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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0604292N / <i>FUTURE VERTICAL LIFT (MARITIME STRIKE)</i>							
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	0.000	0.000	5.097	9.825	-	9.825	-	-	-	-	-	-
2940: <i>Future Vertical Lift (Maritime Strike)</i>	0.000	0.000	5.097	9.825	-	9.825	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Future Vertical Lift (Maritime Strike) (FVL (MS)) directs a Naval Aviation initiative to close key warfighting gaps and recapitalize capabilities lost when legacy rotary wing platforms (MQ-8C, MH-60S, and MH-60R) reach service-life limits beginning in the late 2020s. The FVL (MS) program will develop and field more capable, maintainable and reliable manned and unmanned rotorcraft systems to meet the needs of the Navy. FVL (MS) will be a key component of Distributed Maritime Operations (DMO) which will add warfighting capabilities in long-range Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T), Surface Warfare, Undersea Warfare (Anti-Submarine Warfare and Mine Warfare), Air Warfare, Electronic Warfare, Naval Special Warfare, Personnel Recovery, Patient Movement, Humanitarian Assistance/Disaster Relief and Combat Logistics. The activities conducted under this program will contribute to the acquisition documentation required to support a Milestone A (MS-A) decision and enable Technology Maturation and Risk Reduction (TMRR) key activities. These efforts will enable timely development of a system that provides best value and capability to the warfighter while maintaining effective and efficient war fighting capability in support of the Navy's 30-year Aviation Plan.

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

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	5.097	10.197	-	10.197
Current President's Budget	0.000	5.097	9.825	-	9.825
Total Adjustments	0.000	0.000	-0.372	-	-0.372
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.372	-	-0.372

Change Summary Explanation

Technical: Not applicable.

The FY 2022 funding request was reduced by \$0.372M due to rate and miscellaneous adjustments.

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<p>Schedule: Analysis of Alternative date changed to 4QFY2021 through 3QFY2022 to align with OSD CAPE revising DoD Instruction 5000.84 Analysis of Alternatives (AoA) dated 04 Aug 2020. A revised AoA execution plan was developed to include a Pre-Materiel Development Decision Preparation event and Materiel Development Decision milestone added based on revised CAPE instruction.</p>		

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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 0604292N / <i>FUTURE VERTICAL LIFT (MARITIME STRIKE)</i>				Project (Number/Name) 2940 / <i>Future Vertical Lift (Maritime Strike)</i>			
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
2940: <i>Future Vertical Lift (Maritime Strike)</i>	0.000	0.000	5.097	9.825	-	9.825	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Future Vertical Lift (Maritime Strike)(FVL (MS)) project directs developmental activities in support of the replacement of the current inventory of Navy helicopters in the 2030+ timeframe. Specific development activities required for FVL (MS) may include: capability requirements definition, documentation, and validation; Analysis of Alternatives (AoA) planning and execution including AoA Study Guidance and Study Plan preparation); completion of affordability studies; establishment of the appropriate security environment (e.g. computers, facilities, and administration); production of an Acquisition Strategy (AS), Life Cycle Cost Estimate (LCCE), Life Cycle Support Plan (LCSP), Systems Engineering Plan (SEP), and Draft Capability Development Document (CDD); Request for Proposal (RFP) development: acquisition documentation; risk reduction initiatives; design trade studies; and support to joint FVL, including open hardware and software reference and objective architectures definition, mission system interoperability, and shipboard compatibility. These activities will result in completion of all acquisition documentation required for Milestone-A in FY 2024. Follow-on activities support preparation and execution of efforts to develop common systems reference and objective open architectures, and eventual prototype aircraft flight demonstrations in support of the FVL Technology Maturation and Risk Reduction (TMRR) acquisition phase. Activities and technologies developed also have the potential to be leveraged for sustainment of legacy Navy helicopters. These efforts will enable timely development of a system that provides best value and capability to the Joint Warfighter while maintaining effective and efficient war fighting capability in support of the Navy's 30 year Aviation Plan.

FY 2022 budget request funds for the continued support for FVL (MS) AoA to assess the technical feasibility, technical risk, and affordability of potential strategic solutions with the intent to develop the next generation of Naval rotary wing aircraft systems. Tasks to be performed may include but are not limited to: AoA support, acquisition program management functions, establishment of the security environment, engineering modeling and analysis, Test and Evaluation Master Plan (TEMP) development, system specification and Draft CDD development and design trade studies. AoA and post AoA follow-on efforts in FY22 for FVL (MS) will involve: Doctrine, Organization, Training, materiel, Leadership and Education, Personnel, Facilities and Policy that will include all facets of a program with particular focus on life-cycle cost reductions through common processes, support equipment, logistic support and component commonality utilizing non-materiel solutions, such as maintenance strategies, training solutions, and infrastructure requirements.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: FVL (MS) Requirements Definition and Acquisition Documentation	0.000	5.097	9.825	0.000	9.825
Articles:	-	-	-	-	-
FY 2021 Plans: Provide initial support for FVL (MS) AoA to assess the technical feasibility, technical risk, and affordability of potential strategic solutions with the intent to develop the next generation of Naval rotary wing aircraft systems.					

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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
<p>Tasks to be informed include: AoA support, acquisition program management functions, establishment of the security environment, engineering modeling and analysis, TEMP development, system specification and Draft CDD development, and design trade studies. Support for these efforts will come from government, industry, and academia.</p> <p>FY 2022 Base Plans: Continue support for FVL(MS) AoA execution, to assess the technical feasibility, technical risk, and affordability of potential strategic solutions with the intent to develop the next generation of Naval rotary wing aircraft systems. Tasks to be informed may include but are not limited to: AoA support, acquisition program management functions, engineering, engineering modeling and analysis, test and evaluation development, system specification and Draft CDD development, and design trade studies, acquisition program management functions, acquisition documentation to support the Milestone A, RFP development, engineering modeling and analysis, test and evaluation planning and development, a Model Based System Specification, Draft CDD completion, and design trade studies and prototyping on the Air Vehicle and all associated systems. These efforts may include but not be limited to studies, virtual simulation, conceptual design, prototyping of Air Vehicle, Avionics, Propulsion and Dynamics, Communications and Navigation, Weapons and Fire Control, Human Systems Integration, Survivability and Vulnerability, Missions and Missions Systems Management, Reliability and Maintainability, Training, Logistics, Sensor, Pilotage and Targeting Systems, VMS/Flight Control, and Software/Hardware architecture. Support for these efforts will come from government, industry and academia such as Naval Research Labs, DARPA, Georgia Tech Research Institute, John Hopkins University Applied Physics Lab, Penn State University Applied Research Lab, and various industry partners.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Increase of \$4.728M from FY 2021 to FY 2022 continues AoA execution and risk mitigation studies, increased engineering efforts, and modeling, virtual prototyping and prototyping efforts to support the initialization efforts driving to a Milestone A program entry.</p>					
Accomplishments/Planned Programs Subtotals	0.000	5.097	9.825	0.000	9.825

C. Other Program Funding Summary (\$ in Millions) N/A

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C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

FY 2022 funds continue AoA execution and risk mitigation studies, increased engineering effort and modeling, virtual prototyping and prototyping efforts to support the initialization efforts driving to a Milestone A program entry.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy **Date:** May 2021

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Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering Support	WR	NAWC AD : Patuxent River, MD	0.000	0.000		3.300	Feb 2021	5.236	Nov 2021	-		5.236	-	-	-
Trade Studies/ Requirements Analysis	Various	Various : Various	0.000	0.000		1.502	Mar 2021	0.969	Dec 2021	-		0.969	-	-	-
AoA Study	C/CPFF	RAND Corporation : Washington, DC	0.000	0.000		0.000		1.000	Dec 2021	-		1.000	-	-	-
Architecture Framework Analysis	Various	Various : Various	0.000	0.000		0.000		2.000	Dec 2021	-		2.000	-	-	-
Subtotal			0.000	0.000		4.802		9.205		-		9.205	-	-	N/A

Remarks
Increase from FY 2021 to FY 2022 supports risk mitigation studies, staffing increases, and modeling, virtual prototyping and prototyping efforts to support the initialization efforts driving to a Milestone A program entry.

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	WR	NAWC AD : Patuxent River, MD	0.000	0.000		0.255	Feb 2021	0.600	Nov 2021	-		0.600	-	-	-
Travel	Various	Various : Various	0.000	0.000		0.040	Feb 2021	0.020	Oct 2021	-		0.020	-	-	-
Subtotal			0.000	0.000		0.295		0.620		-		0.620	-	-	N/A





Remarks
Increase from FY 2021 to FY 2022 supports the review of risk mitigation studies for a Milestone A decision.

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	5.097	9.825	-	9.825	-	-	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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PU 2940	FY 2020				FY 2021				FY 2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
PU 2940					Analysis of Alternatives Study 							
					 Pre-Material Development Decision Preparation							
					Program Planning and Documentation 							
Milestone					Materiel Development Decision 							

Budget Schedule 4-19-21

Snapshot Date: 4/19/2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2940				
Analysis of Alternatives	4	2021	3	2022
Pre-Materiel Development Decision Preparation	2	2021	4	2021
Program Planning and Documentation	1	2022	4	2022
Milestones: Materiel Development Decision	4	2021	4	2021