Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603680N *I (U)Manufacturing Technology Program*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	54.739	56.712	57.797	-	57.797	58.832	60.706	60.711	61.925	Continuing	Continuing
1050: *Manufacturing Tech*	0.000	54.739	56.712	57.797	-	57.797	58.832	60.706	60.711	61.925	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Manufacturing Technology (ManTech) Program is intended to improve the productivity and responsiveness of the U.S. defense industrial base by funding the development, optimization, and transition of enabling manufacturing technologies to key naval suppliers. In general, investments transition emerging Science and Technology (S&T) results to acquisition programs; improve industrial capabilities in production, maintenance, repair and industrial base responsiveness; and advance manufacturing technology to reduce cost, improve performance, and responsiveness. Currently, the ManTech Program is focused on affordability improvements for specific key acquisition platforms as defined in the Navy ManTech Investment Strategy. Key platforms currently targeted include: VIRGINIA Class Submarine (VCS)/ OHIO Replacement Program (ORP); DDG 51 Class Destroyer; CVN 78 Class Carrier; Joint Strike Fighter (JSF); and CH-53K Heavy Lift Helicopter. ONR ManTech helps these Navy programs achieve their respective affordability goals by transitioning developed manufacturing technology which, when implemented, results in needed cost reduction or cost avoidance.

This Program Element, new as of FY16, is the result of the re-alignment of funds from PE 0708011N Industrial Preparedness and the Manufacturing Science and Technology activity from PE 0603758N Navy Warfighting Experiments and Demonstrations.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	57.074	56.712	57.797	-	57.797
Current President's Budget	54.739	56.712	57.797	-	57.797
Total Adjustments	-2.335	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.448	0.000			
• SBIR/STTR Transfer	-1.887	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

Technical: Not applicable.
Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 3	R-1 Program Element (Number/Name) PE 0603680N / *(U)Manufacturing Technology Program*	Project (Number/Name) 1050 / *Manufacturing Tech*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1050: *Manufacturing Tech*	0.000	54.739	56.712	57.797	-	57.797	58.832	60.706	60.711	61.925	Continuing	Continuing

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Composites Processing and Fabrication	5.755	7.000	8.000	0.000	8.000
Description: The primary technical goal of the Composites Processing and Fabrication activity is improving weapon systems affordability, enhancing weapon system effectiveness and improving reliability/war-fighter readiness through the increased utilization of composite materials and structures. This is being achieved through the development, maturation, and transition of affordable and robust manufacturing, assembly, and repair processes that fully exploit the benefits of composite materials. Concentration is on affordability for the following platforms: VIRGINIA Class Submarine (VCS)/OHIO Replacement (ORP), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter. The funding increase from FY16 to FY17 and FY17 to FY18 supports more composites focused work as the CH-53K project portfolio ramps up. ***FY 2016 Accomplishments:*** - Continued Composite Materials and Process Improvement Thrust for VCS/ORP Affordability Initiative. Includes efforts to develop/optimize composite materials fabrication technology for reduced cost VCS and ORP construction.					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued Composite Materials and Process Improvement Thrust for DDG 51 Affordability Initiative. Includes efforts to develop/optimize composite materials fabrication technology for reduced cost DDG 51 construction. - Continued Composite Materials and Process Improvement Thrust for CVN 78 Affordability Initiative. Includes efforts to develop/optimize composite materials fabrication technology for reduced cost CVN 78 construction. - Continued Composite Materials and Process Improvement Thrust for JSF Affordability Initiative. Includes efforts to develop/optimize composite materials fabrication technology for reduced cost JSF construction. - Continued Composite Materials and Process Improvement Thrust for CH-53K Affordability Initiative. Includes efforts to develop/optimize composite materials fabrication technology for reduced cost CH-53K construction. - Continued Composite Materials and Process Improvement Thrust for other high interest NAVSEA, NAVAIR, and Marine Corps platforms and components. ***FY 2017 Plans:*** - Continue all efforts of FY 2016. ***FY 2018 Base Plans:*** Continue composites processing and fabrication efforts of FY17. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy ***FY 2018 OCO Plans:*** N/A					
Title: Electronics Processing and Fabrication ***Description:*** The primary technical goal of the Electronics Processing and Fabrication activity is improving electronic weapon systems affordability by developing and transitioning affordable, robust manufacturing processes and capabilities for electronics critical to defense applications over their full life-cycle. Efforts create new and improved electronics/electro-optics manufacturing processes for transition to the production floor. Emphasis is on affordability for the following shipbuilding platforms: VIRGINIA Class Submarine (VCS)/OHIO Replacement (ORP), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter. ***FY 2016 Accomplishments:*** - Continued Electronics/Electro-Optics Thrust for VCS/ORP Affordability Initiative. Includes efforts to improve electronics/electro-optics affordability for VCS and ORP construction. - Continued Electronics/Electro-Optics Thrust for DDG 51 Affordability Initiative. Includes efforts to improve electronics/electro-optics affordability for DDG 51 construction.	11.030	12.000	12.000	0.000	12.000

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued Electronics/Electro-Optics Thrust for CVN 78 Affordability Initiative. Includes efforts to improve electronics/electro-optics affordability for CVN 78 construction. - Continued Electronics/Electro-Optics Thrust for JSF Affordability Initiative. Includes efforts to improve electronics/electro-optics affordability for JSF construction. - Continued Electronics/Electro-Optics Thrust for CH-53K Affordability Initiative. Includes efforts to improve electronics/electro-optics affordability for CH-53K construction. - Continued Electronics/Electro-Optics Thrust for other high interest NAVSEA, NAVAIR, and Marine Corps platforms and components. ***FY 2017 Plans:*** - Continue all efforts of FY 2016. ***FY 2018 Base Plans:*** Continue electronics processing and fabrication efforts of FY17. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy. ***FY 2018 OCO Plans:*** N/A					
Title: Metals Processing and Fabrication ***Description:*** The primary technical goal of the Metals Processing and Fabrication activity is to develop affordable, robust manufacturing and repair processes/capabilities for metals and special materials critical to Navy weapon system applications. Major areas that support this objective include: processing methods, special materials, joining, machining, coating/cladding, assembly, and inspection and compliance resulting in reduced cost of fabrication for components. Emphasis is on affordability for the following platforms: VIRGINIA Class Submarine (VCS)/OHIO Replacement (OR), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter. This activity also includes the development, optimization, and transition of repair technology for the repair, overhaul, and sustainment of key navy systems. The funding decreases from FY16 to FY17 and FY 17 to FY18 reflect an investment strategy shift from primarily supporting ship platforms to more balance with JSF and CH-53K and subsequently more focus on the Composites, Electronics and Manufacturing Enterprise/Other technical areas. ***FY 2016 Accomplishments:***	14.866	12.800	12.000	0.000	12.000

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued Metals Processing Thrust for VCS/OR Affordability Initiative. Includes efforts to improve affordability for VCS and OR construction. - Continued Metals Processing Thrust for DDG 51 Affordability Initiative. Includes efforts to improve affordability for DDG 51 construction. - Continued Metals Processing Thrust for CVN 78 Affordability Initiative. Includes efforts to improve affordability for CVN 78 construction. - Continued Metals Processing Thrust for JSF Affordability Initiative. Includes efforts to improve affordability for JSF construction. - Continued Metals Processing Thrust for CH-53K Affordability Initiative. Includes efforts to improve affordability for CH-53K construction. - Continued Metals Processing Thrust for other high interest NAVSEA, NAVAIR, and Marine Corps platforms and components. - Continued Repair Technology (RepTech) Thrust to develop, optimize, and transition repair technology for key naval platforms at depots and logistics centers. ***FY 2017 Plans:*** - Continue all efforts of FY 2016. ***FY 2018 Base Plans:*** Continue metals processing and fabrication efforts of FY17. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy. ***FY 2018 OCO Plans:*** N/A					
Title: Manufacturing Enterprise/Other ***Description:*** The Manufacturing Enterprise / Other activity includes: (1) efforts targeted towards improving, in general, the manufacturing enterprise for the production of key naval platforms (both shipbuilding and aircraft), (2) energetic efforts, (3) naval research enterprise and laboratory support for key projects, and (4) technical program support. Manufacturing Enterprise addresses the development, optimization, and transition of manufacturing enterprise technology to key naval platform suppliers. Emphasis is on affordability for the following shipbuilding platforms: VIRGINIA Class Submarine (VCS)/OHIO Replacement (ORP), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter. Manufacturing enterprise technology areas include, but are not limited to Design for Producibility/Design for Manufacturability; development of build/assembly strategies; modeling and simulation technologies; model-based tools and	23.088	24.912	25.797	0.000	25.797

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
approaches to optimize producibility; intelligent manufacturing planning and factory execution; elimination of inefficiencies in design optimization, material usage, labor utilization, work flow, etc.; supply chain procedures and improvements (such as network centric manufacturing capabilities to facilitate resilient and adaptable supply chains); development of more efficient structural fabrication product lines; and inspection technologies. Energetics efforts concentrate on developing energetics solutions to ensure the availability of safe, affordable, and quality energetics products largely in support of Program Executive Office (PEO) Integrated Warfare Systems (IWS). The funding increase from FY16 to FY17 is due to an investment strategy shift from primarily supporting ship platforms to more balance with JSF and CH-53K and subsequently more focus on the Manufacturing Enterprise/ Other technical area. ***FY 2016 Accomplishments:*** - Continue Manufacturing Enterprise Thrust for VCS/ORP Affordability Initiative. Includes efforts to improve affordability for VCS and ORP construction. - Continue Manufacturing Enterprise Thrust for DDG 51 Affordability Initiative. Includes efforts to improve affordability for DDG 51 construction. - Continue Manufacturing Enterprise Thrust for CVN 78 Affordability Initiative. Includes efforts to improve affordability for CVN 78 construction. - Continue Manufacturing Enterprise Thrust for JSF Affordability Initiative. Includes efforts to improve affordability for JSF construction. - Continue Manufacturing Enterprise Thrust for CH-53K Affordability Initiative. Includes efforts to improve affordability for CH-53K construction. - Continue Manufacturing Enterprise Thrust for other high interest NAVSEA, NAVAIR, and Marine Corps platforms and components. - Continue Energetics Thrust for PEO IWS and Other Acquisition Programs. Includes energetics efforts to support PEO IWS and other acquisition programs. - Continue efforts to provide naval research enterprise and laboratory support for key projects. - Continue efforts to provide technical engineering support for the ManTech Program. ***FY 2017 Plans:*** - Continue all efforts of FY 2016. ***FY 2018 Base Plans:***					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue manufacturing enterprise/other processing and fabrication efforts of FY17. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	54.739	56.712	57.797	0.000	57.797

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Efforts are focused on affordability improvements (both acquisition and life-cycle) for specific key acquisition platforms as defined in the Navy ManTech Investment Strategy. Currently, the majority of Navy ManTech efforts are focused on affordability improvements for: VIRGINIA Class Submarine (VCS)/OHIO Replacement (OR), DDG-51 Class Destroyer, CVN-78 Class Carrier, Joint Strike Fighter (JSF), and CH-53-K Heavy Lift Helicopter.

E. Performance Metrics

The ManTech Program's overall goal is to transition production technology to reduce the cost of Navy weapon systems. Metrics are currently collected on the cost savings per hull or per aircraft for each of the primary affordability platforms: VIRGINIA Class Submarine/OHIO Replacement (VCS/OR), DDG-51 Class Destroyer, CVN-78 Class Carrier, Joint Strike Fighter (JSF), and CH-53-K Heavy Lift Helicopter.