Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604659N *I Precision Strike Weapons Development Program*							
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	230.257	78.493	89.513	84.734	-	84.734	7.900	6.907	6.611	6.579	Continuing	Continuing
3378: *Next Generation Strike Weapons*	35.638	7.231	2.877	2.787	-	2.787	2.987	3.003	3.043	3.096	Continuing	Continuing
3407: *Air Launched Decoy Development*	194.619	70.493	69.905	74.891	-	74.891	4.094	3.357	3.135	3.043	Continuing	Continuing
3409: *Advanced Aerial Refueling Store*	0.000	0.000	4.736	6.705	-	6.705	0.000	0.000	0.000	0.000	0.000	11.441
3411: *CAD/PAD Digital Twin Modeling*	0.000	0.769	0.761	0.351	-	0.351	0.819	0.547	0.433	0.440	Continuing	Continuing
3467: *Sea Launched Cruise Missile Nuclear*	0.000	0.000	5.234	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.234
9999: *Congressional Adds*	0.000	0.000	6.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.000
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 570												

Note

Project 3409 Advanced Aerial Refueling Store is a new start in FY 2022.

Project 3467 Sea Launched Cruise Missile - Nuclear is a new start in FY 2022.

A. Mission Description and Budget Item Justification

Initial and continuing development of strike weapons consisting of armament, munitions, and weapon subsystems to allow for horizontal integration among current and future weapon system capabilities to provide enhanced anti-surface and land strike capabilities in a demanding Anti-Access Area-Denial environment. This program provides for the development of weapon and weapon system technologies to address future requirements for enhanced and alternative weapon system capability requirements that include selectable output weapons, low collateral damage weapons, precision lethality weapons, area weapons, alternative warhead technology, Insensitive Munitions (IM), scaled munitions, Department of Defense (DoD) fuzing systems, sensors, extended range weapons, precision guided training rounds, aerial refueling, fuel containment, and technologies associated with cartridge actuated devices/propellant actuated devices.

PROJ 3378: Next Generation Strike Weapon (NGSW) Family of Systems (FoS) based on the NGLAW Analysis of Alternatives (AoA) completed with results briefed out to OSD. NGSW FoS more accurately reflects the surface/submarine capabilities for land-attack and maritime strike that the AoA results identified for the most capable and economic solutions fielding incrementally between 2020 and 2032. NGSW FoS Increments I and II will leverage mature as well as emerging technologies vice

developing a single weapon. NGSW funding will maintain the security environment (enclave), facility, and study team to enable continuing analysis efforts across the FoS. The NGSW enclave ensures the Navy is able to maintain the most up to date modeled threats and validate the effectiveness of current US weapons, offensive and defensive, as well as future systems and concepts developed by industry and other DoD organizations. Maintaining this capability allows expedited analysis of systems and fully informed investment decisions.

PROJ 3407: Air-launched electronic warfare (EW) systems capability; through the integration of a Navy variant of the Miniature Air Launched Decoy (MALD). EW is an integral war-fighting effect supporting combatant commander integrated priorities, as well as Joint or Coalition operations. EW systems influence, deceive, disrupt, degrade, deny and destroy threats throughout the electromagnetic spectrum to airborne and air-launched systems and their operations. EW includes air-launched electronic attack (EA) as well as elements of electronic support (ES) and electronic protection (EP). EA provides self-protection capabilities to other weapon systems through active and passive measures that deceive threats to airborne and air-launched systems and their operations by using kinetic and non-kinetic means to defeat threats that rely on the electromagnetic spectrum, Radio Frequency (RF), Electro-Optical (EO), Infrared (IR). The ES capabilities support the collection, analysis, and dissemination of information related to the detection, geo-location, characterization, and identification of threats to airborne and air-launched systems and their operations. An air-launched EW system with stand-in capability increases the range and duration of EW systems while providing flexibility to commanders for employment. MALD is integral to realizing the National Defense Strategy of combat-credible military forces to deter war, protect the security of our nation and to enable the Joint Force to win should deterrence fail. The development and acquisition of MALD has been structured to be fielded at a pace relevant to maintain overmatch against long-term strategic competition. Specifically MALD directly contributes to building a more lethal force and is a critical enabler for joint lethality in contested environments; deterring adversaries from aggression and evolves innovative operational concepts.

PROJ 3409: Development and fielding of the Advanced Aerial Refueling Store (AARS). The AARS effort is the result of an Operation Navy (OPNAV) Future Readiness Initiative (FRI) award. The AARS will package new technologies into this next generation Aerial Refueling Store (ARS) to support both manned and unmanned (automated) aerial refueling from platforms such as F/A-18 and MQ-25. In doing so, the AARS will facilitate tanking operations to both manned and unmanned receivers and improve safety of flight by stabilizing the aerial refueling drogue and incorporating better health and diagnostics. These improvements will be accomplished by providing updated store health message content and additional health monitoring Built-In Tests (BITS) that will be sent over the 1553 data-bus. The AARS will also add receiver and drogue position data for situational awareness and support autonomous receiver engagements of unmanned systems. This in turn will increase reliability and decrease aerial refueling mishaps, providing a significant safety and readiness improvement when compared with the current ARS.

PROJ 3411: Cartridge Actuated Device / Propellant Actuated Device (CAD/PAD) Digital Twin Modeling to develop and validate models and algorithms for the Department of the Navy (DoN). The development effort is specific to Navy Air Crew Common Ejection Seats (NACES). These models will also be used to support initial service life decisions, service life extension decisions, and address obsolescence.

PROJ 3467: This project will design, develop, produce and deploy a Nuclear-Armed Sea-Launched Cruise Missile (SLCM-N). SLCM-N is scoped to deliver an integrated flight system and to continue to advance SLCM-N capabilities to fully address requirements identified in the 2018 Nuclear Posture Review, SLCM-N Initial Capabilities Document, and examined in the Analysis of Alternatives to mitigate a lack of a sea based tactical nuclear based system.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604659N *I Precision Strike Weapons Development Program*

PROJ 9999: Neutron radiography (N-ray) is a critical nondestructive inspection technique used to complement X-ray. N-ray and X-ray are used to detect defects and proper assembly of a variety of energetics, including Cartridge and Propellant Actuated Devices (CAD/PADs). The US Navy intends to continue to employ neutron radiographic inspection to support energetics programs for the foreseeable future.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES because it includes all efforts necessary to evaluate integrated technologies, representative models or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	79.417	96.763	0.000	-	0.000
Current President's Budget	78.493	89.513	84.734	-	84.734
Total Adjustments	-0.924	-7.250	84.734	-	84.734
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-13.250			
• Congressional Rescissions	-	-			
• Congressional Adds	-	6.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	-1.181			
• SBIR/STTR Transfer	-0.924	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	1.181	0.000	-	0.000
• Adjustments to Budget Year	-	-	84.734	-	84.734

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Project: 9999: *Congressional Adds*		
Congressional Add: *Neutron radiography technologies for energetic devices*	0.000	6.000
Congressional Add Subtotals for Project: 9999	0.000	6.000
Congressional Add Totals for all Projects	0.000	6.000

Change Summary Explanation

PROJ 3407: Air Launched Decoy Development overall schedule was delayed from PB22 to PB23 by 12 months. Schedule delays are due to issues with fuselage redesign efforts and associated test events. Program reduced by $12.250M in FY22 for early to need.

PROJ 3409: FY22 contract awards have been delayed since the previous President's budget submission due to the projects being New Starts that cannot commence until approval of the FY22 Appropriations bill. Program reduced by $1.0M in FY22 for contract delays.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604659N *I Precision Strike Weapons Development Program*

PROJ 3411 CAD/PAD Digital Twin Modeling FY2023 funding request was reduced by $0.295M to account for the availability of prior year execution balances. Digital Twin Model development contract was delayed due to contract vehicle availability.

Proj 9999 FY22 $6.0M Congressional Add for Neutron radiography technologies for energetic devices.

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0604659N / *Precision Strike Weapons Development Program*				Project (Number/Name) 3378 / *Next Generation Strike Weapons*			
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
3378: *Next Generation Strike Weapons*	35.638	7.231	2.877	2.787	-	2.787	2.987	3.003	3.043	3.096	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 570

Note

Starting with the FY 2022 Budget Cycle, the description for Project Unit 3378 was changed from Next Generation Land Attack Weapon (NGLAW) to Next Generation Strike Weapon (NGSW)

A. Mission Description and Budget Item Justification

Funding is provided for the Next Generation Strike Weapon (NGSW) Family of Systems (FoS) based on the NGLAW Analysis of Alternatives (AoA) completed with results briefed out to OSD. NGSW FoS more accurately reflects the surface/submarine capabilities for land-attack and maritime strike that the AoA results identified for the most capable and economic solutions fielding incrementally between 2020 and 2032. NGSW FoS Increments I and II will leverage mature as well as emerging technologies vice developing a single weapon. NGSW funding will maintain the security environment (enclave), facility, and study team to enable continuing analysis efforts across the FoS. The NGSW enclave ensures the Navy is able to maintain the most up to date modeled threats and validate the effectiveness of current US weapons, offensive and defensive, as well as future systems and concepts developed by industry and other DoD organizations. Maintaining this capability allows expedited analysis of systems and fully informed investment decisions. Further funding supports investment for technologies which enable Increment II capabilities (additional details are held at a higher classification).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Next Generation Strike Weapon (NGSW)	7.231	2.877	2.787	0.000	2.787
Articles:	-	-	-	-	-
FY 2022 Plans: Continue annual enclave security and IT updates, annual DSS updates for latest threat data and ownship defense, multidomain assessment, expanding the US capabilities database, mission integration, and lifecycle cost estimate updates as applicable. In support of NGSW FoS and continued Offensive Anti-Surface Warfare (OASUW) analysis, continue to modify TACSITs and threat postures for air, surface and subsurface launched weapons, identify new launch points and concepts for employment, mission integration and cost estimate updates as applicable. Conduct Threat Updates and Threat modeling to include threat systems against US					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3378 / *Next Generation Strike Weapons*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
offensive and defensive systems to ensure the enclave remains fully informed to assist senior leadership in investment decisions. Initiate update to previous NGLAW AoA and generate draft report. ***FY 2023 Base Plans:*** Continue annual enclave security and IT updates, annual DSS updates for latest threat data and ownship defense, multidomain assessment, expanding the US capabilities database, mission integration, and lifecycle cost estimate updates as applicable. In support of NGSW FoS and continued Offensive Anti-Surface Warfare (OASUW) analysis, continue to modify TACSITs and threat postures for air, surface and subsurface launched weapons, identify new launch points and concepts for employment, mission integration and cost estimate updates as applicable. Conduct Threat Updates and Threat modeling to include threat systems against US offensive and defensive systems to ensure the enclave remains fully informed to assist senior leadership in investment decisions. Initiate update to previous NGLAW AoA and generate draft report. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY22 to FY23 decrease is due to the completion of the OASUW analysis.					
Accomplishments/Planned Programs Subtotals	7.231	2.877	2.787	0.000	2.787

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

NGSW FoS more accurately reflects the multi-domain capabilities for land-attack and maritime strike that the NGLAW AoA results identified for the most capable and economic solutions fielding incrementally between 2020 and 2032. NGSW FoS Increments I and II will leverage mature as well as emerging technologies vice developing a single weapon. NGSW funding will maintain the security environment (enclave), facility, and study team to enable continuing analysis efforts across the FoS. The NGSW enclave ensures the Navy is able to maintain the most up to date modeled threats and validate the effectiveness of current US weapons, offensive and defensive, as well as future systems and concepts developed by industry and other DoD organizations. Maintaining the enclave allows expedited analysis of systems and fully informed investment decisions.

NGSW FoS funding will support Increment II development of technologies to enable capabilities identified in the NGLAW AoA for integration in future systems. Additional details are held at a higher classification.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3378 / *Next Generation Strike Weapons*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
INC II Technologies	C/CPFF	TBD : TBD	0.000	1.994	Jul 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
FMB withhold	TBD	TBD : TBD	10.900	0.000		0.000		0.000		-		0.000	0.000	10.900	-
		Subtotal	10.900	1.994		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

Development of technologies/components to support NGSW Increment II capabilities for integration in future systems. Additional details are held at a higher classification.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NAWC-WD : China Lake, CA	2.475	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Development Support- AIR 4.0M	WR	NAWC-AD : Patuxent River, MD	3.114	0.078	Jan 2021	0.121	Jan 2022	0.055	Jan 2023	-		0.055	Continuing	Continuing	Continuing
Development Support	SS/CPFF	JHU/APL : Laurel, MD	6.304	3.585	Mar 2021	2.276	Mar 2022	0.367	Mar 2023	-		0.367	Continuing	Continuing	Continuing
Weapons Control System	WR	NSWC-DD : Dahlgren, VA	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	Continuing
Development Support	WR	NSMA : JBAB, DC	11.242	1.379	Mar 2021	0.350	Mar 2022	2.270	Mar 2023	-		2.270	0.000	15.241	Continuing
Development Support	MIPR	NRO : Chantilly, VA	0.569	0.000		0.000		0.000		-		0.000	0.000	0.569	Continuing
Development Support	WR	NSWC-NPT : Newport, RI	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	Continuing
Development Support	C/CPFF	SSP : WNY, DC	0.700	0.000		0.000		0.000		-		0.000	0.000	0.700	-
		Subtotal	24.504	5.042		2.747		2.692		-		2.692	Continuing	Continuing	N/A

Remarks

Annual enclave updates, annual DSS updates, multi-domain assessment, mission integration, support OASUW analysis, conduct SLCM-N AoA study and initiate update to previous NGLAW AoA.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3378 / *Next Generation Strike Weapons*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support	WR	NAWC-AD : Patuxent River, MD	0.234	0.195	Jan 2021	0.130	Jan 2022	0.095	Jan 2023	-		0.095	Continuing	Continuing	Continuing
		Subtotal	0.234	0.195		0.130		0.095		-		0.095	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	35.638	7.231		2.877		2.787		-		2.787	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3378 / *Next Generation Strike Weapons*

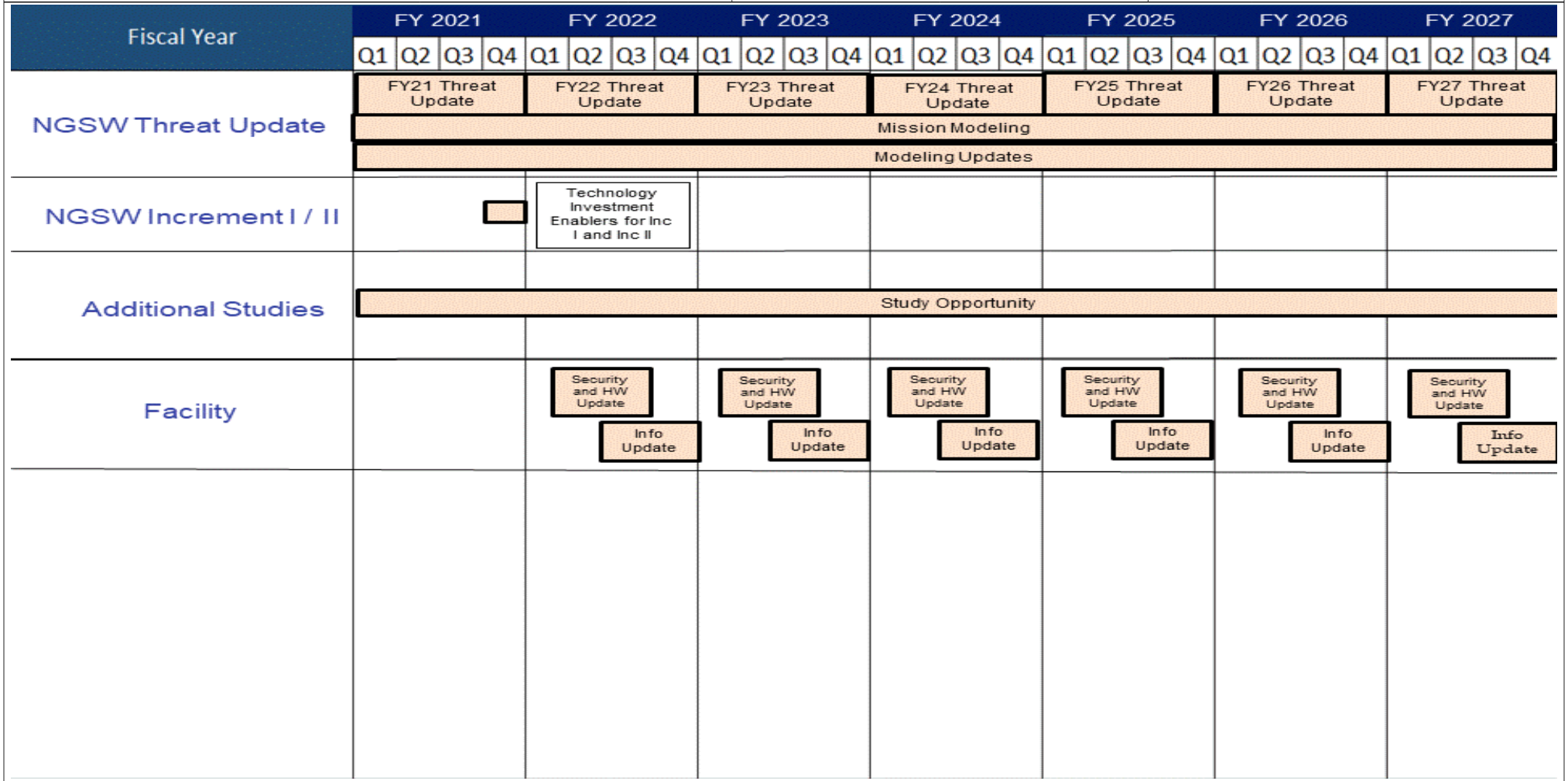


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3378 / *Next Generation Strike Weapons*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Next Generation Strike Weapon				
NGSW Threat Updates: NGSW FY21 Threat Update	1	2021	4	2021
NGSW Threat Updates: NGSW FY22 Threat Update	1	2022	4	2022
NGSW Threat Updates: NGSW FY23 Threat Update	1	2023	4	2023
NGSW Threat Updates: NGSW FY24 Threat Update	1	2024	4	2024
NGSW Threat Updates: NGSW FY25 Threat Update	1	2025	4	2025
NGSW Threat Updates: NGSW FY26 Threat Update	1	2026	4	2026
NGSW Threat Updates: NGSW FY27 Threat Update	1	2027	4	2027
NGSW Threat Updates: NGSW Threat Updates Mission Modeling	1	2021	4	2027
NGSW Threat Updates: NGSW Threat Updates Modeling Updates	1	2021	4	2027
NGSW Increment I/II: Technology Investment Enablers for INC I / INC II Capabilities	4	2021	4	2021
Additional Studies: Study Opportunity	1	2021	4	2027
Additional Studies: Weapon/Platform Tradespace Analysis	1	2021	4	2021
Additional Studies: NGLAW AoA Update	1	2022	4	2022
Facility: FY 22 Security and HW Update	2	2022	3	2022
Facility: FY 22 Info Update	3	2022	4	2022
Facility: FY 23 Security and HW Update	2	2023	2	2023
Facility: FY 23 Info Update	3	2023	3	2023
Facility: FY 24 Security and HW Update	2	2024	2	2024
Facility: FY 24 Info Update	3	2024	3	2024
Facility: FY 25 Security and HW Update	2	2025	2	2025
Facility: FY 25 Info Update	3	2025	3	2025

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3378 / *Next Generation Strike Weapons*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Facility: FY 26 Security and HW Update	2	2026	2	2026
Facility: FY 26 Info Update	3	2026	3	2026
Facility: FY 27 Security and HW Update	2	2027	2	2027
Facility: FY 27 Info Update	3	2027	3	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604659N / *Precision Strike Weapons Development Program*	Project (Number/Name) 3407 / *Air Launched Decoy Development*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3407: *Air Launched Decoy Development*	194.619	70.493	69.905	74.891	-	74.891	4.094	3.357	3.135	3.043	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops a Navy variant of the Miniature Air Launched Decoy (MALD). The variant will address current and future advanced Integrated Air Defense System (IADS) threats by bringing an air-launched, stand-in EW capability to Department of the Navy (DON) suppression of enemy air defenses/destruction of enemy air defenses (SEAD/DEAD) and standoff conventional land strike. A Navy variant of MALD with stand-in capability increases the range and duration of EW systems while providing flexibility to commanders for employment. To the maximum extent possible, the Navy will utilize existing technology from the current MALD-J production line and other common components (e.g. navigation, communication, guidance and control, payload) to reduce cost, shorten development timelines and promote interoperability. OPNAV approved requirements in a Capability Development Document (CDD) 2Q2018.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Miniature Air Launched Decoy (MALD)	70.493	69.905	74.891	0.000	74.891
Articles:	-	-	-	-	-
FY 2022 Plans: FY 2022 builds upon the FY 2021 EMD. FY 2022 will support powered launch, payload software development and fuselage redesign. FY 2022 will complete EMD through Test Readiness Review in support of Free Flight test events and fuselage redesign through Design Verification Test (DVT AF).					
FY 2023 Base Plans: FY 2023 continues FY 2022 EMD. FY 2023 will complete Operational Assessment test events to support production decision. FY 2023 will complete powered launch and payload software, while continuing fuselage redesign.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The FY 2022 to FY 2023 increase of $4.986M is due to the increase required for fuselage redesign developmental efforts.					
Accomplishments/Planned Programs Subtotals	70.493	69.905	74.891	0.000	74.891

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3407 / *Air Launched Decoy Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• WPN/2285: *Drones and Decoys*	19.956	30.321	62.930	-	62.930	139.726	82.693	85.025	85.610	241.799	748.060

Remarks

BLI 2285 FY2021 enacted Funding is $0M.

D. Acquisition Strategy

The MALD-N Acquisition Category (ACAT) II program is an evolution from the previous United States Air Force (USAF) MALD-J program and is managed by Program Executive Office, Unmanned Aviation & Strike Weapons (PEO(U&W)), PMA-201 Precision Strike Weapons Program Office. PEO(U&W) has been delegated Milestone Decision Authority (MDA) and chairs quarterly Executive Steering Boards which ensure timely communications. MALD-N is being implemented as a Model 4 acquisition program. The MALD-N program will use event-driven "Knowledge Points" (KP) at key program strategic inflection points to brief progress to stakeholders throughout the program life-cycle. The program met the statutory requirements associated with Milestone B at Knowledge Point 2 (1Q FY2019). With the removal of FY 2020 production funding, a Quick Reaction Assessment (QRA) to support an FY 2021 Early Operational Capability (EOC) will not be conducted. The MALD-N program will continue to progress towards Initial Operational Capabilities (IOC) which will be achieved through integrated test commencing in FY2022, followed by Initial Operational Test and Evaluation (IOT&E) in FY2024, with asset delivery in FY2025. MALD-N will use a capabilities-based acquisition approach to characterize performance and evolve an IOC system for Fleet integration.

MALD is integral to realizing the National Defense Strategy of combat-credible military forces to deter war, protect the security of our nation and to enable the Joint Force to win should deterrence fail. The development and acquisition of MALD has been structured to be fielded at a pace relevant to maintain overmatch against long-term strategic competition. Specifically MALD supports greater performance of the acquisition system and is demonstrating the delivery of performance at the speed of relevance; organizational structure that supports innovation with a rapid approach that dramatically decreases the timeline from development to fielding.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3407 / *Air Launched Decoy Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	SS/CPIF	Raytheon Missle Systems : Tucson, AZ	130.338	47.485	Jan 2021	28.768	Nov 2021	46.176	Nov 2022	-		46.176	0.000	252.767	252.767
		Subtotal	130.338	47.485		28.768		46.176		-		46.176	0.000	252.767	N/A

Remarks

FY 2023 Product Development increase reflects the scope addition of the fuselage redesign effort.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Support	WR	NAWC AD : Patuxent River, MD	14.233	2.500	Nov 2020	3.291	Nov 2021	2.500	Nov 2022	-		2.500	Continuing	Continuing	Continuing
Government Support	WR	NAWC WD : China Lake, CA	19.858	5.845	Nov 2020	9.701	Nov 2021	3.797	Nov 2022	-		3.797	Continuing	Continuing	Continuing
Government Support	WR	NAWC WD : Point Mugu, CA	7.969	2.036	Nov 2020	3.311	Nov 2021	0.549	Nov 2022	-		0.549	Continuing	Continuing	Continuing
Government Support	WR	NSMA : Patuxent River, MD	0.000	5.316	Nov 2020	4.276	Nov 2021	1.500	Nov 2022	-		1.500	Continuing	Continuing	Continuing
Various	Various	Various : Various	0.000	1.813	Nov 2020	3.322	Nov 2021	1.318	Nov 2022	-		1.318	Continuing	Continuing	Continuing
Aircraft Integration Support	SS/CPIF	Boeing : Not Specified	0.000	0.000		2.500	Dec 2021	0.000		-		0.000	0.000	2.500	-
		Subtotal	42.060	17.510		26.401		9.664		-		9.664	Continuing	Continuing	N/A

Remarks

Support costs update made from PB22 reflects new and updated cost break outs of performing activities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3407 / *Air Launched Decoy Development*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Support	WR	NAWC AD : Patuxent River, MD	12.593	1.900	Nov 2020	2.113	Nov 2021	6.513	Nov 2022	-		6.513	Continuing	Continuing	Continuing
Government Support	WR	NAWC WD : China Lake, CA	6.700	1.785	Nov 2020	8.974	Nov 2021	10.427	Nov 2022	-		10.427	Continuing	Continuing	Continuing
Goverment Support	WR	Eglin AFB : Eglin, FL	0.000	1.209	Nov 2020	2.239	Nov 2021	1.041	Nov 2022	-		1.041	Continuing	Continuing	Continuing
Government Support	WR	Various : Various	0.000	0.000	Nov 2020	0.030	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	19.293	4.894		13.356		17.981		-		17.981	Continuing	Continuing	N/A

Remarks

Test and Evaluation update made from PB22 reflects delayed test events due to fuselage redesign efforts that need to be completed prior to test occurrence. NAWC AD and NAWC WD test support increases in FY 2023 to support aircraft integration testing to evaluate the new fuselage.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Support	WR	NAWC AD : Patuxent River, MD	1.397	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Government Support	WR	NAWC WD : China Lake, CA	0.597	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Project Management Support	C/CPFF	NAWC AD : Patuxent River, MD	0.724	0.600	Mar 2021	1.350	Nov 2021	1.050	Nov 2022	-		1.050	Continuing	Continuing	Continuing
Travel	Various	NAVAIR : Patuxent River, MD	0.210	0.004	Nov 2020	0.030	Nov 2021	0.020	Nov 2022	-		0.020	Continuing	Continuing	Continuing
		Subtotal	2.928	0.604		1.380		1.070		-		1.070	Continuing	Continuing	N/A

Remarks

Management Services updates from PB22 reflect funds realignment to Support cost for appropriate categorization.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	194.619	70.493		69.905		74.891		-		74.891	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604659N / *Precision Strike Weapons Development Program*	Project (Number/Name) 3407 / *Air Launched Decoy Development*	

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3407 / *Air Launched Decoy Development*

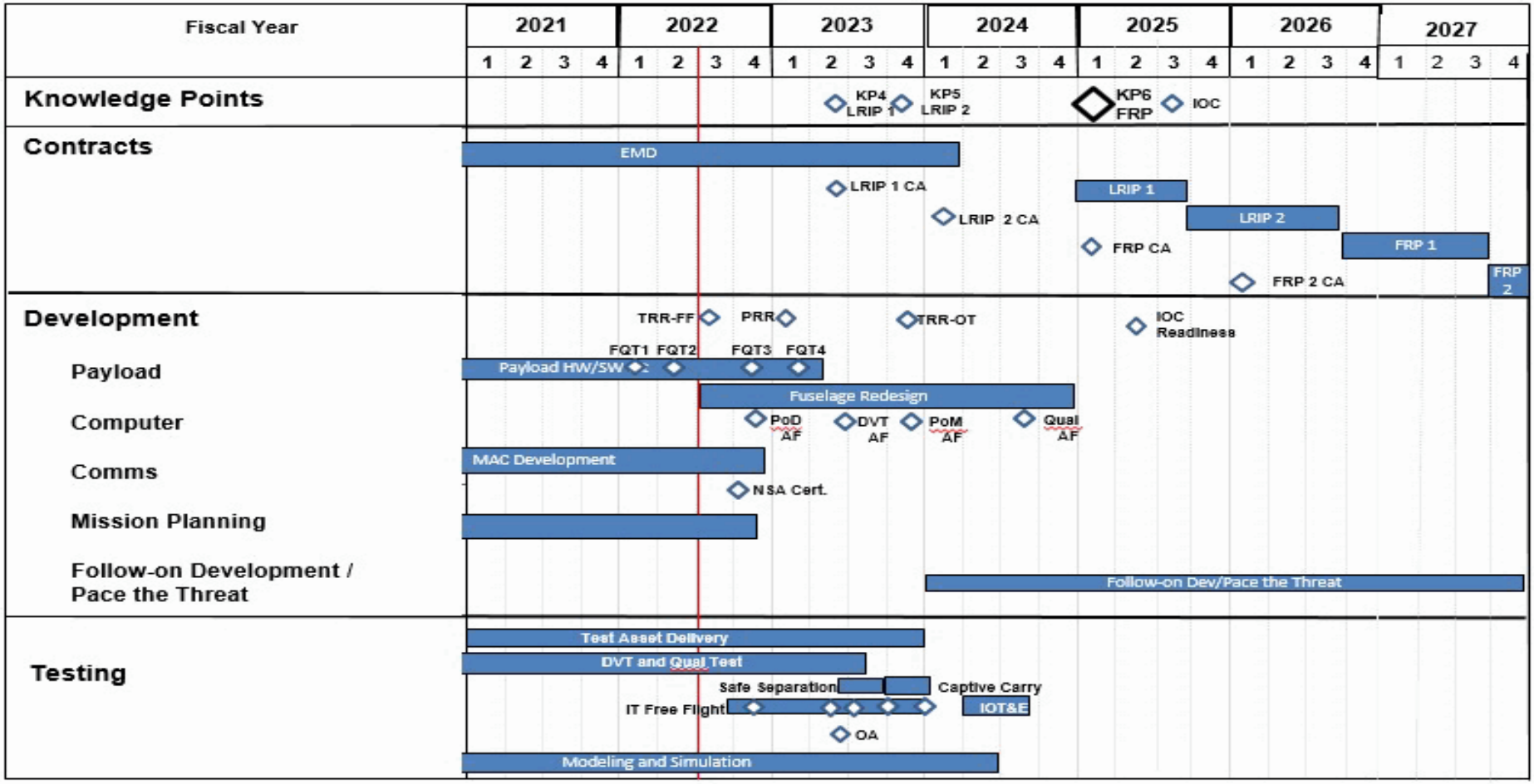


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3407 / *Air Launched Decoy Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Miniature Air Launched Decoy				
Milestones: KP4 LRIP 1 Decision	2	2023	2	2023
Milestones: KP5 LRIP 2 Decision	4	2023	4	2023
Milestones: KP6 Full Rate Production	1	2025	1	2025
Milestones: Initial Operational Capablity	3	2025	3	2025
Product Development: Contract Award: EMD Contract	1	2021	2	2024
Product Development: Contract Award: LRIP 1 Contract Award	2	2023	2	2023
Product Development: Contract Award: LRIP 2 Contract Award	1	2024	1	2024
Product Development: Contract Award: FRP 1 Contract Award	1	2025	1	2025
Product Development: Contract Award: FRP 2 Contract Award	1	2026	1	2026
Product Development: Contract Award: LRIP 1 Deliveries	1	2025	3	2025
Product Development: Contract Award: LRIP 2 Deliveries	4	2025	3	2026
Product Development: Contract Award: FRP 1 Deliveries	4	2026	3	2027
Product Development: Contract Award: FRP 2 Deliveries	4	2027	4	2027
Product Development: Product Development: Payload HW/SW	1	2021	2	2023
Product Development: Product Development: Fuselage Redesign	3	2022	4	2024
Product Development: Product Development: MAC Development	1	2021	4	2022
Product Development: Product Development: Mission Planning	1	2021	4	2022
Product Development: Product Development: Follow-on Development	1	2024	4	2027
Product Development: Product Development: PRR	1	2023	1	2023
Product Development: Product Development: TRR-FF	3	2022	3	2022
Product Development: Product Development: TRR-OT	4	2023	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3407 / *Air Launched Decoy Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Product Development: Product Development: IOC Readiness	2	2025	2	2025
Product Development: Product Development: PoD AF	4	2022	4	2022
Product Development: Product Development: DVT AF	2	2023	2	2023
Product Development: Product Development: PoM AF	4	2023	4	2023
Product Development: Product Development: Qual AF	3	2024	3	2024
Product Development: Product Development: FQT1	1	2022	1	2022
Product Development: Product Development: FQT2	2	2022	2	2022
Product Development: Product Development: FQT3	4	2022	4	2022
Product Development: Product Development: FQT4	1	2023	1	2023
Product Development: Product Development: NSA Cert	4	2022	4	2022
Test and Evaluation: Modeling and Simulation	1	2021	2	2024
Test and Evaluation: DVT and Qual Test	1	2021	3	2023
Test and Evaluation: Operational Assessment	2	2023	2	2023
Test and Evaluation: IOT&E	2	2024	3	2024
Test and Evaluation: Test Asset Delivery	1	2021	4	2023
Test and Evaluation: IT Free Flight	3	2022	4	2023
Test and Evaluation: Free Flight 1	4	2022	4	2022
Test and Evaluation: Free Flight 2	2	2023	2	2023
Test and Evaluation: Free Flight 3	3	2023	3	2023
Test and Evaluation: Free Flight 4	4	2023	4	2023
Test and Evaluation: Free Flight 5	1	2024	1	2024
Test and Evaluation: Safe Separation	2	2023	3	2023
Test and Evaluation: Captive Carry	4	2023	1	2024

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604659N / *Precision Strike Weapons Development Program*	Project (Number/Name) 3409 / *Advanced Aerial Refueling Store*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3409: *Advanced Aerial Refueling Store*	0.000	0.000	4.736	6.705	-	6.705	0.000	0.000	0.000	0.000	0.000	11.441
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced Aerial Refueling Store (AARS) is a collection of modifications to individual Aerial Refueling Store (ARS) components that will improve performance and readiness. The ARS updates will package new technologies into the existing store that will support both manned and unmanned (automated) aerial refueling from platforms such as the F/A-18 and MQ-25. These technologies include drogue stabilization, drogue positioning sensors, advanced health and diagnostic capability and real time receiver situational awareness for the unmanned mission operator. These updates will increase safety of flight, facilitate unmanned tanking operations to both manned and unmanned receivers and improve overall ARS reliability.

The Digital Controller Upgrade (DCU) with Optical Reference System (ORS) is a hardware and software update to existing components which will provide increased flight safety through monitoring/diagnostic capabilities and enhanced situational awareness to reduce mission aborts. Drogue Stabilization incorporates hardware and software updates to improve the Aerial Refueling Stores ability to hold the drogue in position for refueling actions, and also improve the ability for the receiving platform to maneuver into position for refueling which decreases the risk of refueling mishaps, reduces mission aborts which improves operational efficiency and safety. Hydraulic System Improvements will update hardware to increase hydraulic efficiency by eliminating high failure rate components, improving fuel offload and reducing power demands on the Ram Air Turbine (RAT).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Advanced Aerial Refueling Store	0.000	4.736	6.705	0.000	6.705
Articles:	-	-	-	-	-
FY 2022 Plans: FY 2022 funding will begin modifications to improve the existing Aerial Refueling Stores. Funding provided for the development and testing includes the development of drawings and specifications for prototypes. Efforts include Hydraulic Systems improvements, the Digital Controller Upgrade (DCU) with Optical Reference System (ORS) and Drogue Stabilization.					
FY 2023 Base Plans: FY 2023 funding will continue modifications to improve the existing Aerial Refueling Stores. Funding provided for the development and testing includes the development of drawings and specifications for prototypes. Efforts					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3409 / *Advanced Aerial Refueling Store*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
include Hydraulic Systems improvements, the Digital Controller Upgrade (DCU) with Optical Reference System (ORS, Drogue Stabilization and Software Qualification. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY2022 - FY2023 increase ($1.969M) due to the scheduled Software Qualification event to qualify the Prototype AARS. Additional funds also required for the completion of the Digital Controller Upgrade and Hydraulic Systems improvements.					
Accomplishments/Planned Programs Subtotals	0.000	4.736	6.705	0.000	6.705

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• APN/0720: *War Consumables*	40.553	42.496	40.316	-	40.316	46.638	50.176	54.309	55.513	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Advanced Aerial Refueling Store (AARS) development program will mature and integrate modifications to improve the existing Aerial Refueling Store (ARS). The Advanced Aerial Refueling Store (AARS) program will develop, prototype and test the next generation Aerial Refueling Store (ARS) utilizing a hybrid program structure to capitalize on existing technologies that can be incorporated into the existing ARS to improve reliability and readiness while also increasing safety during refueling. The AARS technologies will be fielded as a series of individual modifications to the ARS.

The ARS improvement program will center on the Digital Controller Upgrade (DCU). The DCU utilizes government owned software and hardware to command and control the refueling store. The remainder of the AARS upgrades will be built around this government owned DCU. Based on current technology assessments, the program anticipates incorporating an Optical Reference System into the DCU to improve performance and reduce risk during refueling. Additional technologies that will be evaluated include drogue stabilization sensors, positioning, improved health and diagnostics and real time receiver situational awareness for unmanned mission operators.

The program will use regular technical interchanges to coordinate with F/A-18 and MQ-25 platforms to maximize effectiveness of the technology upgrades across both manned and unmanned environments.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3409 / *Advanced Aerial Refueling Store*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Digital Controller Upgrade Dev & Int	SS/CPFF	CTSi : Lakehurst, NJ	0.000	0.000		2.000	Apr 2022	1.218	Apr 2023	-		1.218	0.000	3.218	3.052
Government Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.736	Apr 2022	1.500	Nov 2022	-		1.500	0.000	2.236	-
Hydraulic System Improvements Developmen	TBD	TBD : Patuxent River, MD	0.000	0.000		0.000		1.237	Feb 2023	-		1.237	0.000	1.237	-
Drogue Stabilization Development	SS/CPFF	AMA : Lakehurst, NJ	0.000	0.000		1.000	Apr 2022	1.750	Apr 2023	-		1.750	0.000	2.750	2.750
		Subtotal	0.000	0.000		3.736		5.705		-		5.705	0.000	9.441	N/A

Remarks

FY2022 - FY2023 increase due to the scheduled Software Qualification event to qualify the Prototype AARS. Additional funds also required for the completion of the Digital Controller Upgrade and Hydraulic Systems improvements. Contract award has been delayed since the previous President's Budget submission due to the project being a New Start that cannot commence until approval of the FY22 Appropriations Bill.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation Support	WR	NAWCAD Pax : Patuxent River, MD	0.000	0.000		1.000	Apr 2022	1.000	Apr 2023	-		1.000	0.000	2.000	-
		Subtotal	0.000	0.000		1.000		1.000		-		1.000	0.000	2.000	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		4.736		6.705		-		6.705	0.000	11.441	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3409 / *Advanced Aerial Refueling Store*

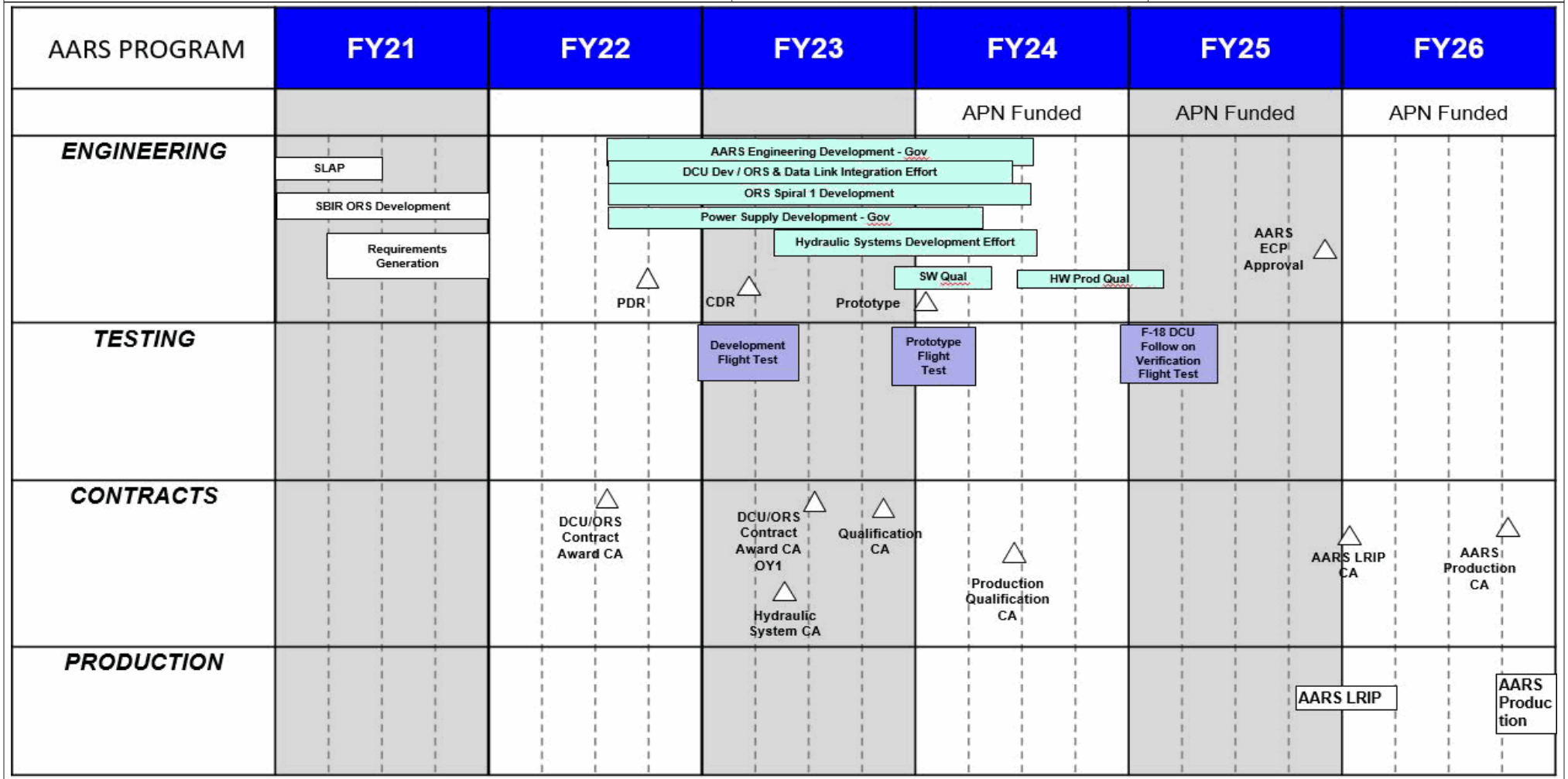


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3409 / *Advanced Aerial Refueling Store*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3409				
AARS Development: AARS Engineering Development - Gov	3	2022	3	2024
AARS Development: DCU/ORS/DL Integration	3	2022	2	2024
AARS Development: ORS Spiral 1 Development	3	2022	3	2024
AARS Development: Power Supply Development	3	2022	2	2024
AARS Development: Hydraulic System Upgrade Development	2	2023	3	2024
AARS Development: Software Qualification	4	2023	2	2024
AARS Development: Hardware Production Qualification	2	2024	1	2025
AARS Development: PDR	3	2022	3	2022
AARS Development: CDR	1	2023	1	2023
AARS Development: Prototype	1	2024	1	2024
AARS Development: AARS ECP Approval	4	2025	4	2025
Testing: Development Flight Test	4	2022	2	2023
Testing: Prototype Flight Test Validation	4	2023	2	2024
Testing: F-18 DCU Follow Verification Flight Test	4	2024	2	2025
Contracts: DCU/ORS Contract Award	3	2022	3	2022
Contracts: Hydraulic System Upgrade Contract Award	2	2023	2	2023
Contracts: DCU/ORS Contract Award OY1	3	2023	3	2023
Contracts: Qualification Contract Award	4	2023	4	2023
Contracts: Production Qualification Contract Award	2	2024	2	2024
Contracts: AARS LRIP CA	1	2026	1	2026
Contracts: AARS Production CA	4	2026	4	2026

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604659N / *Precision Strike Weapons Development Program*	Project (Number/Name) 3411 / *CAD/PAD Digital Twin Modeling*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3411: *CAD/PAD Digital Twin Modeling*	0.000	0.769	0.761	0.351	-	0.351	0.819	0.547	0.433	0.440	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Cartridge Actuated Devices/ Propellant Actuated Devices (CAD/PAD) Digital Twin Modeling will develop and validate models and algorithms for the Department of the Navy (DoN). Digital Twin is a software model that predicts service life of a components' energetic material. This will be used to move towards a Condition Based Maintenance Model vice restrictive service life. The development will be phased over three efforts, specific to Navy AirCrew Common Ejection Seats (NACES). These models will be used as a starting point for a condition based service life for CAD/PAD. A condition based service life will result in long term cost savings for the DoN by enabling CAD/PAD to be installed for full useful service life. These models will also be used to support initial service life decisions, service life extension decisions, and address obsolescence.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: CAD/PAD Digital Twin Modeling	0.769	0.761	0.351	0.000	0.351
Articles:	-	-	-	-	-
FY 2022 Plans: Continue to develop software and integrating digital twin model into additional Navy or tri-service aviation platforms. Additional loggers to be added and installed into aircraft for further refinement of digital twin model and support of surveillance testing efforts.					
FY 2023 Base Plans: Continue to develop software and integrating digital twin model into additional Navy or tri-service aviation platforms.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: Funds decrease from FY 2022 to FY 2023 due to less support required after completion of initial validation efforts of the Digital Twin model ($0.41M).					
Accomplishments/Planned Programs Subtotals	0.769	0.761	0.351	0.000	0.351

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3411 / *CAD/PAD Digital Twin Modeling*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PANMC/0180: *CARTRIDGE ACTUATED DEVICES/ PROPELLANT ACT DEVICES*	67.190	70.876	72.534	-	72.534	73.966	75.821	77.207	78.919	Continuing	Continuing

Remarks

The software development for CAD/PAD products to support inventory objectives by transitioning to condition based maintenance. Recent investigations into life cycle cost savings, safety mitigation and reliability of products indicate that a substantial costs savings could be realized, address obsolescence, as well as improve readiness.

D. Acquisition Strategy

Culmen International, LLC has a proven methodology to develop computer models (digital twin) relevant to the thermal loading CAD/PAD items are subjected to. A contract will be awarded to Culmen International, LLC to develop a digital twin using their proprietary software, Tru Navigator. The Tru Navigator software will use as its input, key areas of degradation to CAD/PAD items (temperature, humidity, shock, vibration and thermal cycling) and its output will be the cumulative degradation to the CAD/PAD item. Additional technologies and associated vendors will also be evaluated as necessary.

All other efforts; procurement of CAD/PAD test items, test and evaluation, and model validation will be sourced using competitive contracting strategies.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3411 / *CAD/PAD Digital Twin Modeling*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	SS/CPIF	Culmen International : Alexandria, VA	0.000	0.469	Oct 2021	0.661	May 2022	0.251	Feb 2023	-		0.251	Continuing	Continuing	Continuing
		Subtotal	0.000	0.469		0.661		0.251		-		0.251	Continuing	Continuing	N/A

Remarks

Phase 1 contract to validate Digital Twin Model using proprietary software.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Support	WR	NSWC : Indian Head	0.000	0.300	May 2021	0.100	Mar 2022	0.100	Feb 2023	-		0.100	Continuing	Continuing	Continuing
		Subtotal	0.000	0.300		0.100		0.100		-		0.100	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.769		0.761		0.351		-		0.351	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3411 / *CAD/PAD Digital Twin Modeling*

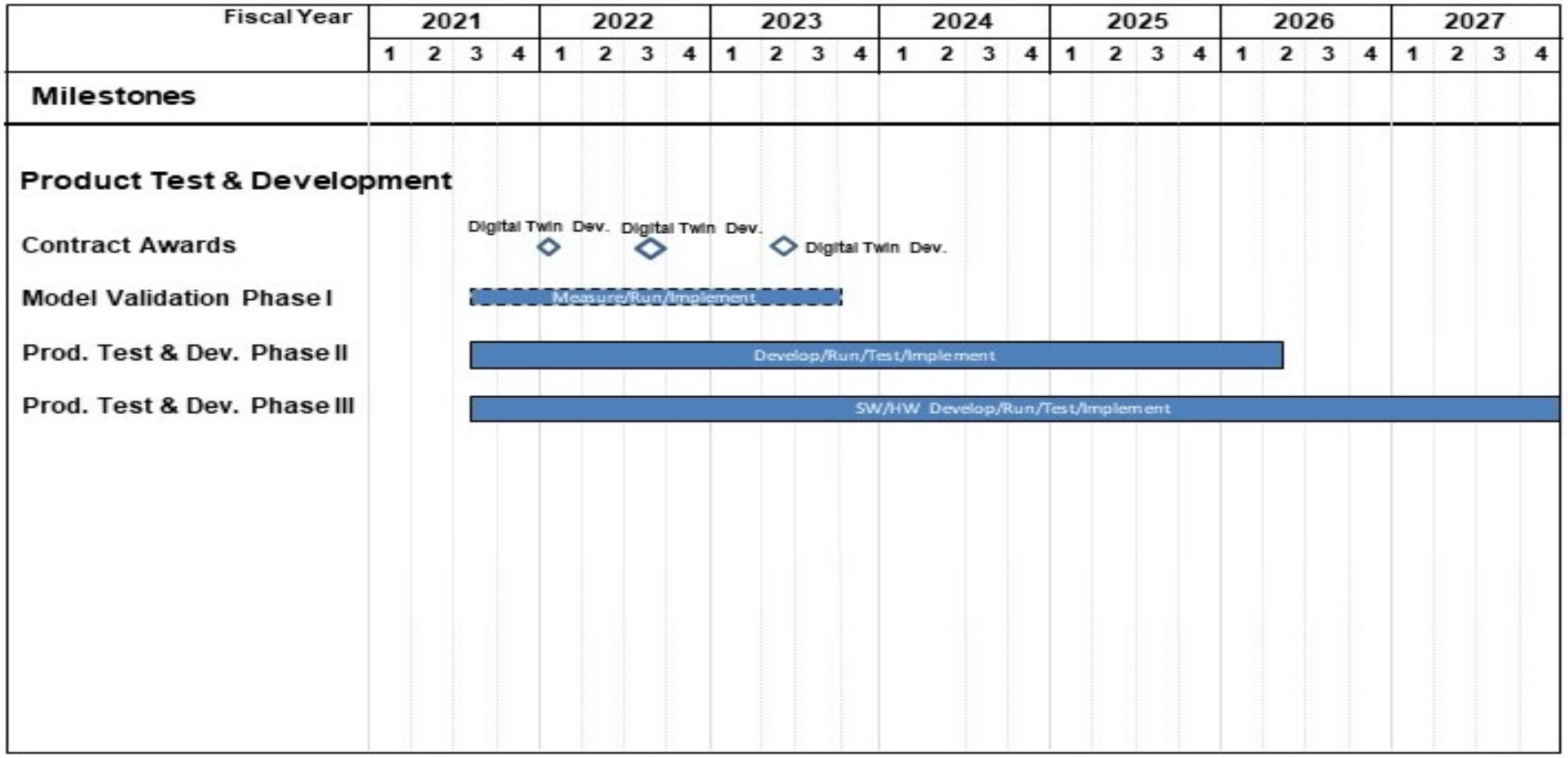


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3411 / *CAD/PAD Digital Twin Modeling*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CAD/PAD Digital Twin Modeling				
Product Development: Contract Awards: FY21 Culmen International Contract Award	1	2022	1	2022
Product Development: Contract Awards: FY22 Culmen International Contract Award	3	2022	3	2022
Product Development: Contract Awards: FY23 Culmen International Contract Award	2	2023	2	2023
Product Development: Model Validation Phase I: Model Validation Phase I	3	2021	3	2023
Product Development: Product Test and Development Phase II: Product Test and Development Phase II	3	2021	2	2026
Product Development: Product Test and Development Phase III: Product Test and Development Phase III	3	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604659N / *Precision Strike Weapons Development Program*	Project (Number/Name) 3467 / *Sea Launched Cruise Missile Nuclear*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3467: *Sea Launched Cruise Missile Nuclear*	0.000	0.000	5.234	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.234
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Project 3467 Sea Launched Cruise Missile - Nuclear is a new start in FY 2022.

A. Mission Description and Budget Item Justification

This project will design, develop, produce and deploy a Nuclear-Armed Sea-Launched Cruise Missile (SLCM-N). SLCM-N is scoped to deliver an integrated flight system and to continue to advance SLCM-N capabilities to fully address requirements identified in the 2018 Nuclear Posture Review, SLCM-N Initial Capabilities Document, and examined in the Analysis of Alternatives to mitigate a lack of a sea based tactical nuclear based system.

The major activities in the SLCM-N program include 1) Flight System (FS); 2) Weapon System Command and Control (WSC2); 3) Infrastructure [e.g. Launch Vessel (LV) and Launch Control Centers (LCC)]; 4) Weapon System Integration. Flight System is an integrated system which includes the following major subcomponents: propulsion, guidance, and warhead systems. WSC2 encompasses all weapon system Command and Control (C2) components and interfaces, associated shipboard hardware, shipboard fire control equipment and associated software directly related to the sustainment, survivability, monitoring and launch of the flight system. Infrastructure includes modernization of launch vessels, real property and structures, and associated ground mechanical systems. The SLCM-N program will include development of applicable support equipment, data, flight test hardware and infrastructure, and training material.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: SLCM-N	0.000	5.234	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans: Continue concept refinement to include development of a functional architecture that supports the nuclear weapon surety rules, technology analyses, modeling and simulation support, engineering studies, program cost and schedule estimation, acquisition strategy development, risk reduction efforts, initial requirements definition, and associated acquisition documentation. Analyze, select, and assess cruise missile propulsion technologies, air frames, and associated components to support SLCM-N flight requirements. Conduct technology development and concept analysis and design efforts to identify areas for warhead integration to support SLCM-N trade space considerations.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3467 / *Sea Launched Cruise Missile Nuclear*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Identify and assess weapon system integration of SLCM-N's Command & Control (WSC2) systems, flight systems, and infrastructure required to execute, operate, sustain, and secure the SLCM-N weapon system. Assess the Virginia Class launch and control facilities to determine the extent of and evaluate for future upgrades. Assess the Strategic Weapons Facilities handling and storage facilities to determine the extent of and evaluate for future upgrades or replacement. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY 2022 to FY 2023 is attributable to the SLCM-N program being cancelled.					
Accomplishments/Planned Programs Subtotals	0.000	5.234	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The SLCM-N program will deliver a weapon system capability that meets Navy requirements. For the pre-Milestone A and Technology Maturation/Risk Reduction (TMRR) phases of this strategy, contracts will be competitively awarded. The TMRR phase will include a System Requirements Review (SRR), a System Design Review (SDR) and will culminate in a system Preliminary Design Review (PDR). As appropriate, the contract will include risk reduction prototyping on key technologies and the requirement to bring forward multiple vendor designs for key government designated components/sub-components to PDR or beyond. After MS B approval, Engineering, Manufacturing and Development (EMD) contract will be competitively awarded.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3467 / *Sea Launched Cruise Missile Nuclear*

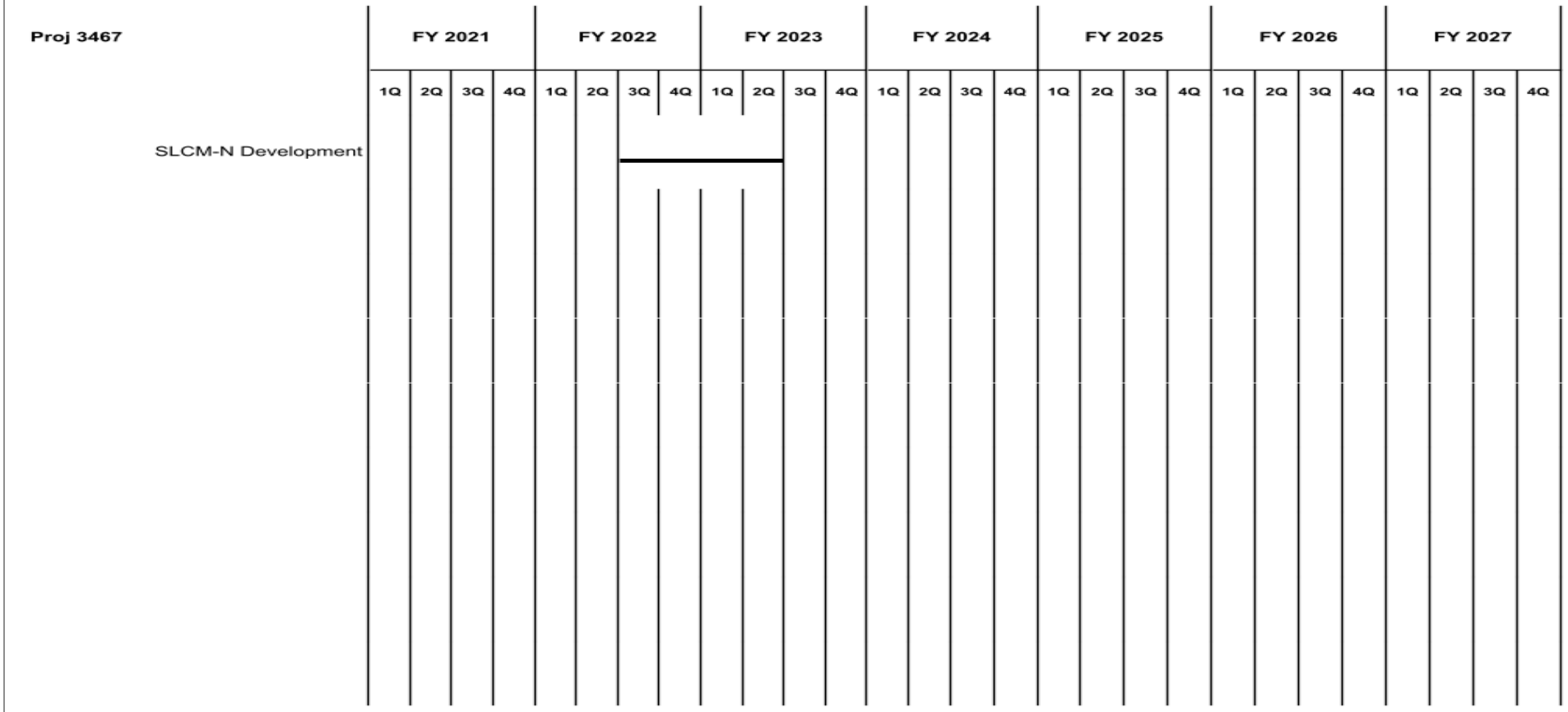
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SCLM-N	TBD	TBD : TBD	0.000	0.000		5.234	May 2022	0.000		-		0.000	0.000	5.234	-
		Subtotal	0.000	0.000		5.234		0.000		-		0.000	0.000	5.234	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		5.234		0.000		-		0.000	0.000	5.234	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3467 / *Sea Launched Cruise Missile Nuclear*



2023PB - 0604659N - 3467

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 3467 / *Sea Launched Cruise Missile Nuclear*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3467				
SLCM-N Development: SLCM-N Continuous Development	3	2022	2	2023

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604659N / *Precision Strike Weapons Development Program*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	0.000	6.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Neutron radiography (N-ray) is a critical nondestructive inspection technique used to complement X-ray. N-ray and X-ray are used to detect defects and proper assembly of a variety of energetics, including Cartridge and Propellant Actuated Devices (CAD/PADs). The US Navy intends to continue to employ neutron radiographic inspection to support energetics programs for the foreseeable future. Historically, nuclear reactors have been the only sources to perform high quality, high throughput neutron radiography. The energetics supply chain has been heavily reliant on a single commercial nuclear reactor that has been operating since the 1950s with closure imminent This congressional add allows research and development to provide a site survey and preparatory improvement of facilities to support a high energy ion accelerator capability.

*PHASE I of N-Ray Congressional Add is located under PE: 0605518N CONVENTIONAL PROMPT STRIKE (CPS).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022
Congressional Add: Neutron radiography technologies for energetic devices	0.000	6.000
FY 2021 Accomplishments: N/A		
FY 2022 Plans: Congressional Add for Neutron radiographic inspection of cartridge and propellant. Funding was realigned to NAVAIR as they were the intended recipient of the Congressional Add.		
Congressional Adds Subtotals	0.000	6.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

CAD/PAD JPO and NSWC IHD are performing site and facility assessments, developing requirements, and performing a safety analyses for an accelerator-based neutron radiography capability to be located at NSWC IHD other partner location.
In parallel to the government work above, a contract is planned to award for engineering support to perform modeling and safety analyses to ensure the system is safe to operate in the Navy facility, as well as assist the Navy with any regulatory submittals required to own and operate the system. System component hardware procurement will be phased in once requirements are defined.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 9999 / *Congressional Adds*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Phase II Product Dev	WR	NSWC : Indian Head	0.000	0.000		3.400	Mar 2022	0.000		-		0.000	0.000	3.400	-
Phase II Product Dev	TBD	Pheonix, LLC : Wisonsin	0.000	0.000		2.600	Apr 2022	0.000		-		0.000	0.000	2.600	2.600
		Subtotal	0.000	0.000		6.000		0.000		-		0.000	0.000	6.000	N/A

Remarks

FY 2022 Congressional Add for Neutron radiographic inspection of cartridge and propellant.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		6.000		0.000		-		0.000	0.000	6.000	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 9999 / *Congressional Adds*

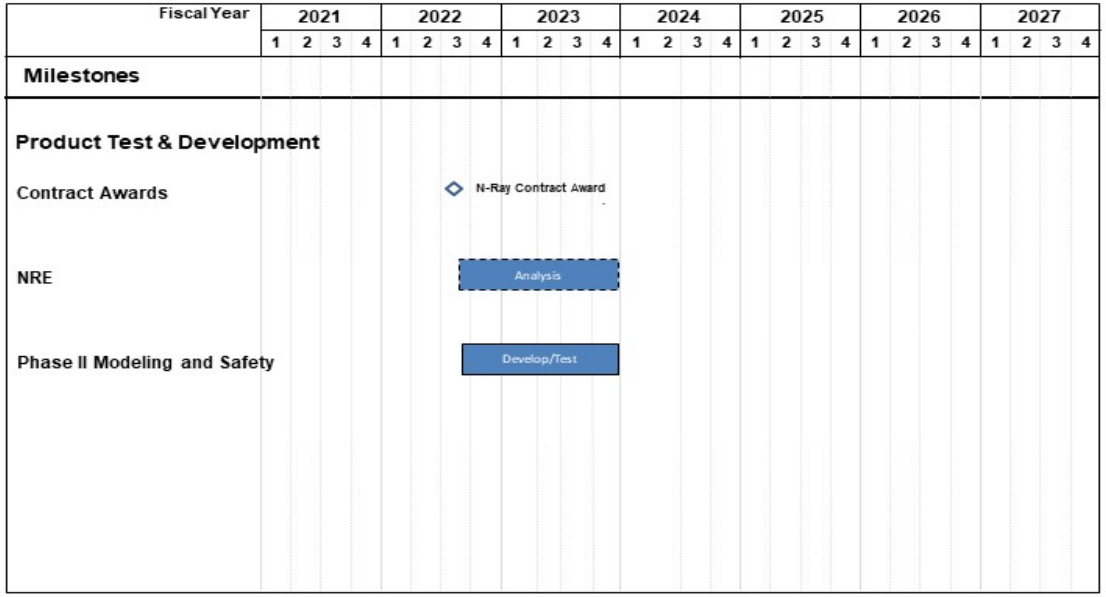


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604659N / *Precision Strike Weapons Development Program*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CAD/PAD N-RAYPage/Group/Row				
Product Development: Contract Awards: PHEONIX, LLC CONTRACT	3	2022	3	2022
Product Development: PHASE II MODEL SAFETY: PHASE II MODEL SAFETY	3	2022	4	2023