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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2019 Navy	<b>Date:</b> February 2018
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<b>Appropriation/Budget Activity</b> 1319: Research, Development, Test & Evaluation, Navy I BA 3: Advanced Technology Development (ATD)					<b>R-1 Program Element (Number/Name)</b> PE 0603680N I (U)Manufacturing Technology Program							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	0.000	55.555	57.797	58.657	-	58.657	60.500	60.473	61.669	62.923	Continuing	Continuing
1050: Manufacturing Tech	0.000	55.555	57.797	58.657	-	58.657	60.500	60.473	61.669	62.923	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><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2017</u></b>	<b><u>FY 2018</u></b>	<b><u>FY 2019 Base</u></b>	<b><u>FY 2019 OCO</u></b>	<b><u>FY 2019 Total</u></b>
Previous President's Budget	56.712	57.797	58.832	-	58.832
Current President's Budget	55.555	57.797	58.657	-	58.657
Total Adjustments	-1.157	0.000	-0.175	-	-0.175
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.157	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.175	-	-0.175

**Change Summary Explanation**

Technical: Not applicable.  
Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
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## A. Mission Description and Budget Item Justification

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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. Accomplishments/Planned Programs (\$ in Millions)

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> Composites Processing and Fabrication	7.000	8.000	8.000	0.000	8.000
<b>Description:</b> 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)/COLUMBIA Class Submarine (CLB), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter.					
<b>FY 2018 Plans:</b> - Continue Composite Materials and Process Improvement Thrust for VCS/ORP Affordability Initiative. Included efforts to develop/optimize composite materials fabrication technology for reduced cost VCS and ORP construction. - Continue Composite Materials and Process Improvement Thrust for CVN 78 Affordability Initiative. Included efforts to develop/optimize composite materials fabrication technology for reduced cost CVN 78 construction.					

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B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Continue Composite Materials and Process Improvement Thrust for DDG 51 Affordability Initiative. Included efforts to develop/optimize composite materials fabrication technology for reduced cost DDG 51 construction.</p> <p>- Continue Composite Materials and Process Improvement Thrust for JSF Affordability Initiative. Included efforts to develop/optimize composite materials fabrication technology for reduced cost JSF construction.</p> <p>- Continue Composite Materials and Process Improvement Thrust for CH-53K Affordability Initiative. Included efforts to develop/optimize composite materials fabrication technology for reduced cost CH-53K construction.</p> <p>- Continue Composite Materials and Process Improvement Thrust for other high interest NAVSEA, NAVAIR, and Marine Corps platforms and components.</p> <p>Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy</p> <p><b>FY 2019 Base Plans:</b> Continue composites processing and fabrication efforts of FY18. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy</p> <p><b>FY 2019 OCO Plans:</b> N/A</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> There is no change from FY 2018 to FY 2019.</p>						
<p><b>Title:</b> Electronics Processing and Fabrication</p> <p><b>Description:</b> 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)/ COLUMBIA Class Submarine (CLB), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter.</p> <p><b>FY 2018 Plans:</b></p> <p>- Continued Electronics/Electro-Optics Thrust for JSF Affordability Initiative. Included efforts to improve electronics/ electro-optics affordability for JSF construction.</p> <p>- Continued Electronics/Electro-Optics Thrust for CH-53K Affordability Initiative. Included efforts to improve electronics/ electro-optics affordability for CH-53K construction.</p>		12.000	12.000	12.000	0.000	12.000

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Appropriation/Budget Activity 1319 / 3		R-1 Program Element (Number/Name) PE 0603680N / (U)Manufacturing Technology Program		Project (Number/Name) 1050 / Manufacturing Tech		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Continued Electronics/Electro-Optics Thrust for other high interest NAVSEA, NAVAIR, and Marine Corps platforms and components.</p> <p>- Continued Electronics/Electro-Optics Thrust for VCS/ORP Affordability Initiative. Included efforts to improve electronics/electro-optics affordability for VCS and ORP construction.</p> <p>- Continued Electronics/Electro-Optics Thrust for DDG 51 Affordability Initiative. Included efforts to improve electronics/ electro-optics affordability for DDG 51 construction.</p> <p>- Continued Electronics/Electro-Optics Thrust for CVN 78 Affordability Initiative. Included efforts to improve electronics/electro-optics affordability for CVN 78 construction.</p> <p>Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy.</p> <p><b>FY 2019 Base Plans:</b> Continue electronics processing and fabrication efforts of FY18. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy.</p> <p><b>FY 2019 OCO Plans:</b> N/A</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> There is no change from FY 2018 to FY 2019.</p>						
<p><b>Title:</b> Metals Processing and Fabrication</p> <p><b>Description:</b> 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)/COLUMBIA Class Submarine (CLB), 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.</p> <p><b>FY 2018 Plans:</b> - Continue Metals Processing Thrust for DDG 51 Affordability Initiative. Included efforts to improve affordability for DDG 51 construction.</p>		12.800	12.000	12.000	0.000	12.000

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<div>- Continue Metals Processing Thrust for CVN 78 Affordability Initiative. Included efforts to improve affordability for CVN 78 construction.</div> <div>- Continue Metals Processing Thrust for JSF Affordability Initiative. Included efforts to improve affordability for JSF construction.</div> <div>- Continue Metals Processing Thrust for CH-53K Affordability Initiative. Included efforts to improve affordability for CH-53K construction.</div> <div>- Continue Metals Processing Thrust for other high interest NAVSEA, NAVAIR, and Marine Corps platforms and components.</div> <div>- Continue Repair Technology (RepTech) Thrust to develop, optimize, and transition repair technology for key naval platforms at depots and logistics centers.</div> <div>- Continue Metals Processing Thrust for VCS/OR Affordability Initiative. Includes efforts to improve affordability. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy.</div> <div><b>FY 2019 Base Plans:</b> Continue metals processing and fabrication efforts of FY18. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy.</div> <div><b>FY 2019 OCO Plans:</b> N/A</div> <div><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> There is no change from FY 2018 to FY 2019.</div>						
Title: Manufacturing Enterprise/Other		23.755	25.797	26.657	0.000	26.657
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)/COLUMBIA Class Submarine (CLB), 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 approaches to optimize producibility; intelligent manufacturing planning and factory execution;						

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B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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).						
<b>FY 2018 Plans:</b> - Continue Manufacturing Enterprise Thrust for DDG 51 Affordability Initiative. Included efforts to improve affordability for DDG 51 construction. - Continue Manufacturing Enterprise Thrust for CVN 78 Affordability Initiative. Included efforts to improve affordability for CVN 78 construction. - Continue Manufacturing Enterprise Thrust for JSF Affordability Initiative. Included efforts to improve affordability for JSF construction. - Continue Manufacturing Enterprise Thrust for CH-53K Affordability Initiative. Included 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. Included 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. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy.						
<b>FY 2019 Base Plans:</b> Continue manufacturing enterprise/other processing and fabrication efforts of FY18. Includes support of affordability initiatives for the six acquisition platforms in the Navy ManTech investment strategy.						
<b>FY 2019 OCO Plans:</b> N/A						
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b>						

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<b>Appropriation/Budget Activity</b> 1319 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603680N / (U)Manufacturing Technology Program	<b>Project (Number/Name)</b> 1050 / Manufacturing Tech			
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>					
	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
There is no significant change from FY 2018 to FY 2019.					
<b>Accomplishments/Planned Programs Subtotals</b>	55.555	57.797	58.657	0.000	58.657
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A					
<b>Remarks</b>					
<b>D. Acquisition Strategy</b> 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)/COLUMBIA Class Submarine (CLB), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter.					
<b>E. Performance Metrics</b> 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/COLUMBIA Class Submarine (VCS/CLB), DDG 51 Class Destroyer, CVN 78 Class Carrier, Joint Strike Fighter (JSF), and CH-53K Heavy Lift Helicopter.					