Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy	Date: March 2023
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602750N *I Future Naval Capabilities Applied Research*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	193.392	177.141	182.662	-	182.662	183.064	186.596	190.337	193.778	Continuing	Continuing
0000: *Future Naval Capabilities Applied Research*	0.000	167.327	173.641	182.662	-	182.662	183.064	186.596	190.337	193.778	Continuing	Continuing
9999: *Congressional Adds*	0.000	26.065	3.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.565

A. Mission Description and Budget Item Justification

The Office of Naval Research (ONR) works closely across the Department of the Navy (DON) and Naval Research Enterprise (NRE) to develop warfighting capabilities that address operational force's highest priorities..

While leveraging technology innovation is critical to maintaining a decisive edge, maintaining a pipeline of new capabilities requires balancing flexibility and risk, in order to deliver solutions to known requirements, and experiment with potential game-changing ideas informed by higher DoN and DoD guidance. This PE funds Future Naval Capabilities (FNC) Technology Candidates, which are at lower Technology Readiness Level (TRLs), and is focused on maturing technologies to higher TRLs to reduce FNC transition risk. Efforts in this PE are coordinated with related work in the USMC Technology Candidates Activity of PE 0602131M Marine Corps Landing Force Technology.

This Program Element (PE) funds Applied Research, which is the systematic study to understand the means to meet a recognized and specific need. Most of the work in this PE can be classified between TRL 2 (technology concept and/or application formulation) and TRL 4 (component and/or breadboard validation in laboratory environments).

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	198.233	173.641	182.662	-	182.662
Current President's Budget	193.392	177.141	182.662	-	182.662
Total Adjustments	-4.841	3.500	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	3.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.841	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

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Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 9999: *Congressional Adds*		
Congressional Add: *Improved Detection of Submarine Threats*	4.827	0.000
Congressional Add: *Long endurance, autonomous, mobile acoustic detection systems*	21.238	0.000
Congressional Add: *Operational readiness via next-generation satellites*	0.000	3.500
Congressional Add Subtotals for Project: 9999	26.065	3.500
Congressional Add Totals for all Projects	26.065	3.500

Change Summary Explanation

Funding: No significant change

Technical: No significant change

Schedule: No significant change

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 2	R-1 Program Element (Number/Name) PE 0602750N / *Future Naval Capabilities Applied Research*	Project (Number/Name) 0000 / *Future Naval Capabilities Applied Research*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
0000: *Future Naval Capabilities Applied Research*	0.000	167.327	173.641	182.662	-	182.662	183.064	186.596	190.337	193.778	Continuing	Continuing

A. Mission Description and Budget Item Justification

Future Naval Capabilities (FNC) budget activity (BA) 2 investments develop candidate FNC technologies in an agile fashion by exploiting technology advances that respond rapidly to Naval needs. This approach facilitates an optimum response when developing and maturing the technology options that can be developed further in Program Element (PE) 0603673N, Future Naval Capabilities Advanced Technology Development.

The FNC Program favors a high level of collaboration. PE R-2 activities are mostly organized by the Office of Naval Research (ONR) Science and Technology Departments, which are tasked to collaborate with the acquisition stakeholders and their resource sponsors. A complete accounting of the technology candidates being developed and a full disposition of each technology development effort funded in this PE is provided annually to the Congressional oversight committees.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Expeditionary Maneuver Warfare (EMW) and Combating Terrorism	15.799	16.599	17.723	0.000	17.723
Description: The objective of this activity is to develop and mature technologies in asymmetric and irregular warfare, distributed operations, information warfare, survivability and self-defense to a point where they can be proposed and continued as FNCs in PE 0603673N, Future Naval Capabilities Advanced Technology Development. ***FY 2023 Plans:*** Human Performance Education and Training Thrust: - Continue research in new training technologies, knowledge products, architectures, and systems. - Continue research to accelerate mental, emotional and cognitive decision-making skills. - Continue research to improve human-machine teaming. - Continue research in the areas of detecting, localizing and neutralization of mines and improvised explosive devices that challenge the ability to operate in contested maritime environments. - Initiate efforts to develop and evaluate modeling and simulation-based capabilities to accelerate performance in training and education settings and increase readiness in the expeditionary environment. This includes the continuation of Warfighter Training research completed in PE 0602131M in FY22. Logistics Thrust: - Continue research to enhance movement of troops and equipment from ship to inland objectives.					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Continue research to develop higher material readiness and reduce the length of the supply chain for small units. This includes the continuation of New Repair Techniques research completed in PE 0602131M in FY22. - Continue Fleet Vehicle research completed in PE 0602131M in FY22 by continuing research in the area of unmanned platform power systems. - Initiate research in the area of advanced manufacturing materials. - Initiate applied research in the area of small scale, energy efficient water purification in support of distributed operations and Expeditionary Advance Base Operations (EABO). Force Protection Thrust: - Continue research to improve warfighter effectiveness in command, control, computers and communication, intelligence, surveillance and reconnaissance in the area of electromagnetic spectrum analysis and signature management. This includes the continuation of Flexible Software Development research completed in PE 0602131M in FY22. - Complete applied research to defend against adversarial unmanned vehicles in the area of Counter Small Unmanned Aerial Systems (UAS). This effort will transition to Advanced Technology Demonstration. - Complete applied research to enhance long-range fires capabilities in the area of Ground Based Air Defense High Energy Laser. This effort will transition to Advanced Technology Demonstration. - Initiate research in the area of increased range and lethality for small form factor weapon systems in support of EABO. Firepower Thrust: - Initiate effort to conduct feasibility demonstration of a missile launcher capable of launching multiple calibers of militarily relevant munitions from a single platform.					
FY 2024 Base Plans: Human Performance Education and Training Thrust: Complete: - Research in new training technologies, knowledge products, architectures, and systems. - Research to accelerate mental, emotional and cognitive decision-making skills. - Research to improve human-machine teaming. - Research in the areas of detecting, localizing and neutralization of mines and improvised explosive devices that challenge the ability to operate in contested maritime environments.					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Efforts to develop and evaluate modeling and simulation-based capabilities to accelerate performance in training and education settings and increase readiness in the expeditionary environment. This includes the continuation of Warfighter Training research completed in PE 0602131M in FY22. Logistics Thrust: Continue: - Research in the area of advanced manufacturing materials. - Applied research in the area of small scale, energy efficient water purification in support of distributed operations and Expeditionary Advance Base Operations (EABO). Complete: - Research to enhance movement of troops and equipment from ship to inland objectives. - Research to develop higher material readiness and reduce the length of the supply chain for small units. This includes the continuation of New Repair Techniques research completed in PE 0602131M in FY22. - Fleet Vehicle research completed in PE 0602131M in FY22 by continuing research in the area of unmanned platform power systems. Force Protection Thrust: Continue: - Research to improve warfighter effectiveness in command, control, computers and communication, intelligence, surveillance and reconnaissance in the area of electromagnetic spectrum analysis and signature management. This includes the continuation of Flexible Software Development research completed in PE 0602131M in FY22. - Research in the area of increased range and lethality for small form factor weapon systems in support of EABO. Firepower Thrust: - Continue effort to conduct feasibility demonstration of a missile launcher capable of launching multiple calibers of militarily relevant munitions from a single platform. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:***					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
The increase in funding from FY2023 to FY2024 is due to the increased investments in Logistics and Firepower research in the area of advanced manufacturing materials and in feasibility demonstration of a missile launcher capable of launching multiple calibers of militarily relevant munitions from a single platform.					
Title: C4ISR and Special Projects ***Description:*** The objective of this activity is to develop and mature technologies in data science, mathematical optimization, computational and information sciences, quantum information sciences, electronics, command and control (C2), combat systems, communications, cyber security, cyber operations, electronic warfare (EW), sensing and surveillance, and precision timing and navigation (PTN), as well as technologies for surface and airborne vehicles, and cruise missile defense weapons to a point where they can be proposed and continued as Future Naval Capabilities (FNC) in program element (PE) 0603673N, Future Naval Capabilities Advanced Technology Development. ***FY 2023 Plans:*** Communications and Networking Thrust: - Continue analyzing Fifth generation (5G) security and protocol to identify vulnerabilities to close security gaps to increase resiliency and robustness against adversarial attack. - Continue maturing promising over the horizon communications that include low probability of detection and low probability of intercept features to enable distributed maritime operations. - Continue developing hardware and software routing and applications for resilient networking in contested warfighting scenarios and improving data dissemination across both forward and back fit Joint heterogeneous networks. - Initiate multi-beam communications for data dissemination and unmanned and autonomous control applications. - Initiate development of promising low-frequency RF and optical technologies for multi-platform communication capabilities. Intelligence, Decision-Making Superiority, C2 and Combat Systems Thrust: - Continue developing frameworks for cross platform intelligent resource management and data dissemination providing both enhanced Distributed Maritime Operations and system resilience. - Continue developing capabilities that allow commanders to rapidly and confidently move from data-to-options-to-informed decision both at the Maritime Operations Center and Afloat.	46.496	45.141	46.971	0.000	46.971

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Initiate optimization of machine learning and AI algorithms for planning to execution synchronization of hard kill, cyber and electromagnetic engagements. - Initiate development of advanced computing for machine learning on the tactical edge. Full Spectrum Cyber Thrust: - Continue developing tools for convergence and coordinate cyber and EW effects. - Continue maturing innovative cyber approaches to enhance naval platform and warfighting resilience, safety, reliability and efficiency. - Initiate machine learning for automation of cyber defense approaches. - Initiate efforts to automate identification and leveraging of over-permissioned protocol implementations. Electromagnetic Warfare Thrust: - Continue developing technologies, techniques and algorithms that degrade, neutralize, or destroy an adversary's C5ISR capabilities. - Continue developing cross platform technologies to mature electro-magnetic techniques that rely on geographic separation of platform sensors to deliver enhanced operational capabilities. - Continue developing and maturing the necessary component technologies for spectrum access both in EO and RF that enable defeat of adversarial sensors and systems. - Initiate counter ISR technology to defeat and degrade EO sensor and seekers. Surveillance, Sensors and Phenomenology Thrust: - Continue developing and implementing novel hardware, algorithms and high speed processing to enable detection of advanced maritime threats in both manmade and natural clutter at stand-off ranges. - Continue developing and implementing new electro-optic and infrared sensing capabilities including digital readouts for improved passive sensing of difficult threats in cluttered backgrounds. - Continue providing advanced sensor processing that improve Intelligence, Surveillance, Reconnaissance and Targeting of hard targets. - Continue developing key technologies for off-board RF illumination sources to enable Multi-Input Multi-Output and receive-only sensing in a distributed environment. Quantum, Positioning, Navigation, and Timing Thrust:					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Initiate development of quantum gravimetry mapping and navigation techniques.					
FY 2024 Base Plans: Communications and Networking Thrust Continue: - Analyzing Fifth generation (5G) security and protocol to identify vulnerabilities to close security gaps to increase resiliency and robustness against adversarial attack. - Maturing promising over the horizon communications that include low probability of detection and low probability of intercept features to enable distributed maritime operations. - Continue multi-beam communications for data dissemination and unmanned and autonomous control applications. Complete: - Development of hardware and software routing and applications for resilient networking in contested warfighting scenarios and improving data dissemination across both forward and back fit Joint heterogeneous networks. - Development of promising low-frequency RF and optical technologies for multi-platform communication capabilities. Initiate: - Development of software defined modem technologies for waveform interoperability, low probability of intercept and joint service compatibility. Intelligence, Decision-Making Superiority, C2 and Combat Systems Thrust Continue: - Developing frameworks for cross platform intelligent resource management and data dissemination providing both enhanced Distributed Maritime Operations and system resilience. - Developing capabilities that allow commanders to rapidly and confidently move from data-to-options-to-informed decision both at the Maritime Operations Center and Afloat. - Optimization of machine learning and AI algorithms for planning to execution synchronization of hard kill, cyber and electromagnetic engagements. - Development of advanced computing for machine learning on the tactical edge. Full Spectrum Cyber Thrust Continue:					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Developing tools for convergence and coordinate cyber and EW effects. - Machine learning for automation of cyber defense approaches. - Efforts to automate identification and leveraging of over-permissioned protocol implementations. Complete: - Maturing innovative cyber approaches to enhance naval platform and warfighting resilience, safety, reliability and efficiency. Initiate: - Efforts to exploit protocol weaknesses for naval applications. Electromagnetic Warfare Thrust Continue: - Developing technologies, techniques and algorithms that degrade, neutralize, or destroy an adversary's C5ISR capabilities. - Developing cross platform technologies to mature electro-magnetic techniques that rely on geographic separation of platform sensors to deliver enhanced operational capabilities. - Developing and maturing the necessary component technologies for spectrum access both in EO and RF that enable defeat of adversarial sensors and systems. - Counter ISR technology to defeat and degrade EO sensor and seekers. Surveillance, Sensors and Phenomenology Thrust Continue: - Developing and implementing novel hardware, algorithms and high speed processing to enable detection of advanced maritime threats in both manmade and natural clutter at stand-off ranges. - Developing and implementing new electro-optic and infrared sensing capabilities including digital readouts for improved passive sensing of difficult threats in cluttered backgrounds. - Providing advanced sensor processing that improve Intelligence, Surveillance, Reconnaissance and Targeting of hard targets. Complete: - Development of key technologies for off-board RF illumination sources to enable Multi-Input Multi-Output and receive-only sensing in a distributed environment. Initiate: - Polarimetric techniques for improving clutter and identification in maritime radars.					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Quantum, Positioning, Navigation, and Timing Thrust - Continue development of quantum gravimetry mapping and navigation techniques. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY 2023 to FY 2024 is due to additional efforts to improve counter intelligence, surveillance and reconnaissance (ISR) capabilities for distributed maritime operations.					
Title: Ocean Battlespace Sensing ***Description:*** The objective of this activity is to enable maritime domain access and distributed operations for Naval forces in contested environments through superior maritime battlespace awareness and threat detection, identification and neutralization. Specifically, activities will develop and mature technologies that ultimately support Mine and Expeditionary Warfare, Undersea Warfare, and Environmental Information Warfare. Activities will also develop and mature methods and technological approaches for environmental sensing and prediction for the maritime battlespace. The desired outcome for efforts in this activity is to mature the applied research results to a point where they can be focused on particular enabling capabilities and proposed to be continued as Future Naval Capabilities (FNC) in program element (PE) 0603673N, Future Naval Capabilities Advanced Technology Development. Additionally, a subset of technologies explored herein are intended to support expeditionary access and will be further matured, focused, and ultimately demonstrated under the USMC's Advanced Technology Demonstration effort in PE 0603640M MC Advanced Technology Demo. ***FY 2023 Plans:*** Mine and Expeditionary Warfare Thrust: - Complete the investigation of housing designs to both maximize range and improve lethality for aerial mine subcomponents. - Complete initial design and integration of unmanned platform capability for alternate deployment options. - Completed advanced minesweeping capabilities for unmanned surface vehicles. Technology transitioned to Magnetic and Acoustic Generation Next Unmanned Superconducting Sweep (MAGNUSS) Future Naval Capability. - Initiate area coverage rate mine warfare capability in contested shallow water to surf zone to support expeditionary operations in the South Pacific.	25.818	31.977	30.095	0.000	30.095

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Undersea Warfare Thrust: - Continue to develop acoustic sources for floating and mobile anti-submarine warfare (ASW) sensing systems. - Continue testing of glider towed arrays for detection of ASW threats in the ocean environment. - Complete investigation of undersea data networking technologies for employing multi-modal communication devices for reduced latency and bandwidth, and assured connectivity. - Complete development of a large, low-noise volumetric array that can be deployed in an A-size sonobuoy that will have superior detection performance against relevant targets. - Initiate development of signal processing and displays to improve performance and reduce vulnerability for submarine active sonar. - Initiate development of computational methods to detect very quiet submarine targets by combining evidence from multiple arrays. - Initiate development of unmanned undersea vehicle (UUV) navigation concepts that fuse multiple sensing modalities into a single solution to improve performance in long duration complex environments. Ocean, Atmosphere and Space Sciences Thrust: - Complete development of new decision aid to support intelligence, surveillance and reconnaissance (ISR) mission planning tools for four-dimensional atmospheric cloud/particle prediction and impact electro-optical (EO), infrared (IR) and high-energy laser (HEL) sensors. - Complete new government-owed, open architecture paradigm in Space-Based Environmental Monitoring (SBEM) data processing and delivery needed to improve timely, accurate decision making in the maritime battlespace environment. - Complete development of high frequency (HF) signal of opportunity processing, ionospheric propagation, and ocean surface scatter algorithms to add data fusion, and prognostic capability to regional assessments to support Navy HF communications networks at sea. - Complete development of a prototype radio frequency (RF) communications and signature management tool for small unit maneuver in the coastal and terrestrial environments to assess the environmental variability spatially and temporally. - Complete development of a prototype decision support tool for tactical aircraft that can assess the most likely current refractivity environment and diagnose current observed anomalous RF propagation to exploit or mitigate environmental effects on radar and electronic warfare (EW) search performance.					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Complete initial development of forward model components (e.g., coefficients), compression techniques of high-resolution ocean model reassembly on a forward deployed communications-disadvantaged platform. - Initiate development of a methodology of modeling and measurement of EO/IR naval sensors in various weather conditions to determine and predict performance in non-ideal environmental conditions.					
FY 2024 Base Plans: Mine and Expeditionary Warfare Thrust Continue: - Imitate Development of high area coverage rate mine warfare capability for contested environments to support naval maneuver in Western Pacific; includes development of enabling machine learning algorithms, autonomous behavior, and hardware design. Undersea Warfare Thrust Continue: - In-water comparative analysis/testing of glider towed arrays for detection of ASW threats in the ocean environment; leverage emerging glider technologies for increased endurance and consider novel array fabrication to characterize best fit for variety of ocean environments. - Development of signal processing and displays to improve performance and reduce vulnerability for submarine active sonar. - Development of computational methods to detect very quiet submarine targets by combining evidence from multiple arrays. Complete: - Development of acoustic sources for floating and mobile anti-submarine warfare (ASW) sensing systems. - Development of unmanned undersea vehicle (UUV) navigation concepts that fuse multiple sensing modalities into a single solution to improve performance in long duration complex environments. Initiate: - Development of algorithms and software for making probabilistic USW-related sensor performance forecasts that can be used in strike group and theater anti-submarine warfare mission plans. Environmental Information Warfare Thrust (This thrust was previously named Ocean, Atmosphere and Space Sciences Thrust in the FY2023 plans. The name was changed to more accurately describe the research.) Continue:					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Development of algorithms to assess and predict the impact of the atmospheric aerosols and turbulence on the performance of electro-optic and infra-red naval sensors. - Algorithm development for improved cloud visibility assessment by leveraging new government-owed, open architecture paradigm in Space-Based Environmental Monitoring (SBEM) data processing and delivery needed to improve timely, accurate decision making in the maritime battlespace environment. - To apply system learning to tactical environment assessment and prediction in support of aviation applications. - Development of improvements to polar ionosphere sensing and prediction for a regional full-physics model leveraging recently developed sensors and advances in polar space weather science. Complete: - New government-owed, open architecture paradigm in Space-Based Environmental Monitoring (SBEM) data processing and delivery needed to improve timely, accurate decision making in the maritime battlespace environment. - Development of a prototype radio frequency (RF) communications and signature management tool for small unit maneuver in the coastal and terrestrial environments to assess the environmental variability spatially and temporally. Initiate: - Development of a fully coupled ionospheric-thermospheric model to permit greatly improved multi-day forecasts for propagation conditions of HF communications and radars. - Characterization of Earth science model error in decision support tools by examining forecast fidelity from short-term (hourly) to sub-climate (monthly) timescales using a hierarchy of data quality, from full coupled dynamical simulations to regional, statistical, and climatological guidance. - Development of the numerical representation of improved tropospheric-stratospheric interaction and mesospheric data assimilation for gravity wave processes leading to extended range prediction of extreme weather events. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The funding decrease from FY2023 to FY2024 is tied to the completion of the development of prototype radio frequency communications and signature management tool for small unit maneuver in the coastal and terrestrial environments to assess the environmental variability spatially and temporally. Additionally, projects have been completed regarding the new government-owed, open architecture paradigm in Space-Based Environmental					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Monitoring data processing and delivery needed to improve timely, accurate decision making in the maritime battlespace environment.					
Title: Sea Warfare and Weapons	32.946	30.926	33.368	0.000	33.368
Description: The objective of this activity is to develop and mature technologies that enable superior warfighting capabilities for surface and sub-surface naval platforms and undersea weaponry to a point where they can be proposed and continued as Future Naval Capabilities in program element (PE) 0603673N, Future Naval Capabilities Advanced Technology Development. ***FY 2023 Plans:*** Initiate the following: - Efforts associated with rocket-propelled grenade (RPG)-of-the-Sea to develop and test components for a man-portable, easy-to-deploy undersea weapon effective against small surface craft. Use a build-test-build approach to refine, either individually or in combination, components for sensors, guidance, fuzing and propulsion. - Efforts associated with Wide Arc Swath Profiler (WASP) to Develop, test and assess the viability and utility of a new guidance mode for undersea weapons and vehicles. Continue the following: - Autonomous Determination of Vessel Intent (ID) efforts to develop and test an algorithm that will autonomously determine the intent of another vessel. (Initiated in FY22) - Autonomous Tactical Behaviors for M/LUSVs (ATBM/L) efforts to develop, integrate and transition mission executive and behaviors capability to USVs, such that the capability can be used on any UMAA-compliant USV. - Autonomic Readiness Management (ARM) efforts to build an onboard hardware/software infrastructure and integration to operational decision support for onboard data acquisition and analysis using AI/ML based models. - Robust Unmanned Platform Power System (RUPPS) effort to focus on the component modeling, system modeling, simulation, and subscale experimentation activities to demonstrate the suitability of modular, high endurance, alternative power system technology for Unmanned Surface Vessel platforms (USV). (Initiated in FY21) - Propulsion Gas Turbine Materials Upgrade (GTMAT) efforts to enable sustained higher engine service temperatures to meet increased ship power needs/capabilities and maintain engine life (Initiated in FY21) - Flux-Core Additive Manufacturing (FCAM) efforts enable metal additive manufacturing afloat without creating a large logistics burden to carry shielding gas. (Initiated in FY22)					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- COTS Battery Phase II (COTS B II) research to develop and demonstrate a custom battery design that uses automotive industry commercial-off-the-shelf (COTS) battery hardware and lifecycle data-driven reliability approaches to battery management. (Initiated in FY22) - Electrical Ship Asset efforts: aging modelling and Reliability and Condition Assessment (ESARCA) efforts to investigate methods that lead to effective use of electrical insulation materials on ships employing high voltage electrical equipment. (Initiated in FY22) - Digital Evaluation of Implodable Composite Payloads (DEIComP) effort involves developing a suite of validated digital engineering tools and experimental findings that will improve prediction accuracy and improve speed and affordability of implodable integration with the fleet while increasing deployed technologies and survivability. (Initiated in FY22) - Flow Induced Machinery Noise Silencing (FIMNS) efforts to develop an increased knowledge base and an improved computational toolset for the design of efficient and reduced acoustic noise submarine machinery system blowers, cooling fans, and treatments; and deliver a prototype quiet cooling fan. (Initiated in FY22) - Stern Area System+ (SAS+) efforts to develop and demonstrate, through laboratory and in-water tests, algorithms which allow SAS to perform a new function to replace a legacy system, with enhanced capability, in the VIRGINIA Class. (Initiated in FY22) - Own Ship Electro-Magnetic Monitoring (OSEM) efforts to complete external sensor requirements and specifications development, continue sensor design, and develop the sensor qualification test plan. (Initiated in FY22) - Low-Observable Communications Mast for Undersea Platforms (LOCM-UP) efforts to reduce the radar cross section (RCS) and overall counterdetection risk of the submarine multifunction mast (MFM) while maintaining or increasing broad spectrum communications capability. (Initiated in FY22) - Corrosion-Informed Materials Section and Design Tool (CIMaD Tool) efforts to develop a DoN corrosion materials database and associated corrosion simulation algorithms, and validate a set of simulation algorithms using the developed database to predict corrosion damage which is critical to pursue a research to design against corrosion prior to production of DoN assets. (Initiated in FY22) - Next Generation Structural Steel for Enhanced Platform Capability (10% Ni Steel) efforts to develop processing conditions for adequate NIL-Ductility temperature, crack arrest, and stress-corrosion cracking (SCC) resistance; develop machine-learning process-structure-properties models to predict behavior and development of welding consumables and processes requiring no preheat. (Initiated in FY22) Complete the following: - AVIA efforts by delivering details from testing and simulation to the new ATBM/L technical candidate.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Digital twin related efforts by proposing to transition to an INP. - Condition Based Maintenance (CBM) efforts to deliver prototype EDAPO hardware and software modules for vehicle PHMS. - VIPB efforts by delivering models for the shaft-line components to the Future Naval Capability. - Own Ship Acoustic Monitoring efforts by delivering technical details from monitoring, studies and training to support transition to the Future Naval Capability. - Transparent Marine Antifouling Coatings (TMAC) efforts by delivering proposed down-select coatings for scale-up and additional testing.					
FY 2024 Base Plans: Naval Power Systems Continue: - COTS Battery Phase II (COTS B II) research to develop and demonstrate a custom battery design that uses automotive industry commercial-off-the-shelf (COTS) battery hardware and lifecycle data-driven reliability approaches to battery management. Complete: - Electrical Ship Asset efforts: aging modelling and Reliability and Condition Assessment (ESARCA) efforts to investigate methods that lead to effective use of electrical insulation materials on ships employing high voltage electrical equipment. - Robust Unmanned Platform Power System (RUPPS) component modeling, system modeling, simulation, and subscale experimentation activities to demonstrate the suitability of modular, high endurance, alternative power system technology for Unmanned Surface Vessel platforms (USV). (Completed in FY23) FY24-start RUPPS FNC proposed. - High Density Kinetic Energy Storage System (HD KESS) efforts to prove the feasibility of a non-battery Energy Magazine. (Initiated in FY23) - Propulsion Gas Turbine Materials Upgrade (GTMAT) efforts to enable sustained higher engine service temperatures to meet increased ship power needs/capabilities and maintain engine life. FY24-start GTMAT FNC proposed. Initiate: - Feasibility studies to explore next generation applications of Naval Power Systems in Navy and Marine Corps environments. Platform Design and Engineering					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Continue: - Autonomous Determination of Vessel Intent (ID) efforts to develop and test an algorithm that will autonomously determine the intent of another vessel Complete: - Digital Evaluation of Implodable Composite Payloads (DEIComP) effort involves developing a suite of validated digital engineering tools and experimental findings that will improve prediction accuracy and improve speed and affordability of implodable integration with the fleet while increasing deployed technologies and survivability. (Completed in FY23) - Low-Observable Communications Mast for Undersea Platforms (LOCM-UP) efforts to reduce the radar cross section (RCS) and overall counterdetection risk of the submarine multifunction mast (MFM) while maintaining or increasing broad spectrum communications capability. - Stern Area System+ (SAS+) efforts to develop and demonstrate, through laboratory and in-water tests, algorithms which allow SAS to perform a new function to replace a legacy system, with enhanced capability, in the VIRGINIA Class. - Own Ship Electro-Magnetic Monitoring (OSEM) efforts to complete external sensor requirements and specifications development, continue sensor design, and develop the sensor qualification test plan. - Flow Induced Machinery Noise Silencing (FIMNS) efforts to develop an increased knowledge base and an improved computational toolset for the design of efficient and reduced acoustic noise submarine machinery system blowers, cooling fans, and treatments; and deliver a prototype quiet cooling fan. - Digital Engineering that creates a digital thread connecting full platform lifecycle will be proposed as FY25 INP New Start. - Autonomous Tactical Behaviors for M/LUSVs (ATBM/L) efforts to develop, integrate and transition mission executive and behaviors capability to USVs, such that the capability can be used on any UMAA-compliant USV. (project terminated prior to initiation) - Autonomic Readiness Management (ARM) efforts to build an onboard hardware/software infrastructure and integration to operational decision support for onboard data acquisition and analysis using AI/ML based models. (project terminated prior to initiation) Initiate: - Feasibility studies to explore next generation applications of Platform Design and Engineering in Navy and Marine Corps environments. Undersea Weapons Continue: N/A					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Complete: - Efforts associated with rocket-propelled grenade (RPG)-of-the-Sea by transitioning a new and novel undersea weapon concept to the special warfare community. - Efforts associated with Wide Arc Swath Profiler (WASP) to develop, test and assess the viability and utility of a new guidance mode for undersea weapons and vehicles. Initiate: - Feasibility studies to explore next generation applications of Undersea Weapons in Navy and Marine Corps environments. Materials, Manufacturing, Sustainment & Logistics Continue: - Corrosion-Informed Materials Section and Design Tool (CIMaD Tool) efforts to develop a DoN corrosion materials database and associated corrosion simulation algorithms, and validate a set of simulation algoritghms using the developed database to predict corrosion damage which is critical to pursue a research to design against corrosion prior to production of DoN assets. Complete: - Flux-Core Additive Manufacturing (FCAM) efforts enable metal additive manufacturing afloat without creating a large logistics burden to carry shielding gas. - Next Generation Structural Steel for Enhanced Platform Capability (10% Ni Steel) efforts to develop processing conditions for adequate NIL-Ductility temperature, crack arrest, and stress-corrosion cracking (SCC) resistance; develop machine-learning process-structure-properties models to predict behavior and development of welding consumables and processes requiring no preheat. (Completed in FY23) Initiate: - Feasibility studies to explore next generation applications of Materials, Manufacturing, Sustainment and Logistics in Navy and Marine Corps environments. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase in funding from FY2023 to FY2024 will be used to advance efforts associated with the various core competency areas for Sea Warfare and Weapons.					
Title: Warfighter Performance	16.238	18.343	24.248	0.000	24.248

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Description: The objective of this activity is to conduct research and mature technologies that enhance Naval warfighting effectiveness and efficiency within the broad array of Warfighter Performance science and technology domains (Decision Sciences, Information Warfare and Future Conflict, Manpower, Personnel, Training and Education, Intelligent and Autonomous Systems, Biocentric Technologies, Medical, Human Performance) to a point where they can be proposed and continued as Future Naval Capabilities (FNC) in program element (PE) 0603673N, Future Naval Capabilities Advanced Technology Development. ***FY 2023 Plans:*** Advanced Analytics and Decision Making Thrust: - Continue development of an information warfare training system that teaches tactics, techniques and procedures for decisive, effective engagement that is suitable for public affairs, information operations, psychological operations, and intelligence operations. - Complete development of automated data fusion and asset allocation techniques that support the E-2D Hawkeye tactical airborne early warning aircraft's role in orchestrating Carrier Strike Group air defense. Integrate into Virtual/Constructive training environments and enable E-2D crew to train as it fights. - Initiate technology to automatically identify man-made structures in high resolution 3D datasets by defining use cases, workflows, outline methods, and algorithms for existing software applications. Program will reduce the task load for defining structures by identifying specific features unique to man-made structures and using them to outline the structures. - Initiate feasibility studies to explore next generation applications of advanced analytics and decision making in Navy and Marine Corps environments. Autonomy, Artificial Intelligence and Robotics Thrust: - Complete development of information model for expressing and managing mission priorities and authorities between unmanned vehicles, autonomous systems and warfighters to enable transfer of tactical control of vehicles and/or their payloads during missions in contested communications environments. - Initiate development of techniques to manage data sharing requirements to support logistics tools and minimize bandwidth requirement to enable meta-optimization across multiple planners and tactical decision aids. - Initiate feasibility studies to explore next generation applications of autonomy, artificial intelligence, and robotics in Navy and Marine Corps environments. Manpower, Performance, Protection, and Medical Support Thrust:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Continue development of models that provide decision support tools during the selection and assignment process of military personnel in order to maximize organizational effectiveness. - Complete development of a flexible, dry dive suit enabling mobility for divers to work on the bottom of the ocean to accomplish the majority of tasks that previously required a 'wet diver' and cannot be accomplished by robotics. - Initiate development of a Modular, Live-Virtual-Constructive integrated warfare environment to support training, mission rehearsal, and assessment of Carrier Strike Group and Air Wing forces while at sea. - Initiate feasibility studies to explore next generation applications of manpower, performance, protection, and medical support in Navy and Marine Corps environments. Materials Thrust: - Complete maturation of a low viscosity corrosion preventative wash primer to increase paint adhesion for the repair of tiles on submarines. - Complete characterization of a biomimetic and a bioinspired seawater curing adhesive to assess its suitability for adhering submarine hull treatment to steel submarine hulls. - Initiate feasibility studies to explore next generation applications of materials in Navy and Marine Corps environments. ***FY 2024 Base Plans:*** Advanced Analytics and Decision Making Thrust Continue: - Investigating capabilities that will define use cases, workflows, outline methods, and algorithms for existing software applications to automatically identify man-made structures in high resolution 3D datasets. - Complete: - Applied research on an information warfare training system that teaches tactics, techniques and procedures for decisive, effective engagement that is suitable for public affairs, information operations, psychological operations, and intelligence operations. Initiate: - Studies on automated planner coordination and optimization tools for mission logistics, increasing combat readiness with actionable information. This includes methodology and proof of concept software to couple mission, logistics, and route planning in SecDevOps environment. - Feasibility studies to explore next generation applications of advanced analytics and decision making in Navy and Marine Corps environments.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Autonomy, Artificial Intelligence and Robotics Thrust Complete: - Studies on techniques to manage data sharing requirements to support logistics tools and minimize bandwidth requirement to enable meta-optimization across multiple planners and tactical decision aids. Initiate: - Applied research on a family of robotic autonomous systems with modular sensor and force protection payloads that are interoperable between multiple platform variants. - Feasibility studies to explore next generation applications of autonomy, artificial intelligence, and robotics in Navy and Marine Corps environments. Manpower, Performance, Protection, and Medical Support Thrust Continue: - Expanding models that provide decision support tools during the selection and assignment process of military personnel in order to maximize organizational effectiveness. - Applied research on a Modular, Live-Virtual-Constructive integrated warfare environment to support training, mission rehearsal, and assessment of Carrier Strike Group and Air Wing forces while at sea. Initiate: - Applied research to develop capabilities that will improve instructor performance and proficiency, leading to enhanced student learning outcomes. - Investigations on adaptive training approaches that include automated assessment and adaptive scenarios to accelerate training of ship handling skills for bridge personnel. - Feasibility studies to explore next generation applications of manpower, performance, protection, and medical support in Navy and Marine Corps environments. Materials Thrust - Initiate feasibility studies to explore next generation applications of materials in Navy and Marine Corps environments.					
FY 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 2	**R-1 Program Element (Number/Name)** PE 0602750N / *Future Naval Capabilities Applied Research*	**Project (Number/Name)** 0000 / *Future Naval Capabilities Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
The increase in funding from FY2023 to FY2024 will be used to initiate efforts in: 1) automated planner coordination and optimization tools for mission logistics; 2) robotic autonomous systems for force protection; 3) capabilities to improve instructor performance and proficiency; and 4) adaptive, automated training for ship bridge personnel.					
Title: Naval Air Warfare and Weapons ***Description:*** The objective of this activity is to develop and mature technologies in directed energy, energetic materials, autonomy, electromagnetic launch, and high speed conventional air and surface weapons to a point where they can be proposed and continued as Future Naval Capabilities in PE 0603673N, Future Naval Capabilities Advanced Technology Development. ***FY 2023 Plans:*** Kinetic Weapons Thrust: - Continue investigating advanced material and structural capabilities in aerodynamics for high-speed/hypersonic weapons. - Continue the investigation of advanced air-to-surface/ground seeker technologies, focusing largely on efficacy in a hypersonic regime. - Continue maturing design concepts, fabricating sample components, and performing preliminary testing to inform future system level design trades. - Continue leveraging ongoing reactive materials initiatives for application to additional munitions and weapons. Establish weight/volume versus range increase potential for conceptual warhead designs. Establish warhead interface constraints for system integration. - Continue developing novel energy/power generation, management and storage technologies applicable to advanced future missile capabilities and requirements. - Complete investigating novel concepts for solid rocket motor initiation, safety and thrust profile management. - Complete maturing key solid fuel ramjet technologies for increasing range, speed and maneuverability for missiles and projectiles. - Complete leveraging ongoing collaborative weapons technologies for application to additional munitions and weapons. - Initiate feasibility studies for tactical decision aids that support advanced strike weapons. - Initiate feasibility studies and possible development of terminal defense fire control architectures that support low cost and easy integration onto ships and into expeditionary forces for terminal defense suitable for multiple engagement weapons.	30.030	30.655	30.257	0.000	30.257

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Directed Energy / Electric Weapons Thrust: - Continue maturing technologies leading to development of directed energy for self-defense of high value, low density aircraft against next generation advanced threats. Includes solid state and pulsed laser systems. - Continue designing, developing and testing of solid state, High-Power Microwave (HPM) systems for enhanced lethality. - Continue the initial susceptibility testing of Out Board Motor assets utilizing developed waveforms from FY21, modeling potential dynamic engagements matched to Joint Counter UAS operational requirements, and performing scaled demonstration of waveform engagement capability facility. - Continue the system design, build and testing of solid state High Power Microwave (HPM) Nonlinear Transmission Line (NLTL) power combining and phased array phase control evaluation, and platform integration study, and dynamic swarm CUAS HPM lethality testing. - Continue testing of an ensonification device to determine effects of range and amplitude. - Continue developing a conceptual RM warhead designs for 40mm grenade configurations. - Complete evaluating High Power Microwave (HPM) technologies used in counter electronic missions to defeat swarms of small Unmanned Aerial Systems (UAS). - Complete assessing the feasibility of near term solid-state HPM technologies to provide low cost and flexible counter UAS capability. - Complete conceptual designs for HPM weapons to increase defensive weapon capabilities of expeditionary ship classes against small vessels and swarming small UAS threats. - Initiate the development of compact High Power Microwave (HPM) antenna technology with reduced size, weight and cost to enable integration into Marine Corps tactical ground vehicles. - Initiate the advancement of HPM tunable source technology to adapt to evolving airborne threats. Aviation Platforms Thrust: - Continue Investigating and maturing system of systems concepts and associated technologies necessary to fully implement manned-unmanned teaming operations. - Continue maturing technologies leading to development of kinetic kill for self-defense of high value, low density aircraft against next generation advanced threats. This includes kinetic-kill defenses against adversary hypersonic weapons research and developing conceptual approaches for a podded Wide Body Defense System suitable for naval high value air assets. - Complete maturing Fuel Bladder Technologies by fabricating and testing crashworthy and self-sealing large panels.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Initiate the investigation and design of a suite of drag reduction concepts for Naval big wing aircraft, in order to improve flight performance. ***FY 2024 Base Plans:*** Kinetic Weapons Thrust Continue: - Investigating advanced material and structural capabilities in aerodynamics for high-speed/hypersonic weapons. - Investigation of advanced air-to-surface/ground seeker technologies, focusing largely on efficacy in a hypersonic regime. - Maturing design concepts, fabricating sample components, and performing preliminary testing to inform future system level design trades. - Leveraging ongoing reactive materials initiatives for application to additional munitions and weapons. Establish weight/volume versus range increase potential for conceptual warhead designs. Establish warhead interface constraints for system integration. - Feasibility studies for tactical decision aids that support advanced strike weapons. - Feasibility studies and possible development of terminal defense fire control architectures that support low cost and easy integration onto ships and into expeditionary forces for terminal defense suitable for multiple engagement weapons. Complete: - Developing novel energy/power generation, management and storage technologies applicable to advanced future missile capabilities and requirements. Initiate: - Investigation into varied technologies that could mitigate impacts of adverse navigational environments upon weapon systems employed in denied areas. - Investigation into advanced propulsion techniques for high speed weapons; main focus on air-breathing concepts. Directed Energy / Electric Weapons Thrust Continue: - Maturing technologies leading to development of directed energy for self-defense of high value, low density aircraft against next generation advanced threats. Includes solid state and pulsed laser systems.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Initial susceptibility testing of Out Board Motor assets utilizing developed waveforms from FY21, modeling potential dynamic engagements matched to Joint Counter UAS operational requirements, and performing scaled demonstration of waveform engagement capability facility. - Development of compact High Power Microwave (HPM) antenna technology with reduced size, weight and cost to enable integration into Marine Corps tactical ground vehicles. - Advancement of HPM tunable source technology to adapt to evolving threats. Complete: - Designing, developing and testing of solid state, High-Power Microwave (HPM) systems for enhanced lethality. - System design, build and testing of solid state High Power Microwave (HPM) Nonlinear Transmission Line (NLTL) power combining and phased array phase control evaluation, and platform integration study, and dynamic swarm CUAS HPM lethality testing. Transition to Joint CUAS Office. - Testing of an ensonification device to determine effects of range and amplitude. - Developing a conceptual RM warhead designs for 40mm grenade configurations. Initiate: - Development of advanced C-ISR disabling and jamming techniques. Aviation Platforms Thrust Continue: - Investigating and maturing system of systems concepts and associated technologies necessary to fully implement manned-unmanned teaming operations. - Maturing technologies leading to development of kinetic kill for self-defense of high value, low density aircraft against next generation advanced threats. Complete: - Investigation and design of a suite of drag reduction concepts for Naval big wing aircraft, in order to improve flight performance. Initiate: - Investigation into concepts and technologies necessary to achieve greater operational capability from unmanned aerial systems. - Investigation into a suite of technologies leading to more robust shipboard recovery capabilities for air platforms (manned and unmanned). ***FY 2024 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant funding change from FY2023 to FY2024.					
Accomplishments/Planned Programs Subtotals	167.327	173.641	182.662	0.000	182.662

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
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COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	26.065	3.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.565

A. Mission Description and Budget Item Justification

Congressional Interest Items not included in other Projects.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Congressional Add: Improved Detection of Submarine Threats ***FY 2022 Accomplishments:*** Conduct applied research for improved detection of submarine threats. ***FY 2023 Plans:*** N/A	4.827	0.000
Congressional Add: Long endurance, autonomous, mobile acoustic detection systems ***FY 2022 Accomplishments:*** Conduct long endurance, autonomous, mobile acoustic detection systems applied research ***FY 2023 Plans:*** N/A	21.238	0.000
Congressional Add: Operational readiness via next-generation satellites ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Conduct research supporting operational readiness via next-generation satellites.	0.000	3.500
Congressional Adds Subtotals	26.065	3.500

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A