Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy											Date: March 2024	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603729N *I Warfighter Protection Adv Tech*							
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	45.394	5.100	5.105	-	5.105	5.209	5.314	5.397	5.510	Continuing	Continuing
2914: *Warfighter Protection Adv Tech*	0.000	4.849	5.100	5.105	-	5.105	5.209	5.314	5.397	5.510	Continuing	Continuing
9999: *Congressional Adds*	0.000	40.545	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	40.545

A. Mission Description and Budget Item Justification

This PE supports the advanced development and demonstration of technologies to improve warfighter performance, safety and survivability. Naval investment in these areas is essential in order to improve the ability to enhance, maintain, and sustain Warfighter effectiveness.

Today's Sailors and Marines are enabled by Naval Science and Technology (S&T). Since 1946, the Office of Naval Research (ONR) has fostered scientific research related to the maintenance of maritime superiority and national defense. ONR manages the Department of the Navy's (DON) portfolio of Naval basic and applied research, and advanced technology development investments to ensure Naval forces can effectively deter conflict, but when called upon, fight, win and come home safe. Current investments hedge against uncertainty, providing solutions to commanders today, and options for the future. The Naval S&T budget supports higher guidance defined by the National Defense Strategy, and responds to requirements identified by the Secretary of the Navy through research priorities set by the Chief of Naval Research, coordinated across the Naval Research Enterprise (NRE), and outlined in the Naval R&D Framework.

This Program Element (PE) funds Advanced Technology Development (ATD) that includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment. Efforts in this PE generally have Technology Readiness Levels (TRL) of 4 (component and/or breadboard validation in laboratory environment.), 5 (component and/or breadboard validation in relevant environment.), or 6 (system/subsystem model or prototype demonstration in a relevant environment).

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	46.999	5.100	5.105	-	5.105
Current President's Budget	45.394	5.100	5.105	-	5.105
Total Adjustments	-1.605	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.605	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy	Date: March 2024
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603729N *I Warfighter Protection Adv Tech*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2023	FY 2024
Project: 9999: *Congressional Adds*		
Congressional Add: *Bone Marrow Registry Program*	30.891	0.000
Congressional Add: *Laser protective eyewear research*	4.827	0.000
Congressional Add: *Closed-loop sedation and anesthesia system*	4.827	0.000
Congressional Add Subtotals for Project: 9999	40.545	0.000
Congressional Add Totals for all Projects	40.545	0.000

Change Summary Explanation

Funding: No significant change.

Technical: Not applicable.

Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy											Date: March 2024	
Appropriation/Budget Activity 1319 / 3					R-1 Program Element (Number/Name) PE 0603729N / *Warfighter Protection Adv Tech*				Project (Number/Name) 2914 / *Warfighter Protection Adv Tech*			
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
2914: *Warfighter Protection Adv Tech*	0.000	4.849	5.100	5.105	-	5.105	5.209	5.314	5.397	5.510	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element supports the advanced development and demonstration of technologies to improve warfighter performance, safety and survivability. Naval investment in these areas is essential in order to improve the ability to enhance, maintain, and sustain Warfighter effectiveness.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: Naval Noise-Induced Hearing Loss (NIHL) and Warfighter Performance	4.849	5.100	5.105	0.000	5.105
Articles:	-	-	-	-	-
Description: Improve technologies aimed at enhancing warfighter effectiveness and efficiency, including efforts in: biocentric technologies, medical concepts, intelligent and autonomous systems, decision sciences, information warfare and future conflict, manpower, personnel, training, and education, human performance. These efforts will mature technologies in order to better ensure transition into acquisition and procurement programs.					
FY 2024 Plans: Shaping the Maritime Auditory/Acoustic Environment Continue: - Advanced technology development and assessment of enhanced communication systems (communications interfaces with advanced functionalities) and situational awareness (auditory cuing and alerting for spatial audio, auditory sensor network for decision-aiding) for mission effectiveness and mitigate noise to protect Warfighters. - Advanced development and assessment of mitigation strategies to protect Warfighters with: (i.) an improved communication systems for divers to dampen equipment noise and minimize hearing loss, (ii.) an impulse noise calculator for assessing exposure from small caliber firearms, and (iii.) a hearing protection device training protocol to mitigate hazardous noise exposures in weapons training environments. - Development of acoustic camouflage and decoy technologies to identify and exploit acoustic signatures of Naval platforms and systems.					

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603729N / *Warfighter Protection Adv Tech*	**Project (Number/Name)** 2914 / *Warfighter Protection Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Warfighter Performance and Protection Continue: - Advanced technology development and assessment of materials and protective gear to reduce exposures of Warfighters to directed energy systems. - Development of advanced physiological/cognitive monitoring technologies that incorporate real-time sensing, observation, and location of individual and team responses to environmental and operational stressors (e.g., smoke, cold, heat, immersion). - Advanced development of artificial intelligence-driven physiological and environmental monitoring devices that will provide real-time prediction of personnel status to command and leadership in operational scenarios. Complete: - Development of a prototype platform that will enhance and fuse multiple streams of data from environmental and physiological on-body sensor sources for personnel tracking and health status monitoring in emergency scenarios. Initiate: - Advanced development of countermeasures against extreme environmental exposures (i.e., extreme heat, cold, smoke) to enhance warfighter survivability in operational or emergency scenarios. - Advanced technology development efforts in areas including: expeditionary medicine, diver performance, and information warfare.					
FY 2025 Base Plans: Shaping the Maritime Acoustic Environment - Complete advanced technology development and assessment of enhanced communication systems (communications interfaces with advanced functionalities) and situational awareness (auditory cuing and alerting for spatial audio, auditory sensor network for decision-aiding) for mission effectiveness and mitigate noise to protect Warfighters. - Complete advanced development and assessment of mitigation strategies to protect Warfighters with: (i.) an improved communication systems for divers to dampen equipment noise and minimize hearing loss, (ii.) an impulse noise calculator for assessing exposure from small caliber firearms, and (iii.) a hearing protection device training protocol to mitigate hazardous noise exposures in weapons training environments. - Complete development of acoustic camouflage and decoy technologies to identify and exploit acoustic signatures of Naval platforms and systems.					

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603729N / *Warfighter Protection Adv Tech*	**Project (Number/Name)** 2914 / *Warfighter Protection Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Warfighter Performance and Protection - Complete advanced development of artificial intelligence-driven physiological and environmental monitoring devices that will provide real-time prediction of personnel status to command and leadership in operational scenarios. - Continue advanced technology development and assessment of materials and protective gear to reduce exposures of Warfighters to directed energy systems. - Continue development of advanced physiological/cognitive monitoring technologies that incorporate real-time sensing, observation, and location of individual and team responses to environmental and operational stressors (e.g., smoke, cold, heat, immersion). - Continue advanced development of countermeasures against extreme environmental exposures (i.e., extreme heat, cold, smoke) to enhance warfighter survivability in operational or emergency scenarios. - Continue advanced technology development efforts in expeditionary medicine through development and validation of pharmaceuticals and medical supplies produced using distributed additive manufacturing to address contested logistics challenges ashore and afloat to meet surging demands during combat, natural disasters, and epidemics. - Continue advanced technology development efforts in areas including: expeditionary medicine, diver performance, and information warfare. - Initiate the development of advanced prototypes for information warfare simulation of social media conflicts to include advanced analytics. - Initiate the development of battle planning tools and capabilities for gaining information advantage in information conflict situations on social media. - Initiate scale up demonstration of biomanufacturing and evaluation of Naval-relevant materials. ***FY 2025 OCO Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** There is no significant funding change from FY 2024 to FY 2025.					
Accomplishments/Planned Programs Subtotals	4.849	5.100	5.105	0.000	5.105

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603729N / *Warfighter Protection Adv Tech*	**Project (Number/Name)** 2914 / *Warfighter Protection Adv Tech*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy			Date: March 2024
Appropriation/Budget Activity 1319 / 3	R-1 Program Element (Number/Name) PE 0603729N / *Warfighter Protection Adv Tech*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	40.545	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	40.545
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Interest Items not included in other Projects.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024
Congressional Add: Bone Marrow Registry Program ***FY 2023 Accomplishments:*** The first objective is to develop the scientific, medical and technological advances required to support military contingencies caused by injury to the blood-forming system from toxic substances. The aim is to provide HLA matched hematopoietic progenitor cells for casualties from donors during a contingency response and support for hematopoietic progenitor cell donors from the Department of Defense. The second objective is to develop, test, and mature the ability of the NMDP Coordinating Center and NMDP contracted network sites (network sites to address contingency events wherein civilian or military personnel are exposed to marrow toxic agents, primarily ionizing radiation or chemical weapons containing nitrogen mustard gas) for contingency preparedness activities, and to integrate NMDP's role with federal, state and local agencies. Additional work includes immunobiologic and clinical research activities that promote studies to advance the science and technology of HCT transplantation to improve outcome and quality of life for military patients. An additional aim is to develop technology for rapid identification of donors to provide the best matched donor for hematopoietic cell transplantation as quickly as possible for service members in need. To this end, the goal is to test various HLA strategies and protocols to determine which approach matches a recipient to donor in shortest 'diagnosis-to-match' time interval. ***FY 2024 Plans:*** N/A	30.891	0.000
Congressional Add: Laser protective eyewear research ***FY 2023 Accomplishments:*** Leveraging bio-derived compounds, which exhibit heat-resistance, for the manufacture of protective structures for hypersonic projectiles. ***FY 2024 Plans:*** N/A	4.827	0.000
Congressional Add: Closed-loop sedation and anesthesia system	4.827	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603729N / *Warfighter Protection Adv Tech*	**Project (Number/Name)** 9999 / *Congressional Adds*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024
FY 2023 Accomplishments: Acquire in-silico and animal-based data, as well as compliance test reports supporting the safety of the overall system in order to support the FDA Investigational Device Exemption (IDE) application. The IDE application will be the main deliverable under this program. ***FY 2024 Plans:*** N/A		
Congressional Adds Subtotals	40.545	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A