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 0604707N *I SEW Architecture/Eng Support*							
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	40.367	5.060	6.208	9.340	-	9.340	-	-	-	-	-	-
2356: *Maritime Concept Generation & Development*	40.367	5.060	6.208	9.340	-	9.340	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Maritime Concept Generation & Development (MCGD) project focuses on the generation, development and validation of warfighting concepts, Concept of Operations (CONOPS) and doctrine in order to eliminate war fighting gaps. Naval Warfare Development Command (NWDC) also manages the Fleet Experimentation program (formerly Sea Trial). In FY19 the project will execute a number of new experimentations in the areas of Electromagnetic Maneuver Warfare (EMW), Mine Warfare, Naval Integrated Fires, and Unmanned systems and conduct experiments (war simulations, Modeling & Simulation (M&S), at-sea events) to develop emerging Naval concepts.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	5.263	7.657	9.774	-	9.774
Current President's Budget	5.060	6.208	9.340	-	9.340
Total Adjustments	-0.203	-1.449	-0.434	-	-0.434
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-1.449			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.203	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.434	-	-0.434

Change Summary Explanation

The FY22 increase by $3.132M enables the planning and execution of at-sea examinations in 9 additional venues (11 executing in FY21; 20 venues identified in the FY22 campaign). Equally important, it enables greater operational (and analytical) rigor to the examination themselves. While early demonstrations of potential materiel and non-materiel solutions provide insight into an initiative's potential effectiveness, follow-on experiments require a more realistic (and therefore expensive) adversary presentation against which to more accurately assess their value.

The FY22 funding request was reduced by $0.289 million to account for the availability of prior year execution balances.

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 0604707N / *SEW Architecture/Eng Support*				Project (Number/Name) 2356 / *Maritime Concept Generation & 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**
2356: *Maritime Concept Generation & Development*	40.367	5.060	6.208	9.340	-	9.340	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Maritime Concept Generation and Development (MCGD) funding provides naval warfare subject matter expertise, experiment planning expertise, Modeling and Simulation (M&S) support, and analysis expertise to enable execution of the planned experiment efforts (and the individual experiment initiatives contained within) focused on critical warfighting capabilities and the development of Distributed Military Operations and other emerging Naval concepts.
Typical deliverables for each experimental effort include:
- Experiment control plan
- Data Collection and Analysis Plan (DCAP)
- Experiment Analysis Summary Reference Document
- Experiment Engineering Plan
- Final Experiment Report (with Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities - Policy (DOTMLPF-P) recommendations)
- New/refined doctrine/Tactics, Techniques and Procedures (TTP).

The Maritime Concept Generation and Concept Development project funds four main efforts:
(1) Provides critical concept development and experimentation manpower and warfighting subject matter expertise aligned with the Concept Generation/Concept Development (CG/CD) program. The priorities for the CG/CD program are to develop concept/concept of operations and explore near/far-term technological and non-technological solutions to war fighting gaps across all naval warfare areas. The associated experimentation efforts include planning, systems engineering and integration, modeling and simulation support, event execution,
data collection, analysis, and assessment for a wide-range of experimentation efforts including the examination of prototypes, tactical development and evaluation, support for Science and Technology (S&T) innovation, and program of record system development; venues such as workshops, seminars, war games, limited objective experiments, limited technical experiments, and live at-sea events are used to execute these experimentation efforts.
(2) Provides naval warfare subject matter expertise, experiment planning expertise, and analysis expertise to plan, execute, and assess experimentation for the fleets and warfighting development centers (WDC) at the operational and tactical levels. This includes a focus on WDC integration role, maritime command and control (C2), advanced cross-domain warfighting, and maritime operations centers (MOCS)/operational level of war (OLW) lines of operations. Seeks to solve fleet-identified warfighting gaps (referenced within the Integrated Prioritized Capability Lists (IPCL), Urgent Operational Needs Statements (UONS), Fleet Commander's Guidance, etc.). The experimentation and prototyping efforts support the "last tactical mile" of many Navy S&T programs by supporting those programs where the technology is mature enough, but requires evaluation on or by a "fleet asset" - ships, airplanes, submarines, and sailors.
(3) Provides Modeling and Simulation (M&S) support to Navy experimentation efforts. M&S is used to stimulate decision making during seminar-style and system war gaming experiments and provides the simulated operational environment and capabilities with high-fidelity models such as the Joint Semi-Automated Force (JSAF)

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 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

program. Additionally, where applicable, the Navy Simulation System (NSS) "Monte Carlo" model is also used to give high confidence solutions and outcomes to complex warfighting problems.
(4) Provides for focused, solution-driven tactics development and evaluation through experimentation. This effort is focused on developing near-term doctrine solutions to address specific fleet-identified tactical issues.

Maritime Concept Generation and Concept Development products include:
- Concepts (signed by the CNO that influence future funding and technological development)
- Enabling concepts
- Concepts of Operations (CONOPS)
- Final experimentation reports (including findings, insights, and recommendations and Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities - Policy (DOTMLPF-P) change recommendations and plans for action)
- Experiment Analysis Summary Reference Documents
- New/revised doctrinal and Tactics/Techniques/Procedures publications
- White papers (think pieces) intended to generate further discussion within Navy leadership

Specific products are listed in the Accomplishments/Plans section of this exhibit.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Maritime Concept Generation and Development	5.060	6.208	9.340	0.000	9.340
Articles:	-	-	-	-	-
FY 2021 Plans: FY 2021 Plans: Maritime Concept Generation and Development (MCGD) will continue to provide analytical and naval mission subject matter expertise throughout the planning, execution and assessment process of supported experiments; identify fleet warfighting deficiencies through experimentation; capture and accelerate innovative solutions that address prioritized fleet warfighting gaps. Recently completed and upcoming experiments include: MINE COUNTERMEASURE (MCM) CONCEPT TO TECHNOLOGY TABLE TOP EXERCISE (TTX) One of several efforts responding to Mine Warfare (MIW) Governance Council tasking for the Fleet to shift MIW focus to Great Power Competition (GPC) strategy, this Office of Naval Research (ONR)-sponsored FLEX TTX will use a GPC-focused MCM scenario to evaluate currently defined S&T gaps, uncover/explore new gaps, and explore potential solutions to close those gaps. NAVAL TACTICAL GRID LIMITED OBJECTIVE EXPERIMENT (LOE) 1					

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 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
This at-sea LOE examined the employment of a Battle Force Tactical Network (BFTN) shore node as an alternative shore to ship communications path. NAVAL TACTICAL GRID LOE 2 This at-sea LOE will examine several Information Warfare (IW)-related technologies and tactics, techniques, and procedures (TTP) that support multiple strategic capability development efforts. STOIC LOE This at-sea LOE examined alternatives to Global Positioning System (GPS)-based navigation on surface ships. Fleet Experimentation (FLEX) during DAWN BLITZ 21 This FLEX effort leveraged a fleet exercise to examine technologies and TTP primarily focused on C5ISR. UNDERSEA TARGETING TABLE TOP EXERCISE (TTX) This TTX examined Navy and Joint targeting processes and authorities, and informed research and development efforts focused on undersea capabilities. Fleet Experimentation (FLEX) in CITADEL SHIELD/SOLID CURTAIN 2021 This FLEX effort leveraged this annual exercise to examine several counter-unmanned systems technologies and procedures in a shore-based environment. Fleet Experimentation (FLEX) in FLEET BATTLE PROBLEM (FBP) 21-4 (IWO ARG) This FLEX effort leveraged this FBP to examine several IW-related technologies that support multiple strategic capability development efforts. ELEKTRA TECHNOLOGY INNOVATION GAME (TIG) WORKSHOP This ONR-sponsored TIG workshop will examine decision aid technology enabled by artificial intelligence. COUNTER SMALL UNMANNED AERIAL VEHICLES (C-sUAV) AT-SEA LOE This at-sea LOE will examine non-kinetic technologies and TTP to counter small Unmanned Aerial Vehicles (UAVs) in a maritime environment. Fleet Experimentation (FLEX) in FORMIDABLE SHIELD 2021					

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 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
This FLEX effort will leverage a NATO Integrated Air and Missile Defense (IAMD) at-sea exercise to examine Navy TENCAP technologies. Fleet Experimentation (FLEX) in BALTIC OPERATIONS (BALTOPS) 2021 This FLEX effort will leverage an annual NATO exercise to examine expeditionary Mine Countermeasure (MCM) unmanned technologies and employment procedures and a Navy TENCAP technology. HYDROGEN GENERATION LOE This at-sea LOE will examine an at-sea hydrogen generation technology needed to support lighter than air unmanned systems operations. Fleet Experimentation (FLEX) in LARGE SCALE EXERCISE (LSE) 2021 This FLEX effort will leverage a globally integrated large-scale fleet exercise to examine several technologies and TTP primarily focused on the development of a naval tactical grid, alternative communication paths, and employment of unmanned systems. KINETIC COUNTER UNMANNED SYSTEMS (C-UxS) LOE This at-sea LOE will examine several kinetic engagement technologies to counter small UAVs in a maritime environment. FOR FY21 CONCEPT GENERATION/CONCEPT DEVELOPMENT (CG/CD) Continue CG/CD development efforts that carry-over from prior fiscal year: Additional concepts and CONOPs to be developed in FY21/22 will be determined through the CG/CD development process and additional external factors. Concepts under development/consideration include Naval and SOF Operations, Operational Logistics in a Contested Environment (revision), Unmanned Systems in support of DMO, Command and Control in support of DMO, Offensive Mine Warfare, Targeting in support of DMO, and Advanced Autonomous/Semi autonomous Sustainment Systems. ***FY 2022 Base Plans:*** FY 2022 Base Plans: Critical MCGD analytical and subject matter expertise support to FY22 experiments will follow up on findings from FY 2020-21 experiments and focus on materiel and non-materiel solutions using appropriate experimentation venues including workshops, at-sea events, and war simulations. Experimentation efforts					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
in FY22 will support multiple strategic capability development efforts (including CNO's Unmanned Systems Campaign) and will align to the following Fleet Commander's focus areas: C5ISR Experiments will explore technologies and associated TTP that support development of a robust and secure network infrastructure to link distributed forces together and a resilient web of persistent sensors, command and control nodes, platforms, and weapons MARITIME FIRES Experiments will support multiple efforts across the Navy, Marine Corps, and Joint force to enhance capabilities to project synchronized lethal and non-lethal effects across all domains and provide persistent, all-domain, long-range precision fires, supported by agile, resilient, integrated networks. COUNTER-INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE Experiments will support efforts to increase naval forces ability to avoid detection by adversary ISR systems in order to establish, maintain, and exploit sea control in contested environments. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY22 increase of $3.132M enables the planning and execution of at-sea examinations in 9 additional venues (11 executing in FY21; 20 venues identified in the FY22 campaign). Equally important, it will enable greater operational (and analytical) rigor to the examination themselves. While early demonstrations of potential materiel and non-materiel solutions provide insight into an initiative's potential effectiveness, follow-on experiments require a more realistic (and therefore expensive) adversary presentation against which to more accurately assess their value.					
Accomplishments/Planned Programs Subtotals	5.060	6.208	9.340	0.000	9.340

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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D. Acquisition Strategy

This funding is used to acquire intellectual capital in emerging conceptual and technical areas through contracts providing expertise in concepts and experiment design, execution and analysis to mitigate fleet-identified current and future war fighting gaps.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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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
System Test and Evaluation	C/CPFF	Defense Technical Information Center : Ft Belvoir VA	20.363	2.315	Jun 2020	2.873	Dec 2020	4.336	Dec 2021	-		4.336	-	-	-
System Test and Evaluation	Various	NIWC Atlantic : Charleston, SC	2.734	0.000		0.000		0.000		-		0.000	-	-	-
System Test and Evaluation	Various	ONR : Washington, DC	1.370	0.000		0.000		0.000		-		0.000	-	-	-
System Test and Evaluation	Various	NAVSEA : Washington, DC	1.334	0.000		0.000		0.000		-		0.000	-	-	-
System Test and Evaluation	PO	Naval Underwater Warfare Center : Newport RI	0.500	0.000		0.000		0.000		-		0.000	-	-	-
System Test and Evaluation	C/CPFF	NAVSUP : Norfolk VA	11.202	2.745	Jun 2020	3.335	Feb 2021	5.004	Feb 2022	-		5.004	-	-	-
Center for Naval Analysis	IA	Center for Naval Analysis : Norfolk, VA	0.154	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	37.657	5.060		6.208		9.340		-		9.340	-	-	N/A

Remarks

The vast majority of the contract costs are for contract labor; primarily on two large Multi-Award contracts, one through DTIC (Defense Services MAC) and one through Joint Staff J-7 MAC. Task orders on the DS MAC contract provide the majority of the Modeling & Simulation support for experimentation and some of the experiment planner support. Task orders on the JS J-7 MAC provide the majority of the experiment design, planner, and execution support.

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
Program Management	C/FFP	Navy Warfare Development Command : Norfolk, VA	2.710	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	2.710	0.000		0.000		0.000		-		0.000	-	-	N/A

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 0604707N / *SEW Architecture/Eng Support*	Project (Number/Name) 2356 / *Maritime Concept Generation & Development*	

	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	40.367	5.060		6.208		9.340		-		9.340	-	-	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 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

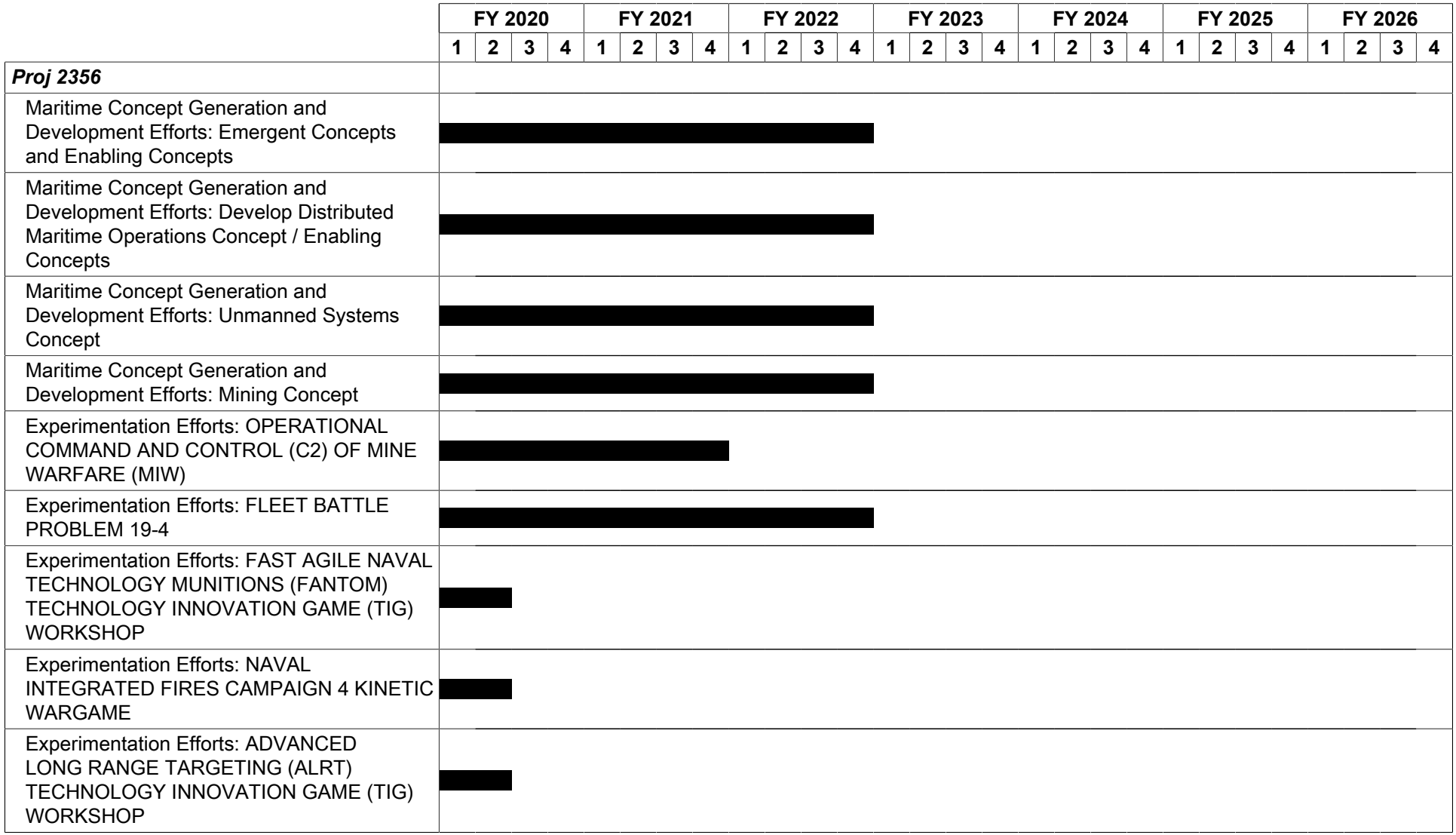

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

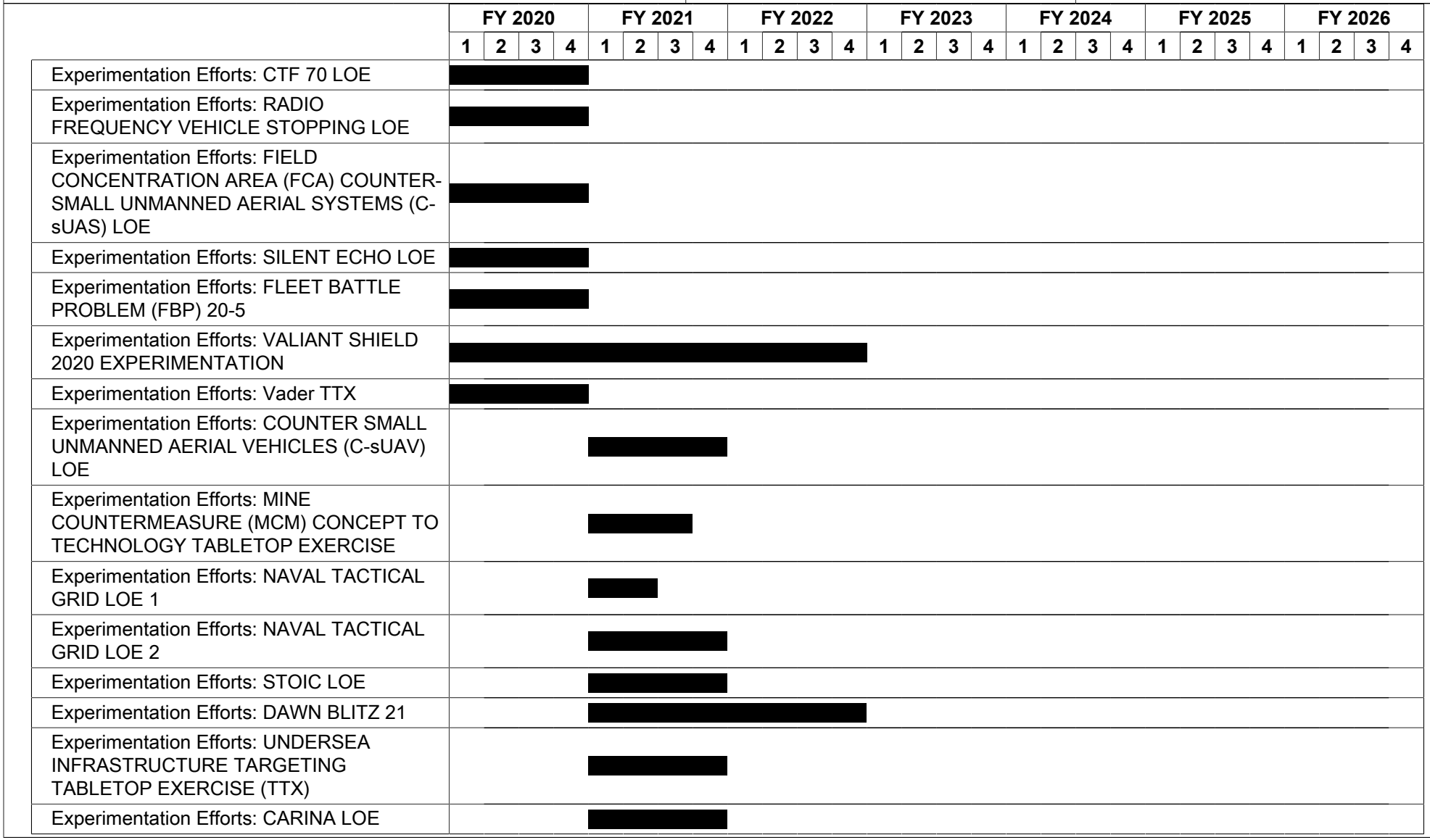

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

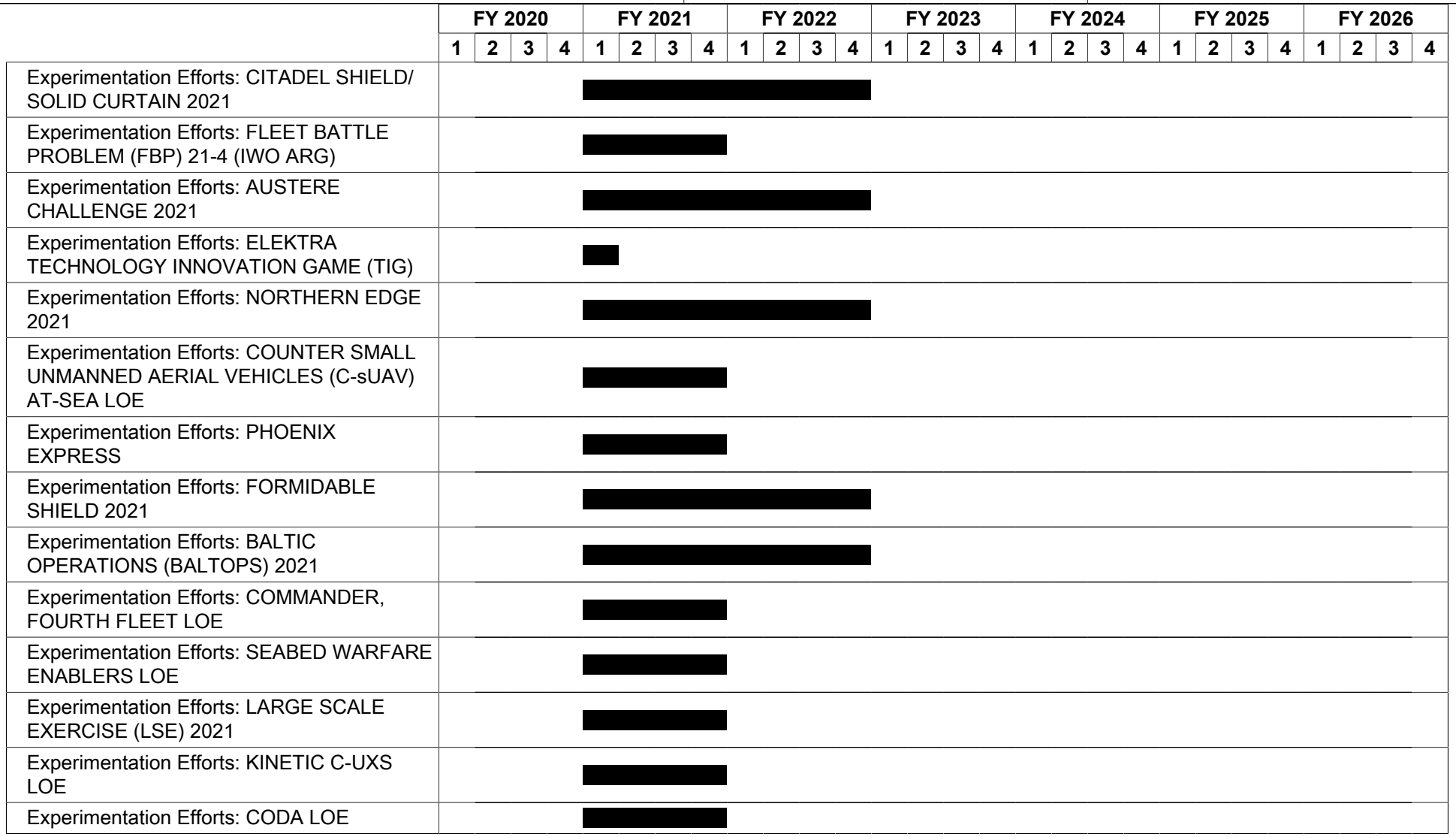

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Experimentation Efforts: AUTOMATED CELESTIAL NAV/STOIC LOE					[redacted]																							

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 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2356				
Maritime Concept Generation and Development Efforts: Emergent Concepts and Enabling Concepts	1	2020	4	2022
Maritime Concept Generation and Development Efforts: Develop Distributed Maritime Operations Concept / Enabling Concepts	1	2020	4	2022
Maritime Concept Generation and Development Efforts: Unmanned Systems Concept	1	2020	4	2022
Maritime Concept Generation and Development Efforts: Mining Concept	1	2020	4	2022
Experimentation Efforts: OPERATIONAL COMMAND AND CONTROL (C2) OF MINE WARFARE (MIW)	1	2020	4	2021
Experimentation Efforts: FLEET BATTLE PROBLEM 19-4	1	2020	4	2022
Experimentation Efforts: FAST AGILE NAVAL TECHNOLOGY MUNITIONS (FANTOM) TECHNOLOGY INNOVATION GAME (TIG) WORKSHOP	1	2020	2	2020
Experimentation Efforts: NAVAL INTEGRATED FIRES CAMPAIGN 4 KINETIC WARGAME	1	2020	2	2020
Experimentation Efforts: ADVANCED LONG RANGE TARGETING (ALRT) TECHNOLOGY INNOVATION GAME (TIG) WORKSHOP	1	2020	2	2020
Experimentation Efforts: CTF 70 LOE	1	2020	4	2020
Experimentation Efforts: RADIO FREQUENCY VEHICLE STOPPING LOE	1	2020	4	2020
Experimentation Efforts: FIELD CONCENTRATION AREA (FCA) COUNTER-SMALL UNMANNED AERIAL SYSTEMS (C-sUAS) LOE	1	2020	4	2020
Experimentation Efforts: SILENT ECHO LOE	1	2020	4	2020
Experimentation Efforts: FLEET BATTLE PROBLEM (FBP) 20-5	1	2020	4	2020
Experimentation Efforts: VALIANT SHIELD 2020 EXPERIMENTATION	1	2020	4	2022
Experimentation Efforts: Vader TTX	1	2020	4	2020

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 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Experimentation Efforts: COUNTER SMALL UNMANNED AERIAL VEHICLES (C-sUAV) LOE	1	2021	4	2021
Experimentation Efforts: MINE COUNTERMEASURE (MCM) CONCEPT TO TECHNOLOGY TABLETOP EXERCISE	1	2021	3	2021
Experimentation Efforts: NAVAL TACTICAL GRID LOE 1	1	2021	2	2021
Experimentation Efforts: NAVAL TACTICAL GRID LOE 2	1	2021	4	2021
Experimentation Efforts: STOIC LOE	1	2021	4	2021
Experimentation Efforts: DAWN BLITZ 21	1	2021	4	2022
Experimentation Efforts: UNDERSEA INFRASTRUCTURE TARGETING TABLETOP EXERCISE (TTX)	1	2021	4	2021
Experimentation Efforts: CARINA LOE	1	2021	4	2021
Experimentation Efforts: CITADEL SHIELD/SOLID CURTAIN 2021	1	2021	4	2022
Experimentation Efforts: FLEET BATTLE PROBLEM (FBP) 21-4 (IWO ARG)	1	2021	4	2021
Experimentation Efforts: AUSTERE CHALLENGE 2021	1	2021	4	2022
Experimentation Efforts: ELEKTRA TECHNOLOGY INNOVATION GAME (TIG)	1	2021	1	2021
Experimentation Efforts: NORTHERN EDGE 2021	1	2021	4	2022
Experimentation Efforts: COUNTER SMALL UNMANNED AERIAL VEHICLES (C-sUAV) AT-SEA LOE	1	2021	4	2021
Experimentation Efforts: PHOENIX EXPRESS	1	2021	4	2021
Experimentation Efforts: FORMIDABLE SHIELD 2021	1	2021	4	2022
Experimentation Efforts: BALTIC OPERATIONS (BALTOPS) 2021	1	2021	4	2022
Experimentation Efforts: COMMANDER, FOURTH FLEET LOE	1	2021	4	2021
Experimentation Efforts: SEABED WARFARE ENABLERS LOE	1	2021	4	2021
Experimentation Efforts: LARGE SCALE EXERCISE (LSE) 2021	1	2021	4	2021
Experimentation Efforts: KINETIC C-UXS LOE	1	2021	4	2021
Experimentation Efforts: CODA LOE	1	2021	4	2021

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 0604707N / *SEW Architecture/Eng Support*	**Project (Number/Name)** 2356 / *Maritime Concept Generation & Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Experimentation Efforts: AUTOMATED CELESTIAL NAV/STOIC LOE	1	2021	4	2021