS) provides a deep strike land attack capability (Tomahawk Land Attack Missile (TLAM)), and can be launched from both surface ships (RGM) and submarines (UGM) via the Tactical Tomahawk Weapons Control System (TTWCS). The Guidance Electronics Unit - Redesign (GEU-R) provides centralized housing of the electronic cards for navigation, guidance, flight control, pyro & power control, mission control (MC), and secondary power and manages all missile monitoring and control functions (navigation, communications, guidance, speed, attitude, health, component power application timing/activation of discrete events).

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy										Date: March 2023		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr				Project (Number/Name) 4032 / NAV/COMMS			
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
4032: NAV/COMMS	9.259	0.000	0.000	2.969	-	2.969	21.060	14.000	8.000	1.500	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

This project is a FY 2024 New Start due to not having funding since FY 2021.

A. Mission Description and Budget Item Justification

TACTOM missile Navigation and Communications (NAV/COMMS) capability consists of a government furnished TACTOM radio, a government furnished crypto unit, and NAV/COMM specific test equipment. This capability enables the Tomahawk Weapon System (TWS) to utilize an Advanced Communications Architecture (ACA) network for secure tactical communications. The Tomahawk Weapons System (TWS) provides a deep strike land attack capability (Tomahawk Land Attack Missile (TLAM)) and can be launched from both surface ships (RGM) and submarines (UGM) via the Tactical Tomahawk Weapons Control System (TTWCS). The ACA Phase II will provide additional capability. Details available at a higher classification. The TACTOM Block V Integrated Single Box Solution (ISBS) radio redesign provides improved Communication (Comms) through the use of an improved software that will expand the platform's capabilities and avoids component obsolescence. The ISBS radio is utilized to send in-flight retargeting commands, employ "loiter" tactic, and transmit health and status.

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: NAV/COMMS	0.000	0.000	2.969	0.000	2.969
Articles:	-	-	-	-	-
FY 2023 Plans: N/A					
FY 2024 Base Plans: NAV/COMMS planned activities for Phase II include procurement of equipment needed for research, development and testing. Additionally, funds will be used to plan and prepare for developmental and operational testing needed in FY 2025 - FY 2028. Radio redesign will allow for improved software that will expand the platform's capabilities, and design out obsolescent parts.					
FY 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding supports continuing Nav/Comms efforts previously funded in FY 2019 thru FY 2021.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	2.969	0.000	2.969

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4032 / NAV/COMMS

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>
• WPN 2101: <i>Tomahawk</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	85.434
• WPN 2301: <i>Tomahawk Mods</i>	35.160	59.672	97.268	-	97.268	108.400	114.418	111.004	71.343	293.807	929.535

Remarks

Other Program Funding Summary for WPN BLI 2301 does not include funding for the Tomahawk Recertification program as there is no RDTEN funding associated with that program.

D. Acquisition Strategy

The Advanced Communication Architecture acquisition strategy in FY 2024 will aim to increase the new Phase II technology readiness level, redesign the ISBS radio, integrate it within the platform, and plan developmental tests. This work will prepare the technology for operational tests and qualification within the weapon system and network.

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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 / 7				PE 0204229N / Tomahawk Mssn Planning Ctr				4032 / NAV/COMMS							
Product Development (\$ 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
Product Development Prior Year Activity	Various	Various : Various	1.773	0.000		0.000		0.000		-		0.000	0.000	1.773	-
NAV/COMMS Improvements	C/CPFF	Raytheon : Tuscon, AZ	0.000	0.000		0.000		1.419	Jun 2024	-		1.419	Continuing	Continuing	Continuing
NAV/COMMS Improvements	C/FFP	GCI : Reston, VA	0.000	0.000		0.000		0.900	Jan 2024	-		0.900	Continuing	Continuing	Continuing
NAV/COMMS Improvements	C/FFP	TBD : TBD	0.000	0.000		0.000		0.450	Jan 2024	-		0.450	Continuing	Continuing	Continuing
NAV/COMMS Improvements	WR	NAWC-AD : Patuxent River, MD	0.000	0.000		0.000		0.200	Jan 2024	-		0.200	0.000	0.200	-
Subtotal			1.773	0.000		0.000		2.969		-		2.969	Continuing	Continuing	N/A
Support (\$ 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
Support Prior Year Activity	Various	Various : Various	5.614	0.000		0.000		0.000		-		0.000	0.000	5.614	-
Subtotal			5.614	0.000		0.000		0.000		-		0.000	0.000	5.614	N/A
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
Operational Test & Evaluation (OT&E)	Various	Various : Various	1.872	0.000		0.000		0.000		-		0.000	0.000	1.872	-
Subtotal			1.872	0.000		0.000		0.000		-		0.000	0.000	1.872	N/A
Project Cost Totals			9.259	0.000		0.000		2.969		-		2.969	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4032 / NAV/COMMS

NAVCOMMS	2022			2023			2024			2025			2026			2027			2028					
	FY 22			FY 23			FY 24			FY 25			FY 26			FY 27			FY 28					
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Major Milestones	Fleet Release ★																							
Contract							◇ Contract Award						Production Contract Award ◇											
Radio Redesign										Radio Redesign			◇ Design Complete											
Qualification										Delivery of Qual Units ◇			Qualification											
Integration													Delivery of Integration Units ◇			Integration and Test								
ACA Phase II	ACA Phase II Planning Efforts									ACA Phase II Field Services Support														

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4032 / NAV/COMMS

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
NAV/COMMS				
Acquisition Milestones: Milestones: Fleet Release	4	2028	4	2028
Acquisition Milestones: Milestones: Contract Award	3	2024	3	2024
Acquisition Milestones: Milestones: Production Contract Award	2	2027	2	2027
Acquisition Milestones: Milestones: Design Complete	1	2026	1	2026
Acquisition Milestones: Milestones: Delivery of Qual Units	1	2026	1	2026
Acquisition Milestones: Milestones: Delivery of Integration Units	1	2027	1	2027

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4033 / M-Code
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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
4033: M-Code	63.906	11.147	8.059	26.301	-	26.301	4.443	3.272	0.052	0.054	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The M-Code (ACAT IVT) Increment I program upgrades the Tactical Tomahawk to the next generation Global Positioning System (GPS) satellite constellation required to maintain GPS-provided position, navigation, and timing (PNT) for the missiles and is planned for Milestone C production decision in FY 2025 and Fleet Release in FY 2026. The M-Code mandate and Public Law restricts the purchase of only M-Code-capable GPS User Equipment (MGUE) after FY 2017 unless a waiver is granted by the Secretary of Defense.

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: M-Code	11.147	8.059	26.301	0.000	26.301
Articles:	-	-	-	-	-
FY 2023 Plans: M-Code planned activities include continuation of EMD. EMD efforts include hardware and software development, integration, and testing of an M-Code capable Tactical Tomahawk (TACTOM) Anti-Jam GPS Receiver.					
FY 2024 Base Plans: M-Code planned activities include continuation of EMD. EMD efforts include hardware and software integration, testing, qualification, and achieve Security Approval of an M-Code capable Tactical Tomahawk (TACTOM) Anti-Jam GPS Receiver (AGR).					
FY 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement: Increase in funding from FY 2023 to FY 2024 driven 12-month delay in receipt of the M-Code Common Architecture for Assured PNT (CAAP) Application Specific Integrated Circuit (ASIC) chip from USAF. Delayed efforts drive significantly increased costs into FY 2024 and include the planned USN AGR subsystem integration, test, qualification, and security approval efforts required to meet the OSD Mandate for M-Code.					
Accomplishments/Planned Programs Subtotals	11.147	8.059	26.301	0.000	26.301

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4033 / <i>M-Code</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 2024</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>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• WPN 2301: <i>Tomahawk Mods</i>	0.000	0.000	0.000	-	0.000	26.162	27.805	27.029	14.598	82.668	178.262

Remarks

Other Program Funding Summary for WPN BLI 2301 does not include funding for the Tomahawk Recertification program as there is no RDTEN funding associated with that program.

D. Acquisition Strategy

The M-Code (ACAT IV) Increment I acquisition strategy includes the development, integration, test, qualification and production of a new GPS receiver which will satisfy Public Law 111-383, sec 913 compliance. Development includes the Tactical Tomahawk M-Code program co-developing the Common Architecture for Assured PNT (CAAP) high anti-jam M-Code Application Specific Integrated Circuit (ASIC) with USAF Small Diameter Bomb (SDB)-II Program Office. M-Code capability enables the missile to maintain GPS integrity in an enhanced spoofing environment. M-Code Milestone B occurred in FY 2019, Milestone C is planned for FY 2025, and the capability will Fleet Release in FY 2026. The M-Code program includes upgrades to the All-Up Round (AUR) missile, Tactical Tomahawk Weapons Control System (TTWCS) v5.x, Submarine Combat & Control System (CCS), and also requires upgrade to the Theater Mission Planning Center (TMPC) program (under PU 4036).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy											Date: March 2023				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr					Project (Number/Name) 4033 / M-Code				

Product Development (\$ in Millions)				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			
M-Code-AUR	SS/CPFF	Raytheon : Tuscon, AZ	38.730	5.269	Nov 2021	4.262	Nov 2022	22.713	Nov 2023	-		22.713	Continuing	Continuing	Continuing
M-Code - AUR	SS/FFP	Raytheon : Raytheon, AZ/SAS:	9.000	0.000		0.000		0.000		-		0.000	0.000	9.000	-
M-Code - TTWCS	SS/CPFF	LMVF : Valley Forge, PA	0.246	0.000		0.000		0.000		-		0.000	0.000	0.246	-
M-Code - TTWCS	SS/CPFF	LMBM : Baltimore, MD	0.371	0.000		0.000		0.000		-		0.000	0.000	0.371	-
M-Code - TTWCS	SS/CPFF	BAE Systems : San Diego, CA	0.065	0.000		0.000		0.000		-		0.000	0.000	0.065	-
M-Code - AUR	SS/CPFF	UARC APL : Laurel, MD	4.517	1.387	Dec 2021	1.255	Oct 2022	1.045	Oct 2023	-		1.045	1.744	9.948	-
Subtotal			52.929	6.656		5.517		23.758		-		23.758	Continuing	Continuing	N/A

Remarks
M-Code Product Development funds to Raytheon: Tucson, AZ provide for hardware and software integration, testing, qualification, and achieve Security Approval of an M-Code capable Tactical Tomahawk (TACTOM) Anti-Jam GPS Receiver.

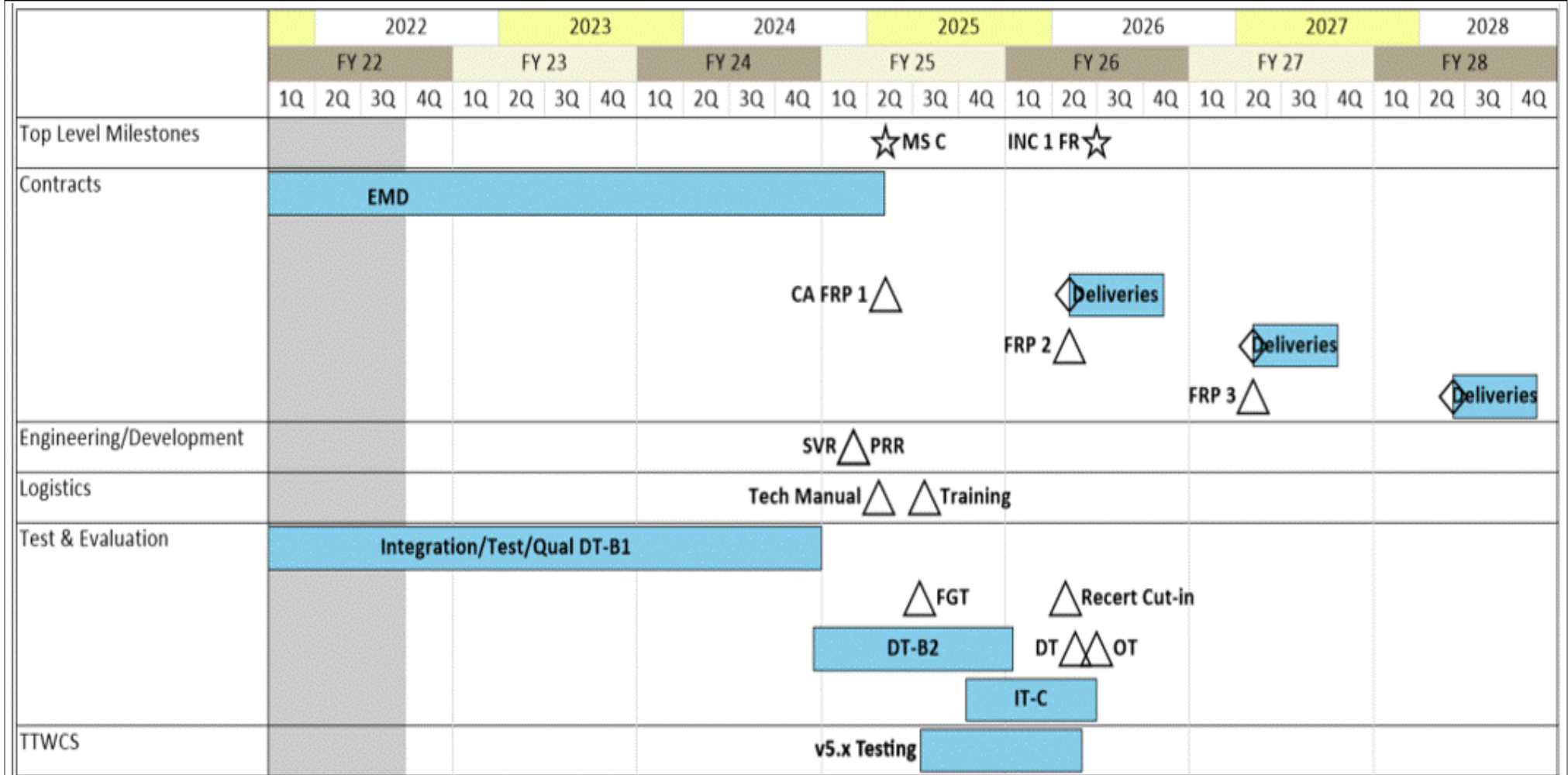
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
M-Code Development Support	WR	NAWC-WD : China Lake, CA	0.523	0.166	Nov 2021	0.262	Nov 2022	0.222	Nov 2023	-		0.222	0.150	1.323	-
M-Code Development Support	WR	NAWC-AD : Patuxent River, MD	1.642	1.083	Nov 2021	0.563	Nov 2022	0.550	Nov 2023	-		0.550	0.512	4.350	-
M-Code Development Support	WR	NUWC-NPT : Newport, RI	0.901	0.175	Nov 2021	0.257	Nov 2022	0.227	Nov 2023	-		0.227	0.315	1.875	-
M-Code Development Support	WR	NSWC-IH : Indian Head, MD	0.825	0.191	Nov 2021	0.180	Nov 2022	0.192	Nov 2023	-		0.192	0.250	1.638	-
M-Code/TTWCS Development Spt	WR	NSWC-DD : Dahlgren, VA	1.666	2.226	Nov 2021	0.785	Nov 2022	0.850	Nov 2023	-		0.850	0.000	5.527	-

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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 / 7				PE 0204229N / Tomahawk Mssn Planning Ctr				4033 / M-Code							
Support (\$ 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
M-Code Development Support	SS/CPFF	Various : Various	0.101	0.000		0.000		0.000		-		0.000	0.000	0.101	-
M-Code NWCF Surcharge	WR	NAWC-WD : China Lake, CA	4.630	0.000		0.000		0.000		-		0.000	0.000	4.630	-
Subtotal			10.288	3.841		2.047		2.041		-		2.041	1.227	19.444	N/A
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	NAWC-AD : Patuxent River	0.113	0.138	Jun 2022	0.165	Jun 2023	0.165	Jun 2024	-		0.165	0.322	0.903	-
Developmental Test & Evaluation (DT&E)	WR	NUWC-NPT : Newport, RI	0.000	0.325	Nov 2021	0.143	Nov 2022	0.150	Nov 2023	-		0.150	0.299	0.917	-
Subtotal			0.113	0.463		0.308		0.315		-		0.315	0.621	1.820	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
M-Code	WR	NAWC-AD : Patuxent River	0.576	0.187	Jun 2022	0.187	Jun 2023	0.187	Jun 2024	-		0.187	0.364	1.501	-
Subtotal			0.576	0.187		0.187		0.187		-		0.187	0.364	1.501	N/A
Project Cost Totals			63.906	11.147		8.059		26.301		-		26.301	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy															Date: March 2023				
Appropriation/Budget Activity 1319 / 7										R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr					Project (Number/Name) 4033 / M-Code				



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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4033 / <i>M-Code</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
M-CODE				
Acquisition Milestones: Milestones: Milestone C	2	2025	2	2025
Systems Development: Test and Evaluation: M-Code Integrated Test (IT-C)	4	2025	2	2026
Systems Development: Test and Evaluation: M-Code Inc I Fleet Release	2	2026	2	2026
Production Milestones: Contract Awards: M-Code FRP Lot-1	2	2025	2	2025
Production Milestones: Contract Awards: M-Code FRP Lot-2	2	2026	2	2026
Production Milestones: Contract Awards: M-Code FRP Lot-3	2	2027	2	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy										Date: March 2023		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>				Project (Number/Name) 4034 / <i>Maritime Strike</i>			
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
4034: <i>Maritime Strike</i>	467.916	73.679	75.101	54.371	-	54.371	70.411	30.137	19.487	19.878	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Maritime Strike Tomahawk (MST) modernization effort provides the capability to hit moving maritime targets through mid-course guidance via a third party or seeker mode, to a terminal seeker engagement. MST began transitioning to a Program of Record in FY 2022 and is estimated to complete transitioning to an ACAT I subprogram in FY 2023. Milestone C planned for FY 2024 and IOC is planned in FY 2025. Program of Record will consist of a period of initial and follow-on operational test and evaluation, seeker software algorithm updates, and commensurate Weapons Control System (WCS) and Theater Mission Planning Center (TMPC) software updates.

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Maritime Strike Tomahawk	73.679	75.101	54.371	0.000	54.371
Articles:	-	-	-	-	-
FY 2023 Plans: Continuation of activities in support of Maritime Strike Tomahawk (MST). MST will continue test efforts in FY 2023 including captive flight testing of seeker assembly and missile test flights from ground launcher apparatus to assess seeker performance and further mature OES 5 software and associated algorithms. These events are expected to result in discovery of required software fixes that will be included in OES 6 software builds. The program will also continue build-up, check-out, and lab test of MST test missiles for surface and subsurface test events to be conducted in FY 2024. Engagement planning and coordination with other stakeholders and agencies that require MST support will continue in FY 2023. Modeling and Simulation (M&S) activity in laboratories will continue in FY 2023 to include validation and verification runs in the System of Systems Test Environment (SoSTE) Lab and the Signal Processor in the Loop (SPIL) environment to verify and begin validation of mission performance. Additional shipping and handling safety analyses will be conducted and further recommendations implemented. TTWCS will continue system integration testing of version 5.6.1.X software build after Global Command and Control System interfaces have completed necessary fixes that were discovered in FY 2022. The testing will continue on system segments and address weapons control software fixes and debugging through the planned corrective build. The program will continue MST training curriculum and logistics product development for the Fleet user, conduct test ship crew training activities for version 5.6.1.X, and continue test ship installation activities, which will be in concert with test ship availability.					
FY 2024 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4034 / <i>Maritime Strike</i>

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Continuation of activities in support of Maritime Strike Tomahawk (MST). MST will continue test efforts in FY 2024 including finishing missile level qualification testing, final missile flight tests from ground launcher apparatus to assess improvements made to seeker performance from the FY 2023 test events, and further mature OES 6 software and associated algorithms. The program will also continue build-up, check-out, and lab test of MST test missiles for surface and subsurface test events to be conducted in FY 2024 and FY 2025. Engagement planning and coordination with other stakeholders and agencies that require MST support will continue in FY 2024. Modeling and Simulation (M&S) activity in laboratories will continue in FY 2024 to include validation and verification runs in the System of Systems Test Environment (SoSTE) Lab and the Signal Processor in the Loop (SPIL) environment to verify and complete validation of mission performance. TTWCS will complete system integration testing of version 5.6.1.X software build after Global Command and Control System interfaces have completed necessary fixes that were discovered in FY 2023. The testing will complete on system segments and address weapons control software fixes and debugging through the planned corrective build. The program will continue MST training curriculum and logistics product development for the Fleet user, conduct test ship crew training activities for version 5.6.1.X, and continue surface (and subsurface) installation activities, which will be in concert with test ship availability in order to support final shipboard testing in FY 2024 and FY 2025. The program will complete development of documentation and planning to support MS-C in FY 2024 and begin initial engineering to support post MS-C Program of Record activities. The program will begin required engineering, integration, and testing to support an upgrade to the seeker processor.					
<i>FY 2024 OCO Plans:</i> N/A					
<i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> The decrease from FY 2023 to FY 2024 is primarily due to reductions in software and hardware development as the program approaches IOC.					
Accomplishments/Planned Programs Subtotals	73.679	75.101	54.371	0.000	54.371

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	
			Base	OCO	Total					Complete	Total Cost
• WPN 6120: <i>Spares and Repair Parts</i>	1.093	2.364	1.913	-	1.913	1.440	1.936	1.950	1.989	Continuing	Continuing
• WPN 2301: <i>Tomahawk Mods</i>	44.470	117.468	121.352	-	121.352	83.903	83.621	84.423	87.897	2,600.319	3,243.048

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4034 / <i>Maritime Strike</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>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks
Other Program Funding Summaries for WPN BLIs 2301 and 6120 do not include funding for the Tomahawk Recertification program as there is no RDTEN funding associated with that program.

D. Acquisition Strategy

Maritime Strike Tomahawk (MST) will enable surface warfare engagement capability from U.S. Navy Guided Missile Cruiser (CG), Guided Missile Destroyer (DDG), and Nuclear Powered Fast Attack Submarine (SSN) platforms. The MST program includes upgrades to the All-Up Round (AUR) missile, the Tactical Tomahawk Weapons Control System (TTWCS) and also required upgrades to the Theater Mission Planning Center (TMPC) programs (under PU 4036). MST was designated a DoDI 5000.02 Rapid Deployment Capability (RDC) by the Assistant Secretary of the Navy (Research, Development, and Acquisition) (ASN (RDA)) in Oct 2016. Milestone decision authority ensures program accountability through knowledge points which inform progress on critical design, production readiness, system test readiness, flight readiness, operational test readiness and fielding decision. To facilitate rapid fleet fielding, hardware design was phased to the beginning of the program. Technical Data package for seeker production units completed in 3Q FY 2020 at Knowledge Point 3 which supported procurement in FY 2021. Seeker software development will continue with initial Engineering Design Models. Initial Operational Capability (IOC) will occur in FY 2025 following operational test. This strategy affords the program flexibility in achieving a threshold capability in a timely manner. MST is estimated to complete transitioning to an ACAT I subprogram in FY 2023 and will conduct MS-C in FY 2024. Program of Record will consist of a period of initial and follow-on operational test and evaluation, seeker software algorithm updates, and commensurate Weapons Control System (WCS) and Theater Mission Planning Center (TMPC) software updates.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy												Date: March 2023			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr				Project (Number/Name) 4034 / Maritime Strike							
Product Development (\$ 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
Maritime Strike - AUR	SS/CPPIF	Raytheon : Tucson, AZ	345.360	56.522	Oct 2021	49.611	Dec 2022	33.266	Dec 2023	-		33.266	Continuing	Continuing	Continuing
Maritime Strike - AUR	WR	NAWCWD : China Lake, CA	20.062	3.995	Nov 2021	5.688	Nov 2022	1.670	Nov 2023	-		1.670	Continuing	Continuing	Continuing
Maritime Strike- TTWCS	SS/CPFF	LMVF : Valley Forge, PA	10.952	1.130	Apr 2022	1.051	Dec 2022	1.643	Dec 2023	-		1.643	0.000	14.776	12.252
Maritime Strike- TTWCS	WR	NSWC-DD : Dahlgren, VA	10.333	2.178	Oct 2021	3.512	Nov 2022	2.725	Nov 2023	-		2.725	Continuing	Continuing	Continuing
Maritime Strike- TTWCS	WR	NUWC-DN : Newport, RI	3.472	1.720	Nov 2021	1.020	Nov 2022	1.260	Nov 2023	-		1.260	Continuing	Continuing	Continuing
Maritime Strike - AUR	MIPR	NRO : Chantilly, VA	3.608	0.000		0.000		0.000		-		0.000	0.000	3.608	3.608
Maritime Strike - AUR	SS/CPFF	UARC APL : Laurel, MD	1.509	0.356	Mar 2022	0.452	Apr 2023	0.498	Apr 2024	-		0.498	0.000	2.815	2.386
Maritime Strike- VLS	SS/CPFF	LM : Baltimore, MD	2.326	0.144	Feb 2022	0.213	Feb 2023	0.000		-		0.000	0.000	2.683	1.600
Maritime Strike - AUR	WR	NSWC-PHD : Port Hueneme, CA	1.345	0.795	Dec 2021	0.908	Oct 2022	0.000		-		0.000	0.000	3.048	1.548
Maritime Strike - AUR	SS/CPFF	ACE Electronics Defense Systems, LLC : Port Hueneme, CA	0.415	0.000		0.000		0.000		-		0.000	0.000	0.415	0.415
Maritime Strike - AUR	WR	NAVWAR : San diego	1.484	0.000		0.000		0.000		-		0.000	0.000	1.484	1.500
Maritime Strike - AUR	MIPR	DCMA : Tucson, AZ	0.560	0.000		0.000		0.000		-		0.000	0.000	0.560	-
Maritime Strike- TTWCS	SS/CPFF	Various : Port Hueneme, CA	0.116	0.000		0.000		0.000		-		0.000	0.000	0.116	-
Maritime Strike - AUR	WR	NSWC-IHD : Indian Head, MD	0.020	0.000		0.000		0.000		-		0.000	0.000	0.020	-
Maritime Strike - AUR	MIPR	DLA : Philadelphia, PA	2.600	0.000		0.000		0.000		-		0.000	0.000	2.600	-
Maritime Strike- TTWCS	SS/CPFF	Various : Newport, RI	0.000	0.507	Mar 2022	0.241	Apr 2023	0.000		-		0.000	0.000	0.748	-
Maritime Strike- TTWCS	SS/CPFF	Various : Dahlgren, VA	0.000	0.290	Mar 2022	0.139	Mar 2023	0.000		-		0.000	0.000	0.429	-

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4034 / Maritime Strike
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Product Development (\$ in Millions)				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			
Maritime Strike - AUR	SS/CPFF	NAVSEA : Manassas, VA	0.000	0.000		1.200	Mar 2023	0.000		-		0.000	0.000	1.200	-
Subtotal			404.162	67.637		64.035		41.062		-		41.062	Continuing	Continuing	N/A

Remarks
 FY 2024 Maritime Strike funding continues the refinement of software algorithm code. FY 2024 funding continues support of system test software development evaluation and continues System of Systems Test Environment and Signal Processor in the Loop laboratory performance runs and analysis. Continues Tactical Tomahawk Weapons Control System v5.6.X system integration testing, correction of deficiencies in Increment (Inc)/Fix-it Build (FB) development, training and curriculum development, and entry into Inc/FB Segment Test. Continue MST training development, and Tomahawk Mission Planning Center initial Product Acceptance Test and Inc/FB complete. Continue planning for the additional capabilities and the correction of MST deficiencies in the follow on derivatives of TTWCS V5.X.X.

Support (\$ in Millions)				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			
Maritime Strike Development Support	WR	NAWC-WD : China Lake	10.161	0.000		0.140	Nov 2022	0.333	Nov 2023	-		0.333	Continuing	Continuing	Continuing
Maritime Strike Development Support	SS/CPFF	UARC APL : Laurel, MD	0.317	0.000		0.000		0.000		-		0.000	0.000	0.317	0.317
Maritime Strike Development Support	WR	NSWC-DD : Dahlgren, VA	9.499	0.725	Nov 2021	0.727	Nov 2022	0.543	Nov 2023	-		0.543	Continuing	Continuing	Continuing
Maritime Strike Development Support	WR	NAWC-AD : Pax River, MD	5.332	0.170	Oct 2021	1.477	Nov 2022	1.544	Nov 2023	-		1.544	Continuing	Continuing	Continuing
Maritime Strike Development Support	WR	NUWC-NPT : Newport, RI	0.387	0.000		0.065	Nov 2022	0.000		-		0.000	0.000	0.452	0.403
Maritime Strike Development Support	WR	NSWC-PHD : Port Hueneme, CA	1.836	0.050	Nov 2021	0.025	Oct 2022	0.000		-		0.000	0.000	1.911	1.850
Maritime Strike Development Support	C/CPFF	SSC : San Diego, CA	5.959	0.477	Apr 2022	0.530	Dec 2022	0.623	Dec 2023	-		0.623	0.000	7.589	6.122
Maritime Strike Development Support	WR	NAVWAR : San Diego, CA	4.140	0.684	Oct 2021	1.099	Nov 2022	0.837	Nov 2023	-		0.837	Continuing	Continuing	Continuing
Maritime Strike Development Support	C/CPFF	Sea Corp : Newport, RI	1.091	0.000		0.000		0.000		-		0.000	0.000	1.091	1.091

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4034 / Maritime Strike
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Support (\$ in Millions)				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			
Maritime Strike Development Support	SS/CPFF	Precise : Pax River, MD	1.771	0.000		0.214	Jul 2023	0.357	Apr 2024	-		0.357	0.000	2.342	2.521
Maritime Strike Development Support	MIPR	US Army : Redstone Arsenal, AL	2.024	0.000		0.000		0.750	Aug 2024	-		0.750	Continuing	Continuing	Continuing
Maritime Strike Development Support	SS/CPFF	Various : Dahlgren, VA	1.094	0.315	Feb 2022	0.000		0.480	Apr 2024	-		0.480	Continuing	Continuing	Continuing
Maritime Strike Development Support	MIPR	Other DOD : Various	0.039	0.000		0.047	Feb 2023	0.000		-		0.000	0.000	0.086	0.615
Maritime Strike Development Support	PO	Naval Research Lab : Washington, DC	0.842	0.168	Jul 2022	0.262	May 2023	0.170	Mar 2024	-		0.170	Continuing	Continuing	Continuing
Maritime Strike Development Support	SS/CPFF	Various : Port Hueneme, CA	0.986	0.393	Mar 2022	0.465	Feb 2023	0.559	Mar 2024	-		0.559	Continuing	Continuing	Continuing
Maritime Strike Development Support	SS/CPFF	Various : Pax River, MD	1.786	0.791	Jun 2022	1.061	Jun 2023	0.000		-		0.000	Continuing	Continuing	Continuing
Maritime Strike Development Support	SS/CPFF	BAE : McLean, VA	0.123	0.000		0.000		0.000		-		0.000	0.000	0.123	0.085
Maritime Strike Development Support	WR	NSWC Corona : Corona, CA	0.223	0.128	Dec 2021	0.000		0.048	Nov 2023	-		0.048	Continuing	Continuing	Continuing
Maritime Strike Development Support	WR	NSWC-IHD : Indian Head, MD	0.060	0.047	Nov 2021	0.049	Oct 2022	0.000		-		0.000	0.000	0.156	0.105
Maritime Strike Development Support	SS/CPFF	Keysight Tech : Colorado Springs, CO	5.101	0.000		0.000		0.000		-		0.000	0.000	5.101	5.101
Maritime Strike Development Support	Various	NAVAIR HQ : Pax River, MD	0.000	0.000		0.025	Nov 2022	0.000		-		0.000	0.000	0.025	-
Subtotal			52.771	3.948		6.186		6.244		-		6.244	Continuing	Continuing	N/A

Remarks
 FY 2024 funding continues Program of Record documentation activities, continues fleet training, ship install of MST hardware and software, continues verification and validation support for Modeling and Simulation (M&S), performs data analysis of final test events to include M&S Runs for Record, TTWCS segment testing, flight testing, TWS Integration Testing, and Missile Level Qualification Test analysis.

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4034 / Maritime Strike
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Test and Evaluation (\$ in Millions)				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			
Developmental Test & Evaluation (DT&E)	WR	NAWC-WD : China Lake	8.441	0.071	Oct 2021	2.025	Nov 2022	5.073	Nov 2023	-		5.073	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NAWC-AD : Pax River	0.094	0.019	Dec 2021	0.173	Nov 2022	0.273	Nov 2023	-		0.273	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NSWC-DD : Dahlgren, VA	1.179	1.085	Oct 2021	1.388	Nov 2022	1.026	Nov 2023	-		1.026	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NSWC-PHD : Port Hueneme, CA	1.064	0.269	Nov 2021	0.564	Nov 2022	0.398	Nov 2023	-		0.398	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NSWC-IHD : Indian Head, MD	0.104	0.123	Feb 2022	0.000		0.096	Nov 2023	-		0.096	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NUWC-NPT : Newport, RI	0.101	0.091	Oct 2021	0.000		0.049	Nov 2023	-		0.049	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NSMA : JBAB, DC	0.000	0.194	Nov 2021	0.248	Nov 2022	0.000		-		0.000	0.000	0.442	-
Developmental Test & Evaluation (DT&E)	SS/CPFF	Various : Pax River, MD	0.000	0.233	Nov 2021	0.241	Nov 2022	0.000		-		0.000	0.000	0.474	-
Developmental Test & Evaluation (DT&E)	Various	NAVAIR HQ : Pax River, MD	0.000	0.009	Dec 2021	0.000		0.000		-		0.000	0.000	0.009	-
Operational Test & Evaluation (OT&E)	WR	NSWC Corona : Corona, CA	0.000	0.000		0.241	Jan 2023	0.150	Jan 2024	-		0.150	0.000	0.391	-
Subtotal			10.983	2.094		4.880		7.065		-		7.065	Continuing	Continuing	N/A

Remarks
 FY 2024 Maritime Strike funding required to continue transition to production representative testing. T&E efforts continue for missile Operationally Embedded Software updates for full seeker capabilities and performance; build-up of missiles for test events to include hardware and software integration; continuation of DT/OT software build-up, System of Systems Test Environment and Signal Processor in the Loop performance runs and analysis. Tactical Tomahawk Weapons Control System Increment/Fix-It Builds completion in preparation for Segment Test and DT/OT.

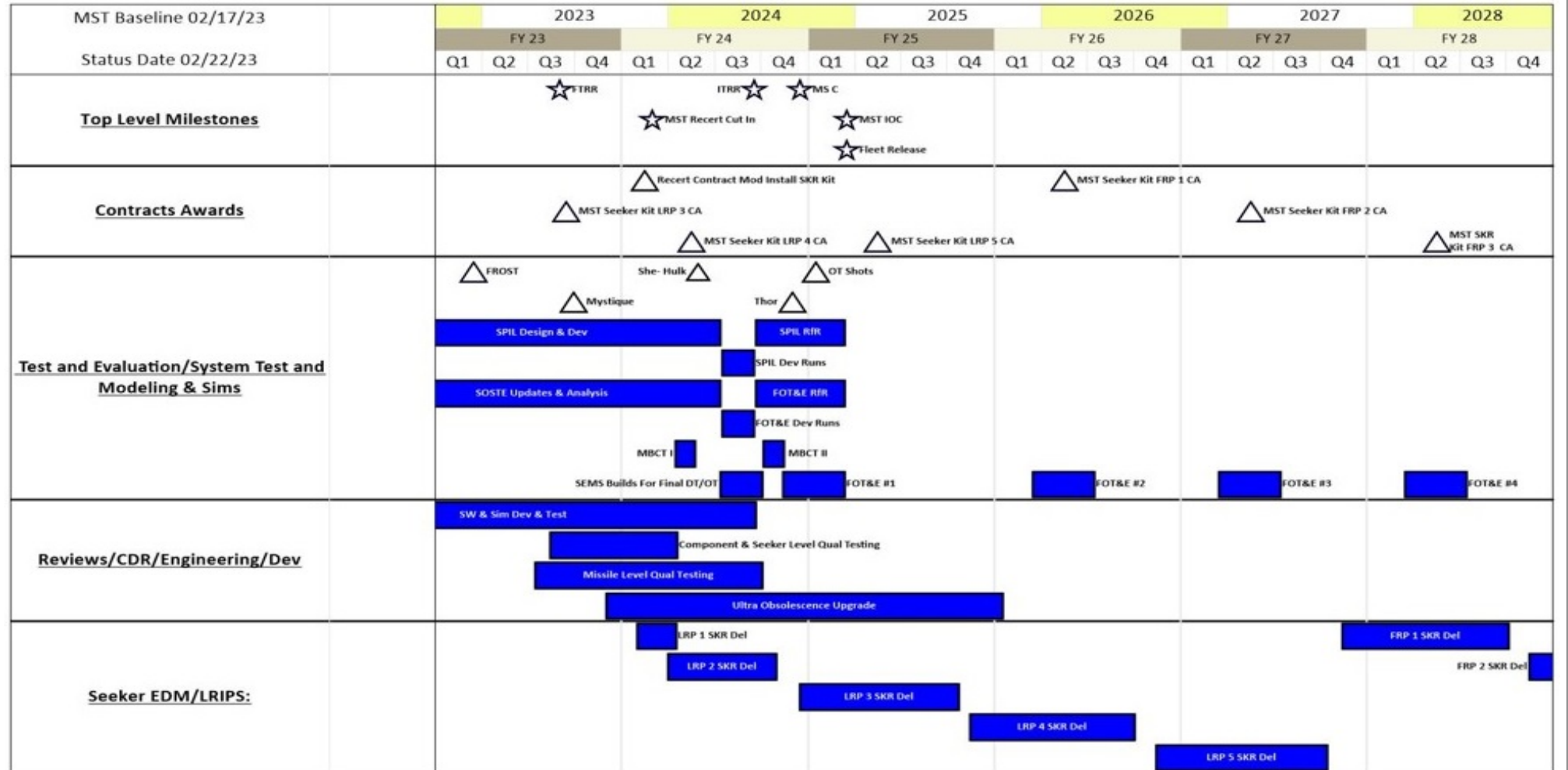
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	467.916	73.679	75.101	54.371	-	54.371	Continuing	Continuing	N/A

Remarks

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4034 / Maritime Strike
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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4034 / Maritime Strike

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 4034				
Acquisition Milestones: Top Level Milestones: Flight Test Readiness Review (FTRR)	3	2023	3	2023
Acquisition Milestones: Top Level Milestones: ITRR	3	2024	3	2024
Acquisition Milestones: Top Level Milestones: MST IOC	1	2025	1	2025
Acquisition Milestones: Top Level Milestones: Fleet Release	1	2025	1	2025
Acquisition Milestones: Top Level Milestones: Milestone C	4	2024	4	2024
Contracts: Contract Awards: Recert Contract Modification to Install SKR Kit	1	2024	1	2024
Contracts: Contract Awards: MST Seeker Kit LRP 3 Contract Award	3	2023	3	2023
Contracts: Contract Awards: MST Seeker Kit LRP 4 Contract Award	2	2024	2	2024
Contracts: Contract Awards: MST Seeker Kit LRP 5 Contract Award	2	2025	2	2025
Contracts: Contract Awards: MST Seeker Kit FRP 1 Contract Award	2	2026	2	2026
Contracts: Contract Awards: MST Seeker Kit FRP 2 Contract Award	2	2027	2	2027
Contracts: Contract Awards: MST Seeker Kit FRP 3 Contract Award	2	2028	2	2028
System Test & Modeling & Simulation: SPIL Design & Dev	1	2022	3	2024
System Test & Modeling & Simulation: SPIL Development Runs	3	2024	3	2024
System Test & Modeling & Simulation: SPIL Runs for Record (RfR)	3	2024	1	2025
System Test & Modeling & Simulation: SoSTE Update & Analysis	1	2022	3	2024
System Test & Modeling & Simulation: FOT&E Development Runs	3	2024	3	2024
System Test & Modeling & Simulation: FOT&E Runs for Recort (RfR)	3	2024	1	2025
System Test & Modeling & Simulation: Mission Base Capability Testing (MBCT) 1	2	2024	2	2024
System Test & Modeling & Simulation: Mission Base Capability Testing (MBCT) 2	4	2024	4	2024
System Test & Modeling & Simulation: Mystique	4	2023	4	2023

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4034 / <i>Maritime Strike</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
System Test & Modeling & Simulation: She-Hulk	2	2024	2	2024
System Test & Modeling & Simulation: Thor	4	2024	1	2028
System Test & Modeling & Simulation: SEMS Builds for final DT/OT	3	2024	4	2024
System Test & Modeling & Simulation: OT Shots	1	2025	1	2025
System Test & Modeling & Simulation: FOT&E 1	4	2024	1	2025
System Test & Modeling & Simulation: FOT&E 2	1	2026	3	2026
System Test & Modeling & Simulation: FOT&E 3	1	2027	3	2027
System Test & Modeling & Simulation: FOT&E 4	1	2028	4	2028
Reviews: Engineering/Dev: Component & Seeker Level Qual Testing	3	2023	2	2024
Reviews: Engineering/Dev: Missile Level Qual Testing	3	2023	4	2024
Reviews: Engineering/Dev: SW & Sim Dev & Test	1	2022	3	2024
Reviews: Engineering/Dev: Ultra Upgrade	4	2023	1	2026
Seeker EDM/LRPS: Seeker EDM Deliveries	1	2022	3	2023
Seeker EDM/LRPS: LRP 1 Seeker Del	1	2024	2	2024
Seeker EDM/LRPS: LRP 2 Seeker Del	1	2024	4	2024
Seeker EDM/LRPS: LRP 3 Seeker Del	4	2024	4	2025
Seeker EDM/LRPS: LRP 4 Seeker Del	4	2025	4	2026
Seeker EDM/LRPS: LRP 5 Seeker Del	4	2026	4	2027
Seeker EDM/LRPS: FRP 1 Seeker Del	4	2027	4	2028
Seeker EDM/LRPS: FRP 2 Seeker Del	4	2028	4	2028

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4035 / JMEWS
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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
4035: JMEWS	88.446	36.825	22.616	22.012	-	22.012	9.736	9.387	3.207	0.169	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Multiple-Effects Warhead System (JMEWS) ACAT III program enables the Tactical Tomahawk to utilize multiple lethal effects to address Hard and Deeply Buried Targets (HDBT) while increasing the Tomahawk Weapon System (TWS) capabilities against Integrated Air Defense Systems (IADS) and Weapons of Mass Destruction (WMD).

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: JMEWS	36.825	22.616	22.012	0.000	22.012
Articles:	-	-	-	-	-
FY 2023 Plans: JMEWS planned activities include the continuation of the EMD phase and post Critical Design Review (CDR) testing, to include Functional Ground Test (FGT) and the start of Flight Testing. EMD efforts continue with hardware and software development, target construction, Insensitive Munitions (IM) and Hazard Classification (HC) testing, arena testing, fuze and warhead integration, systems engineering reviews, and Safety Review board.					
FY 2024 Base Plans: Due to issues found and addressed in developmental test in the hard target sled test and insensitive munitions tests, delta CDR efforts are required. JMEWS planned activities include the continuation of the EMD phase and post Critical Design Review (CDR) testing, to include Functional Ground Test (FGT) and the start of Flight Testing. EMD efforts continue with hardware and software development, target construction, Insensitive Munitions (IM) and Hazard Classification (HC) testing, fuze and warhead qualification, systems engineering reviews, and Safety Review board. No impact to fleet release or IOC.					
FY 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement: Decrease in funding from FY 2023 to FY 2024 is due to completion of arena testing and fuze and warhead integration.					
Accomplishments/Planned Programs Subtotals	36.825	22.616	22.012	0.000	22.012

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4035 / JMEWS

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>
• WPN 2301: <i>Tomahawk Mods</i>	0.000	1.406	6.296	-	6.296	25.307	26.828	36.052	39.880	466.470	602.239

Remarks

Other Program Funding Summary for WPN BLI 2301 does not include funding for the Tomahawk Recertification program as there is no RDTEN funding associated with that program.

D. Acquisition Strategy

Joint Multiple Effects Warhead System (JMEWS) (ACAT III) acquisition strategy includes the development, integration, test, qualification and production of a new warhead that will greatly expand the land target set that the Tomahawk missile is capable of defeating by combining the blast and fragmentation capabilities of the current warhead with a new penetration capability and improved mission planning. JMEWS will also be compliant with Insensitive Munitions requirements which improves safety during transportation and storage on land and aboard ships and submarines. JMEWS Milestone B occurred in FY 2020, Milestone C is planned for FY 2025, and the capability will Fleet Release in FY 2027. JMEWS program includes upgrades to the All-Up Round (AUR) missile, the Tactical Tomahawk Weapons Control System (TTWCS) and also required upgrades Theater Mission Planning Center (TMPC) program (under PU 4036).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy												Date: March 2023			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr						Project (Number/Name) 4035 / JMEWS			

Product Development (\$ 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
JMEWS	SS/CPPIF	Raytheon : Tucson, AZ	49.185	24.664	Nov 2021	15.000	Nov 2022	11.934	Nov 2023	-		11.934	Continuing	Continuing	Continuing
JMEWS	WR	NAWC-WD : China Lake, CA	14.132	6.260	Dec 2021	0.000		2.658	Nov 2023	-		2.658	2.842	25.892	-
JMEWS/TTWCS	SS/CPFF	LMVF : Valley Forge, PA	0.122	0.052	Feb 2022	0.300	Feb 2023	0.000		-		0.000	0.000	0.474	-
JMEWS	WR	NSWC-DD : Dahlgren, VA	0.000	0.000		1.695	Nov 2022	2.001	Nov 2023	-		2.001	4.101	7.797	-
Subtotal			63.439	30.976		16.995		16.593		-		16.593	Continuing	Continuing	N/A

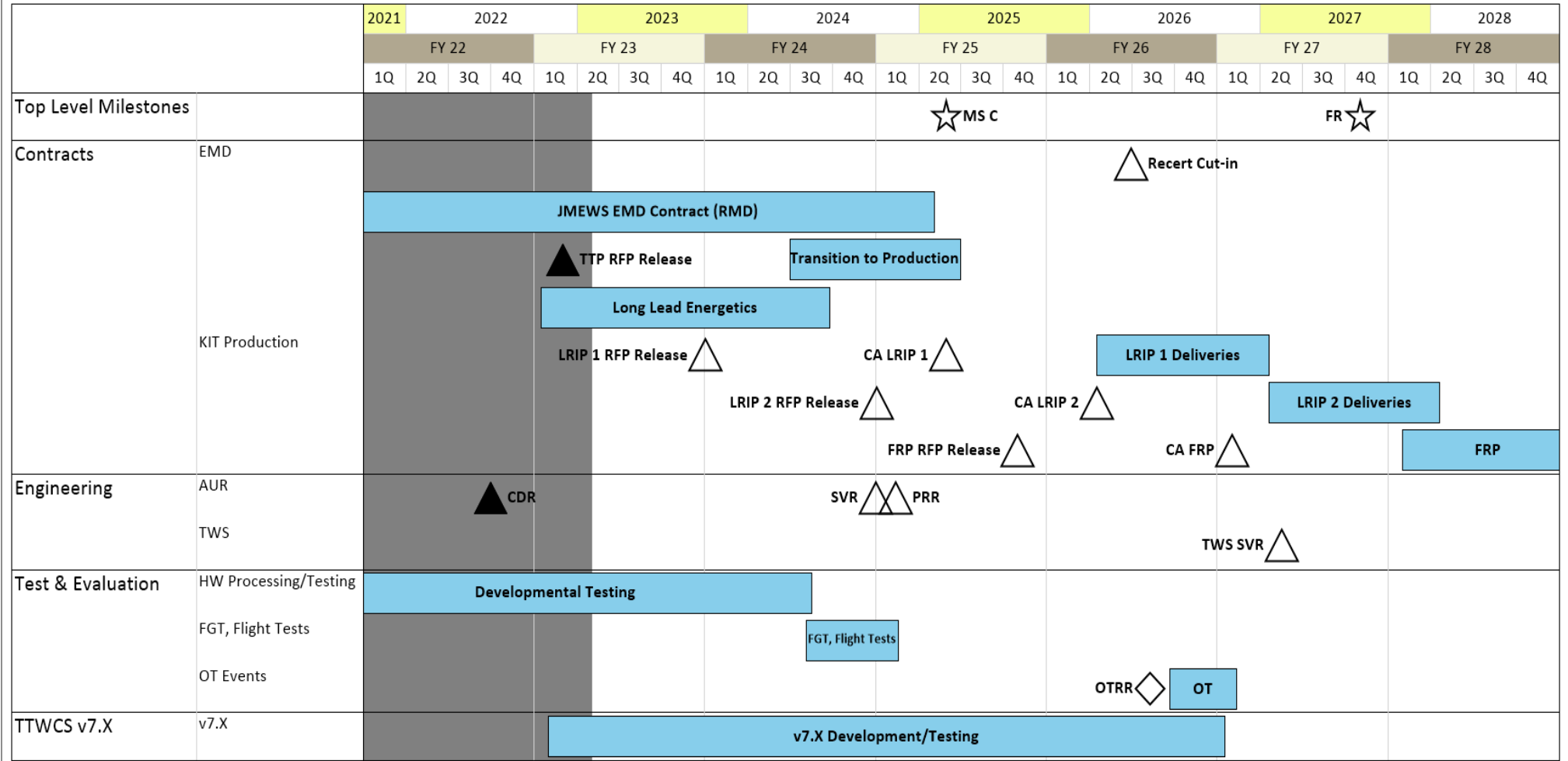
Remarks
FY 2024 JMEWS Product Development funds to NAWC-WD resume China Lake support after FMS (UK) provided funding for FY 2023 efforts.

Support (\$ 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
JMEWS Development Support	SS/CPFF	UARC-APL : Laurel, MD	0.180	0.060	Dec 2021	0.141	Dec 2022	0.075	Dec 2023	-		0.075	0.000	0.456	-
JMEWS Development Support	WR	NSWC-IH : Indian Head, MD	1.410	0.182	Nov 2021	0.281	Nov 2022	0.189	Nov 2023	-		0.189	0.324	2.386	-
JMEWS Development Support	WR	NSWC-DD : Dahlgren, VA	1.087	0.580	Nov 2021	0.500	Nov 2022	0.298	Nov 2023	-		0.298	0.412	2.877	-
JMEWS Development Support	WR	NAWC-AD : Patuxent River, MD	1.307	0.367	Nov 2021	0.315	Nov 2022	0.508	Nov 2023	-		0.508	0.755	3.252	-
JMEWS Development Support	WR	NAWC-WD : China Lake, CA	4.885	0.000		0.000		0.000		-		0.000	0.000	4.885	-
JMEWS VLS Dev Support	SS/CPFF	BAE Systems : Dahlgren, VA	0.530	0.100	Nov 2021	0.294	Nov 2022	0.250	Nov 2023	-		0.250	0.290	1.464	-
JMEWS Development Support	SS/CPFF	Precise Systems : Lexington Park, MD	0.161	0.000		0.000		0.000		-		0.000	0.000	0.161	-
Subtotal			9.560	1.289		1.531		1.320		-		1.320	1.781	15.481	N/A

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4035 / JMEWS
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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4035 / JMEWS

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
JMEWS				
Acquisition Milestones: Milestones: Milestone C	2	2025	2	2025
Acquisition Milestones: Milestones: Fleet Release	4	2027	4	2027
Systems Development: Software Development: JMEWS TTWCS SW Dev	1	2023	3	2025
Systems Development: Software Development: JMEWS TTWCS SW Test	3	2025	1	2027
Reviews: Acquisition Reviews: JMEWS CDR	3	2022	3	2022
Reviews: Contract Awards: JMEWS Long-Lead Energetics Award	1	2023	1	2023
Reviews: Contract Awards: JMEWS LRIP Lot 1 Award	2	2025	2	2025
Reviews: Contract Awards: JMEWS LRIP Lot 2 Award	2	2026	2	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy										Date: March 2023		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>				Project (Number/Name) 4036 / <i>TTWCS TMPC PPPI</i>			
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
4036: <i>TTWCS TMPC PPPI</i>	52.096	8.268	16.943	17.181	-	17.181	18.361	18.485	19.062	19.212	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Theater Mission Planning Center (TMPC) consists of Commercial and Government Off-The-Shelf (COTS/GOTS) software and COTS hardware. TMPC is the mission planning segment of the Tomahawk Weapon System (TWS) that provides subsystems for the precision targeting, route planning, mission distribution, and strike management of Tomahawk cruise missile missions from sites located ashore and afloat. TMPC optimizes all aspects of the Tomahawk missile mission to successfully engage a target.

TMPC provides mission planning at the theater and operational levels and is designed for high rate mission planning production responsive to national strategic, operational, and tactical requirements. TMPC develops and distributes missions; provides command information services for all variants of the Tomahawk missile; provides strike planning, execution, coordination, control and reporting, and provides Maritime Component Commanders (MCC) the capability to plan or modify conventional TWS missions. TMPC is employed in major joint combat operations and Overseas Contingency Operations. TMPC has evolved into 4 scalable configurations deployed at 184 sites: Cruise Missile Support Activities (CMSAs) (3), Tomahawk Strike Mission Planning Cells (TSMPCs) (3), Carrier Strike Groups (CSGs) (19 Total: 12 Afloat / 7 Shore), and Firing Units (FRUs) (140- 89 Surface / 51 Subsurface). Additionally, TMPC is installed in Labs (6) and Training Classrooms (13) that contain various combinations of the four configurations. TMPC software development activities support new capabilities for the Tomahawk Weapon System while also decreasing mission planning time, increasing the quality and accuracy of each mission and reducing complexity. TMPC was previously referred to as Tomahawk Command and Control System (TC2S).

The Tactical Tomahawk Weapons Control System (TTWCS) provides launch capability for surface and submarine platforms. Development of the TTWCS provides a common architecture to launch the TACTOM and all variants in inventory. Development of upgrades to the TTWCS is required to meet the Department of Defense Information Technology Standards Registry, address cyber threats through system security builds, remain interoperable within the Joint Service Architecture, and to retain weapons system viability and usability for our Sailors. Additionally, TTWCS provides launch capability for various fielded missiles, through an incremental approach to software and hardware performance upgrades. These efforts provide battle-group tactical flexibility and responsiveness while maximizing TWS wartime capability.

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Theater Mission Planning Center (TMPC)	8.268	10.838	10.904	0.000	10.904
Articles:	-	-	-	-	-
FY 2023 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4036 / TTWCS TMPC PPI

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
<p>Continue evaluation of TMPC design process to ensure Tomahawk missile performance characteristics are adequately modeled in TMPC. Complete coding of TMPC 7.0 and the Maritime Strike Tomahawk (MST) capability. Commence software development and integration of the TWS Joint Multiple Effects Warhead System (JMEWS). Conduct Product Acceptance Testing (PAT) and DT/OT of TMPC 7.0. Commence PAT & DT/OT for MST.</p> <p>FY 2024 Base Plans: Continue evaluation of TMPC design process to ensure Tomahawk missile performance characteristics are adequately modeled in TMPC. Code critical fixes in TMPC 7.0 from Tomahawk Land Attack DT/OT and achieve IOC. Continue TMPC 7.0 PAT DT/OT for Maritime Strike Tomahawk. Continue software development and integration of the TWS Joint Multiple Effects Warhead System in TMPC 8.0 (JMEWS).</p> <p>FY 2024 OCO Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: TMPC increase from FY 2023 to FY 2024 due to inflation.</p>					
<p>Title: Tactical Tomahawk Weapons Control System (TTWCS)</p> <p align="right">Articles:</p>	0.000 -	6.105 -	6.277 -	0.000 -	6.277 -
<p>FY 2023 Plans: FY 2023 plans include initial planning, and design/development and validation of new advanced computing hardware (HW) components with increased capacity/throughput, security measures, and software architecture that increases performance for fielded systems and is aligned/interoperable with future networking capabilities. Address development of automated software (SW) testing to reduce cycle time, improve quality, and enhance HW/SW for security engineering. Evaluate fielded systems for cyber threats, create impact assessments and mitigation plans, and develop suitable alternatives/roadmaps.</p> <p>FY 2024 Base Plans: FY 2024 plans include Fleet Release of v5.6.1, first series in 2Q FY 2024, and the continuation of planning, design/development, and validation of new advanced computing hardware (HW) components with increased capacity/throughput, security measures, kill chain improvements, integrated combat systems prototypes, and software architecture that increases performance for fielded systems (DevSecOps) and is aligned/interoperable with future networking capabilities. Prototype development of automated software (SW) testing to reduce cycle time and enhance HW/SW for security engineering, prototype hardware virtual twins, hardware surrogates/</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4036 / <i>TTWCS TMPC PPI</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
alternatives, and technology insertion. Continue evaluation of fielded systems for cyber threats, create impact assessments and mitigation plans, and develop suitable alternatives/roadmaps. Design system for virtualization of software, create investigation tools, processes, model-based system engineering, and architecture models to support automated testing. FY 2024 OCO Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: Increase in funding from FY 2023 to FY 2024 is due to inflation.					
Accomplishments/Planned Programs Subtotals	8.268	16.943	17.181	0.000	17.181

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN 5253: <i>Tomahawk Support Equipment</i>	87.147	92.270	92.432	-	92.432	97.568	101.907	98.099	96.886	Continuing	Continuing
• OPN 9020: <i>Initial and Vendor Direct Spares</i>	0.400	0.774	0.408	-	0.408	0.410	0.457	0.464	0.488	Continuing	Continuing

Remarks

D. Acquisition Strategy

TMPC and TTWCS use a combination of contracted and government laboratory facilities to integrate hardware and software updates to provide the planning, design/development, and validation of new advanced computing hardware (HW) components with increased capacity/throughput, security measures, kill chain improvements, integrated combat systems prototypes, and software architecture that increases performance for fielded systems (DevSecOps) and is aligned/interoperable with future networking capabilities that meet the requirement to service the Fleet with a lethal Tomahawk capability.

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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 / 7				PE 0204229N / Tomahawk Mssn Planning Ctr					4036 / TTWCS TMPC PPPI						
Product Development (\$ 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
TMPC 7.0	SS/CPFF	Perspecta : San Jose, CA	10.177	0.293	Dec 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TMPC 7.0	SS/CPFF	Tapestry : St. Louis, MO	0.428	0.097	Jan 2022	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TMPC 7.0	SS/CPFF	BAE Systems : San Diego, CA	2.390	0.097	Dec 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TMPC 7.0	SS/CPFF	Leidos : California, MD	11.270	1.426	Dec 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TMPC 7.0	SS/CPFF	UARC APL : Laurel, MD	1.106	0.105	May 2022	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TMPC 7.0	WR	NAWC-AD : Patuxent River, MD	6.055	0.296	Nov 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TMPC 8.0 (JMEWS)	SS/CPFF	Perspecta : San Jose, CA	1.743	0.687	Dec 2021	0.589	Dec 2022	0.601	Dec 2023	-		0.601	Continuing	Continuing	Continuing
TMPC 8.0 (JMEWS)	SS/CPFF	Tapestry : St. Louis, MO	2.111	0.610	Jan 2022	0.308	Jan 2023	0.314	Jan 2024	-		0.314	Continuing	Continuing	Continuing
TMPC 8.0 (JMEWS)	SS/CPFF	BAE Systems : San Diego, CA	1.321	0.916	Dec 2021	1.178	Dec 2022	1.201	Dec 2023	-		1.201	Continuing	Continuing	Continuing
TMPC 8.0 (JMEWS)	SS/CPFF	Leidos : California, MD	3.855	1.878	Dec 2021	1.980	Dec 2022	1.820	Dec 2023	-		1.820	Continuing	Continuing	Continuing
TMPC 8.0 (JMEWS)	SS/CPFF	UARC APL : Laurel, MD	1.288	0.584	May 2022	1.125	May 2023	1.148	May 2024	-		1.148	Continuing	Continuing	Continuing
TMPC 8.0 (JMEWS)	WR	NAWC-AD : Patuxent River, MD	1.673	1.004	Nov 2021	1.658	Nov 2022	1.300	Nov 2023	-		1.300	Continuing	Continuing	Continuing
Systems Engineering - TTWCS Improvements	WR	NSWC : Dahlgren, VA	1.705	0.000		1.989	Oct 2022	2.037	Nov 2023	-		2.037	Continuing	Continuing	Continuing
Systems Engineering- TTWCS Software Support Activity	SS/CPFF	LMVF : Valley Forge, PA	1.137	0.000		1.777	Dec 2022	1.814	Jan 2024	-		1.814	Continuing	Continuing	Continuing
Systems Engineering - TTWCS Hardware Support	WR	NSWC PHD : Port Hueneme	0.000	0.000		0.940	Dec 2022	1.363	Dec 2023	-		1.363	0.000	2.303	-

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4036 / TTWCS TMPC PPPI
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Product Development (\$ in Millions)				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			
Systems Engineering - TTWCS Software Support	WR	NUWC NPT : Newport, RI	0.000	0.000		0.685	Nov 2022	0.330	Nov 2023	-		0.330	0.000	1.015	-
Subtotal			46.259	7.993		12.229		11.928		-		11.928	Continuing	Continuing	N/A

Remarks
 TMPC 8.0 (JMEWS) Implements functionality to support JMEWS and additional M-Code capabilities. Aligns with PU 4033 and 4035.

 TTWCS Product Development funds to support to design/development and validation of new advanced computing hardware (HW) components with increased capacity/throughput, security measures, and software architecture that increases performance for fielded systems and is aligned/interoperable with future networking capabilities.

Support (\$ in Millions)				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			
TMPC 6.0	SS/CPFF	Perspecta : San Jose, CA	1.395	0.000		0.000		0.000		-		0.000	0.000	1.395	1.496
TMPC 6.0	SS/CPFF	Leidos : California, MD	2.909	0.000		0.000		0.000		-		0.000	0.000	2.909	1.717
TMPC 7.0	SS/CPFF	Leidos : California, MD	0.000	0.275	Dec 2021	0.175	Dec 2022	0.179	Dec 2023	-		0.179	0.000	0.629	-
TMPC 8.0	SS/CPFF	Leidos : California, MD	0.000	0.000		0.000		0.200	Dec 2023	-		0.200	0.000	0.200	-
TMPC Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.281	Dec 2023	-		0.281	0.000	0.281	-
PPPI Development Support	SS/CPFF	Precise : Lexington Park, MD	1.143	0.000		0.000		0.000		-		0.000	0.000	1.143	-
Subtotal			5.447	0.275		0.175		0.660		-		0.660	0.000	6.557	N/A

Remarks
 TMPC 7.0 Implements functionality to support Maritime Strike Tomahawk capability. Aligns with PU: 4034.
 TMPC Support increase from FY 2023 to FY 2024 to include funding for government labor at the field activities.
 TMPC 8.0 (JMEWS) Increase from FY 2023 to FY 2024 implements functionality to support JMEWS and additional M-Code capabilities. Aligns with PU 4033 and 4035.

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4036 / TTWCS TMPC PPPI
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Test and Evaluation (\$ in Millions)				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			
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	WR	NSWC PHD : Port Hueneme	0.390	0.000		0.000		0.000		-		0.000	0.000	0.390	-
Operational Test & Evaluation (OT&E)	C/CPFF	Perspecta : San Jose, CA	0.000	0.000		0.500	Dec 2022	0.503	Dec 2023	-		0.503	0.000	1.003	-
Operational Test & Evaluation (OT&E)	C/CPFF	Leidos : California, MD	0.000	0.000		1.825	Dec 2022	1.827	Dec 2023	-		1.827	0.000	3.652	-
Operational Test & Evaluation (OT&E)	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.500	Dec 2022	1.530	Dec 2023	-		1.530	0.000	3.030	-
Developmental Test & Evaluation (DT&E)	WR	NSWC PHD : Port Hueneme	0.000	0.000		0.714	Nov 2022	0.733	Nov 2023	-		0.733	0.000	1.447	-
Subtotal			0.390	0.000		4.539		4.593		-		4.593	0.000	9.522	N/A

Remarks
 TTWCS Developmental Test and Evaluation funds are required to support testing and prototyping of new hardware components to increase performance.
 TMPC Operation Test and Evaluation funding in FY 2024 supports PAT and DT/OT for TMPC 7.0 Maritime Strike Tomahawk and critical fixes to TMPC 7.0 support for Tomahawk Land Attack

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	52.096	8.268	16.943	17.181	-	17.181	Continuing	Continuing	N/A

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 4036 / TTWCS TMPC PPPI

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TMPC, TTWCS, P3I				
Acquisition Milestones: Milestones: TMPC 7.0 IOC	4	2024	4	2024
Acquisition Milestones: Milestones: TMPC 8.0 (JMEWS) IOC	4	2026	4	2026
Acquisition Milestones: Milestones: TTWCS v5.6.1.X Fleet Release (Land Attack)	2	2024	2	2024
Acquisition Milestones: Milestones: TTWCS v5.6.1.X Fleet Release (MST)	1	2025	1	2025
Acquisition Milestones: Milestones: TTWCS v5.6.1.X Fleet Release (MCODE)	4	2025	4	2025
Acquisition Milestones: Milestones: TTWCS v7.X Fleet Release	4	2027	4	2027
Systems Development: Software Development: TMPC 8.0 (JMEWS) SW Dev & Integration	1	2023	2	2025
Systems Development: Software Development: TMPC 8.0 (JMEWS) Requirements Definition	1	2022	4	2022
Systems Development: Software Development: TTWCS v7.X Design	3	2023	4	2023
Systems Development: Software Development: TTWCS v7.X SW Dev & Int	1	2024	4	2025
Reviews: Critical Design Reviews: TMPC 8.0 (JMEWS) System Requirements Review (SRR)	4	2022	4	2022
Reviews: Critical Design Reviews: TMPC 8.0 (JMEWS) Critical Design Review (CDR)	4	2024	4	2024
Reviews: Critical Design Reviews: TMPC 8.0 (JMEWS) Preliminary Design Review (PDR)	3	2023	3	2023
Reviews: Critical Design Reviews: TACTOM Preplanned Product Improvement (P3I) Cyber Improvements	1	2023	4	2028
Reviews: Test and Evaluation: TTWCS v5.6.1.X DT/OT	1	2022	2	2024
Reviews: Test and Evaluation: TTWCS v5.6.1.X Fix-it Build	3	2024	4	2024
Reviews: Test and Evaluation: TTWCS v7.X DT/OT	1	2024	3	2026

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 4036 / <i>TTWCS TMPC PPPI</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Reviews: Test and Evaluation: TMPC 7.0 Product Acceptance Testing Land Attack (PAT) & DT/OT	4	2022	2	2024
Reviews: Test and Evaluation: TMPC 8.0 (JMEWS) Product Acceptance Testing (PAT) & DT/OT	3	2025	4	2026
Reviews: Test and Evaluation: TMPC 7.0 Product Acceptance Testing MST (PAT) & DT/OT	3	2023	1	2025
Reviews: Test and Evaluation: TMPC 8.0 (JMEWS) Operational Test Readiness Review (OTRR)	3	2026	3	2026