Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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 0603254N *I ASW Systems Development*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	143.115	6.991	18.500	17.612	-	17.612	-	-	-	-	-	-
1292: *Adv ASW Sensors & Proc*	143.115	6.991	15.500	17.612	-	17.612	-	-	-	-	-	-
9999: *Congressional Adds*	0.000	0.000	3.000	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Includes RDT&E funds for advanced development and developmental testing of airborne anti-submarine warfare (ASW) systems, including aircraft, equipment, and devices for use against all types of submarine targets.

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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	7.172	15.719	18.205	-	18.205
Current President's Budget	6.991	18.500	17.612	-	17.612
Total Adjustments	-0.181	2.781	-0.593	-	-0.593
• Congressional General Reductions	-	-0.219			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	3.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.181	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.593	-	-0.593

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: 9999: *Congressional Adds*		
Congressional Add: *Program Increase*	0.000	3.000
Congressional Add Subtotals for Project: 9999	0.000	3.000
Congressional Add Totals for all Projects	0.000	3.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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 0603254N *I ASW Systems Development*

Change Summary Explanation

Funding:
FY20--$0.181 SBIR
FY21--$0.219 Congressional General Reduction; $3.000 Congressional Add
FY22--$0.593 Miscellaneous Rate Adjustments
Technical: Not applicable.
Schedule: NGAPS effort moved to 2Q/22.
Additionally, Congressional Add and Adv ASW technologies bar added to schedule.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603254N / *ASW Systems Development*	Project (Number/Name) 1292 / *Adv ASW Sensors & Proc*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1292: *Adv ASW Sensors & Proc*	143.115	6.991	15.500	17.612	-	17.612	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides Air Anti-Submarine Warfare (ASW) effectiveness through development and maturation of advanced hardware and software associated with airborne acoustic and non-acoustic systems. This includes sensors and components, processing, post-processing, data recording and display capabilities to address regional threat scenarios against surfaced or submerged conventionally and nuclear powered submarines. Key objectives are platform accommodations of advanced active and passive sensors and components, improved detection, classification, localization and tracking; and increased capacity and flexibility to handle multi-sensor data loads. Furthermore, technologies that can be affordably implemented as payloads across fixed wing, rotary and unmanned platforms engaged in ASW will be pursued. Technology evaluations include Over the Horizon (OTH) communications, sonobuoy communication link to/from aircraft, Distributed Netted Sensors, transient signals, and source and receiver improvement technologies that will enhance passive and multistatic active sensor systems capabilities. Programs being funded during the FYDP will provide for the development and maturation of persistent tactical search technologies that will allow transition to the localization and attack phase in all operationally relevant environments. In addition, the program will provide for the development and subsequent experimentation, including data collection and engineering measurement, of the next generation of Multistatic Active Coherent (MAC) sources and receivers, laser technologies, electro-optical and multi-spectral camera technologies, radar, and Magnetic Anomaly Detection (MAD) sensors. Those technologies that are deemed mature and provide increased operational capability will be approved for transition, maturation, and implementation in a production Rapid Capability Insertion (RCI) build. The test articles, which consist of sensors, components and associated processors, will support at-sea trials and experiments.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: System performance assessments	6.991	15.500	17.612	0.000	17.612
Articles:	100	100	100	-	100
FY 2021 Plans: Undersea Advantage funding to develop and validate an air-deployable prototype sensor as the next generation multistatic receiver. Conduct sensor and system performance assessments, gap analyses of the effects-chains, rapid prototyping, and demonstration of the next generation of Multi-Static Active Coherent (MAC) system components, advancements in passive sensing and other acoustic and non-acoustic enhancements for traditional and high altitude ASW operations. Develop and mature prototype signal processing and hardware for data collections and at-sea experimentation. Employ the related test articles, models, processors and algorithms in at-sea demonstrations and related laboratory or in-water experiments to validate technical maturity and operational performance. Conduct data analyses to evaluate and mature the prototype hardware and signal					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603254N / *ASW Systems Development*	**Project (Number/Name)** 1292 / *Adv ASW Sensors & Proc*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
processing algorithms leveraging science and technology, research and development, and operational fleet-collected data. ***FY 2022 Base Plans:*** Continue to develop and validate an air-deployable vertical line array prototype sensor for UnderSea Advantage. Employ the related test articles, models, processors and algorithms in air-deployable demonstrations and related laboratory or in-water experiments to validate technical maturity and assess operational performance. Mature prototype signal processing and air-deployable hardware for data collections and at-sea experimentation. Conduct data analyses to evaluate the prototype hardware and mature the associated algorithms leveraging science and technology, research and development, and operational Fleet-collected data. Conduct sensor and system performance assessments, gap analyses of the effects-chains, rapid prototyping and demonstration of the next generation of MAC system components, advancements in passive sensing, and enhancements of other acoustic and non-acoustic for traditional and high altitude airborne ASW operations. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The FY 2022 increase funds continued development & validation of the air-deployable prototype sensor as the next generation multistatic receiver.					
Accomplishments/Planned Programs Subtotals	6.991	15.500	17.612	0.000	17.612

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• RDT&E/0480: *ASW Sensors & Proc*	41.967	43.215	42.190	-	42.190	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Develop and mature promising acoustic and non-acoustic ASW technologies that have high potential for meeting documented capability gaps and Fleet requirements. As funding permits, transition those technologies into acquisition programs of record for eventual Fleet release on ASW platforms.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603254N / *ASW Systems Development*	Project (Number/Name) 1292 / *Adv ASW Sensors & Proc*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Development	Various	Various : Various	5.664	1.509	Dec 2019	5.002	Dec 2020	5.559	Dec 2021	-		5.559	-	-	-
		Subtotal	5.664	1.509		5.002		5.559		-		5.559	-	-	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	NAWCAD : PATUXENT RIVER, MD	7.357	1.188	Dec 2019	3.610	Dec 2020	3.780	Dec 2021	-		3.780	-	-	-
Studies & Analysis	WR	NAWCAD : PATUXENT RIVER, MD	9.971	0.880	Dec 2019	1.925	Dec 2020	2.636	Dec 2021	-		2.636	-	-	-
		Subtotal	17.328	2.068		5.535		6.416		-		6.416	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Eval	Various	Various : Various	27.780	1.730	Dec 2019	3.058	Dec 2020	3.588	Dec 2021	-		3.588	-	-	-
		Subtotal	27.780	1.730		3.058		3.588		-		3.588	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Eng Spt	Various	Various : Various	23.483	1.050	Dec 2019	1.057	Dec 2020	1.200	Dec 2021	-		1.200	-	-	-
ENG & TECH SVCS (NON-FFRDC)	Various	Various : Various	3.194	0.100	Dec 2019	0.100	Dec 2020	0.100	Dec 2021	-		0.100	-	-	-
MGT & PROF SVCS (FFRDC)	Various	Various : Various	1.657	0.100	Dec 2019	0.100	Dec 2020	0.100	Dec 2021	-		0.100	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603254N / *ASW Systems Development*	Project (Number/Name) 1292 / *Adv ASW Sensors & Proc*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Eng Spt	WR	NAWCAD : PATUXENT RIVER, MD	63.837	0.426	Dec 2019	0.640	Dec 2020	0.641	Dec 2021	-		0.641	-	-	-
Travel	Various	VARIOUS : VARIOUS	0.172	0.008	Dec 2019	0.008	Dec 2020	0.008	Dec 2021	-		0.008	-	-	-
		Subtotal	92.343	1.684		1.905		2.049		-		2.049	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	143.115	6.991		15.500		17.612		-		17.612	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603254N / *ASW Systems Development*	**Project (Number/Name)** 1292 / *Adv ASW Sensors & Proc*

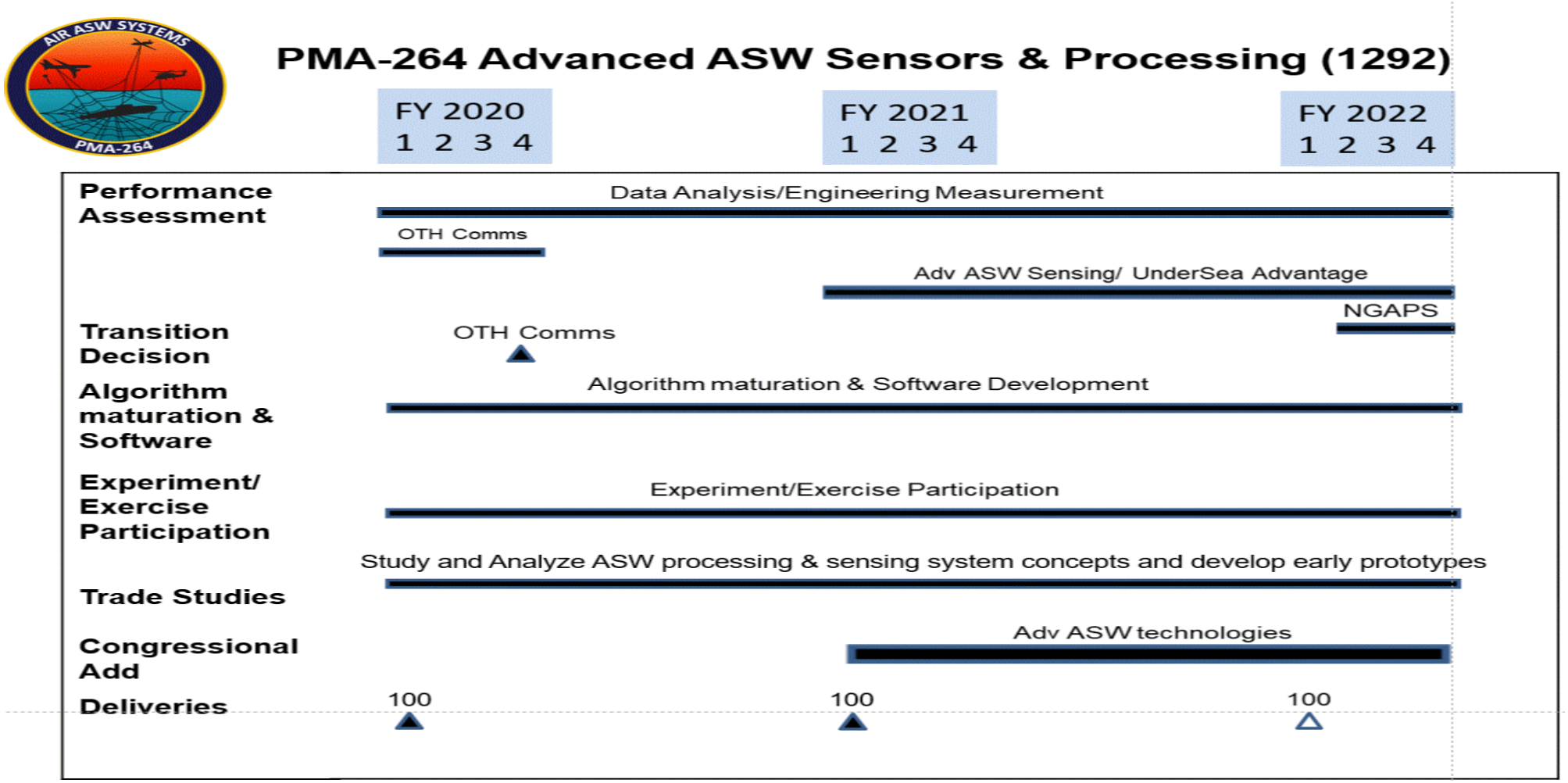

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603254N / *ASW Systems Development*	**Project (Number/Name)** 1292 / *Adv ASW Sensors & Proc*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj: 1292 - Adv ASW Sensors & Processors				
Performance Assessment: Data Analysis/Engineering Measurement	1	2020	4	2022
Performance Assessment: OTH Comms	1	2020	4	2020
Performance Assessment: Advanced ASW sensing / Undersea Advantage	1	2021	4	2022
Performance Assessment: Next Generation Airborne Passive System	2	2022	4	2022
Transition Decision: OTH Comms	4	2020	4	2020
Algorithm maturation & Software: Algorithm maturation & Software Development	1	2020	4	2022
Experiment/Exercise Participation: Experiment/Exercise Participation	1	2020	4	2022
Trade Studies: Trade Studies	1	2020	4	2022
Congressional Add: Adv ASW technologies	1	2021	4	2022
Deliveries: Test Articles: Test Article Deliveries (9)	1	2020	1	2020
Deliveries: Test Articles: Test Article Deliveries (10)	1	2021	1	2021
Deliveries: Test Articles: Test Article Deliveries (11)	1	2022	1	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603254N / *ASW Systems Development*				Project (Number/Name) 9999 / *Congressional Adds*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
9999: *Congressional Adds*	0.000	0.000	3.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Add.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021
Congressional Add: Program Increase	0.000	3.000
FY 2020 Accomplishments: N/A		
FY 2021 Plans: N/A		
Congressional Adds Subtotals	0.000	3.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• RDTE/1292: *ASW SYSTEMS DEVELOPMENT*	6.991	15.500	17.612	-	17.612	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Develop and mature promising acoustic and non-acoustic ASW technologies that have high potential for meeting documented capability gaps and Fleet requirements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603254N / *ASW Systems Development*	Project (Number/Name) 9999 / *Congressional Adds*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various	Various : Various	0.000	0.000		1.442	Jun 2021	0.000		-		0.000	-	-	-
		Subtotal	0.000	0.000		1.442		0.000		-		0.000	-	-	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	Various	Various : Various	0.000	0.000		0.476	May 2021	0.000		-		0.000	-	-	-
Studies and Analysis	Various	Various : Various	0.000	0.000		0.782	Apr 2021	0.000		-		0.000	-	-	-
		Subtotal	0.000	0.000		1.258		0.000		-		0.000	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Spt	WR	NAWCAD : PATUXENT RIVER, MD	0.000	0.000		0.300	Apr 2021	0.000		-		0.000	-	-	-
		Subtotal	0.000	0.000		0.300		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		3.000		0.000		-		0.000	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603254N / *ASW Systems Development*	**Project (Number/Name)** 9999 / *Congressional Adds*

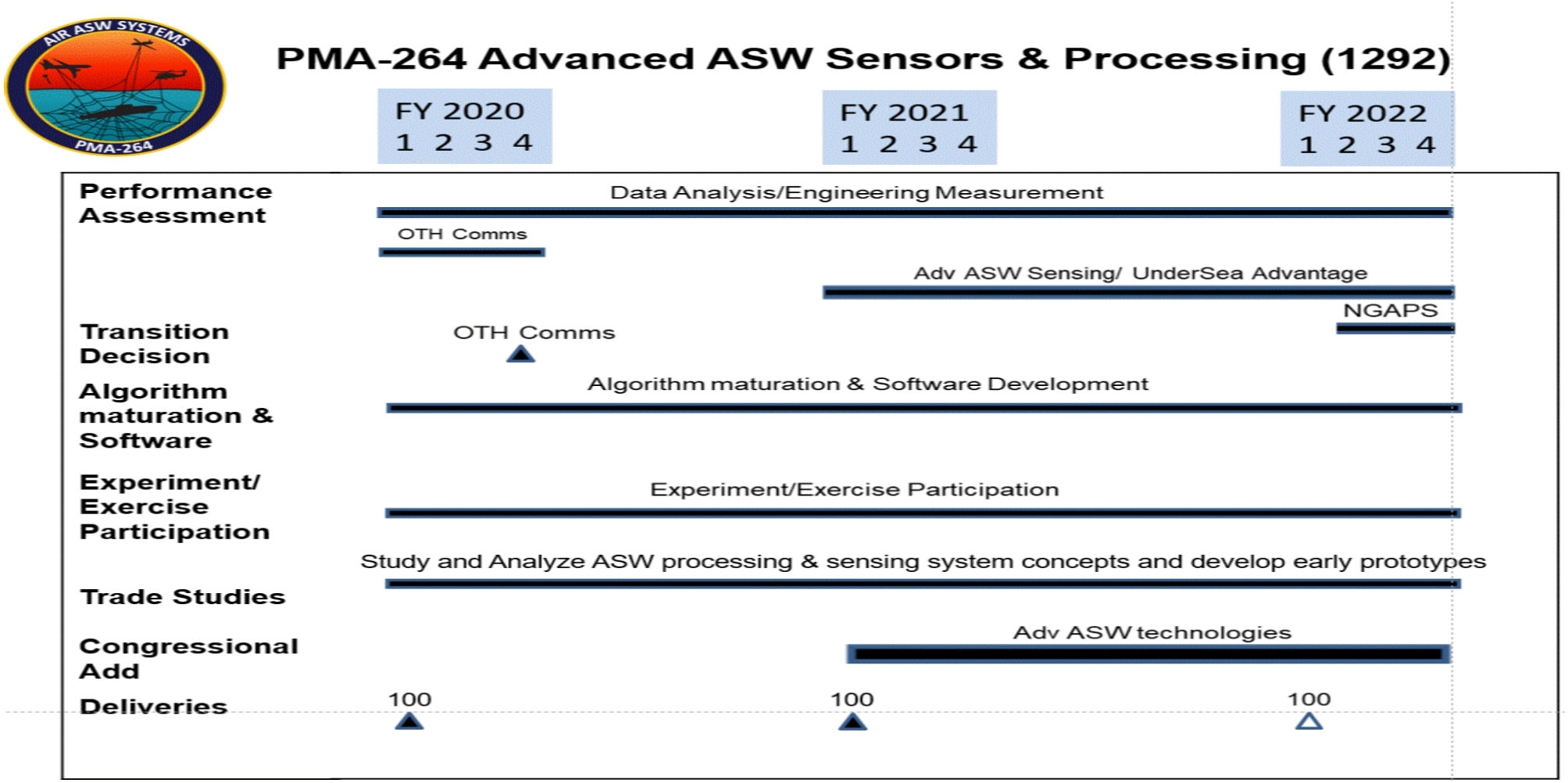

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603254N / *ASW Systems Development*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj: 1292 - Adv ASW Sensors & Processors				
Performance Assessment: Data Analysis/Engineering Measurement	1	2020	4	2022
Performance Assessment: OTH Comms	1	2020	4	2020
Performance Assessment: Advanced ASW sensing / Undersea Advantage	1	2021	4	2022
Performance Assessment: Next Generation Airborne Passive System	2	2022	4	2022
Transition Decision: OTH Comms	4	2020	4	2020
Algorithm maturation & Software: Algorithm maturation & Software Development	1	2020	4	2022
Experiment/Exercise Participation: Experiment/Exercise Participation	1	2020	4	2022
Trade Studies: Trade Studies	1	2020	4	2022
Congressional Add: Adv ASW technologies	1	2021	4	2022
Deliveries: Test Article Deliveries (9)	1	2020	1	2020
Deliveries: Test Article Deliveries (10)	1	2021	1	2021
Deliveries: Test Article Deliveries (11)	1	2022	1	2022