Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Office of Secretary Of Defense										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	17.142	23.546	18.916	0.000	18.916	18.855	23.499	23.880	24.308	Continuing	Continuing
P680: *Manufacturing Science and Technology Program*	17.142	23.546	18.916	0.000	18.916	18.855	23.499	23.880	24.308	Continuing	Continuing

A. Mission Description and Budget Item Justification

Defense Wide Manufacturing Science and Technology (DMS&T) provides the Department with a comprehensive manufacturing program to achieve the strategic goals of focused technology, improved acquisition across the life cycles, and cost-effective logistics. By designing for manufacturability early in development, anticipated results will have an impact on increasing reliability and decreasing the life cycle burden of weapon systems.

DMS&T will: 1) address manufacturing enterprise issues beyond a single Component or platform and, 2) establish and mature cross-cutting manufacturing processes required for transitioning emerging technologies which impact the timelines, affordability, and producibility of acquisition programs and shorten the deployment cycle times.

The DMS&T program is fundamental to a coordinated development process. Concurrent development of manufacturing processes with the technology prototype enables the use of emerging technologies such as ceramic matrix composites for advanced turbine engines, affordable low observables materials for increased survivability in the kill chain of high value targets, and system-on-chip electronics for communication platforms.

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B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	11.981	14.638	0.000	0.000	0.000
Current President's Budget	17.142	23.546	18.916	0.000	18.916
Total Adjustments	5.161	8.908	18.916	0.000	18.916
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	-0.192			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-0.727	0.000			
• SBIR/STTR Transfer	-0.512	0.000			
• R&DFY09: Congressional Distributed Actions	6.400	0.000	0.000	0.000	0.000
• Congressional Adds	0.000	9.100	0.000	0.000	0.000
• Other Program Adjustments	0.000	0.000	18.916	0.000	18.916

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2009	FY 2010
Project: P680: *Manufacturing Science and Technology Program*		
Congressional Add: *High Performance Manufacturing Technology Initiative*	6.400	7.500
Congressional Add: *California Enhanced Defense Small Manufacturing*	0.000	1.600
Congressional Add Subtotals for Project: P680	6.400	9.100
Congressional Add Totals for all Projects	6.400	9.100

Exhibit R-2A, RDT&E Project Justification: PB 2011 Office of Secretary Of Defense			DATE: February 2010
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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
P680: *Manufacturing Science and Technology Program*	17.142	23.546	18.916	0.000	18.916	18.855	23.499	23.880	24.308	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Wide Manufacturing S&T program has a two-pronged approach: 1) technology initiatives and 2) single specific projects. Technology initiatives, in collaboration with the Joint Defense Manufacturing Technology Panel (JDMTP) and industry, identify and develop investment strategies to advance the manufacturing processes needed to support the specific technology. Above-the-shop-floor investments focus on new manufacturing processes that have potential to significantly improve manufacturing efficiencies. Single specific projects address investment opportunities not associated with selected technology initiatives and enable the program to respond to urgent, compelling manufacturing needs and provide seed funding to more high risk-high payoff technologies.

Data calls will be launched through two methods to identify technology initiatives and single specific issues requiring investment. One method is through the JDMTP. The JDMTP is comprised of the ManTech Directors from the Services, Defense Logistics Agency, Missile Defense Agency (MDA) and Office of Secretary of Defense (OSD). The call will be distributed through the ManTech Directors to the three JDMTP sub panels: Metals Processing and Fabrication Subpanel, Composites Processing and Fabrication Subpanel, and Electronics Processing and Fabrication Subpanel. Potential candidates will be evaluated by the JDMTP based on criteria set forth in the call and announcements and down-selected for further development prior to final selection. The other method is through a Broad Agency Announcement to industry. Priority will be given to investments that support affordability and producibility of critical enabling manufacturing technologies that cut across multiple platforms. Investments will also balance defense priorities in specialty materials, electronics, propulsion and power, and manufacturing processes including "above the shop floor" (lean and business technologies facilitating interoperable manufacturing). Final projects are selected by the OSD ManTech Director in collaboration with the JDMTP and in consultation with the Office of Deputy Under Secretary of Defense (Director, Research) and the Director, Defense Research & Engineering. Technology initiatives and projects will be executed at the Component level.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Ceramic Matrix Composite (CMC) Manufacturing Initiative	4.167	0.567	0.000	0.000	0.000
Turbine engines are the main propulsion system for virtually all DoD aircraft and helicopters and also power an array of ships and tanks. Improvements in manufacturing process technology must be					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
achieved with each new generation of engines for these challenging new designs to be manufactured with acceptable quality, cost, and delivery rate to meet the warfighters' needs. This initiative seeks to advance and establish the manufacturing technologies for CMCs needed to support the development, production and sustainment of advanced gas turbine engines. Successful efforts will enable the use of CMCs for defense systems, resulting in significant life cycle cost avoidance through improved fuel efficiencies and greatly reduced maintenance costs over metallic flaps and seals and vanes for turbine engines. Program Outputs: demonstrate the advancement of CMC manufacturing technologies that result in: 1) improved non-destructive evaluation (NDE) techniques 2) reduced production time, 3) consistent performance of the CMC materials, and 4) reduced unit cost such that CMC materials can be incorporated Advanced Turbine Engines resulting in 1) reduced weight, 2) increased engine performance, 3) decreased maintenance, 4) increased production flow through, and 5) increased safety. Advanced manufacturing material processes will reduce re-work, increase production capacity, and enable production rate requirements for engine components. Life cycle cost avoidance for this initiative is projected in the billions, with technology maturity within three to five years. *FY 2009 Accomplishments:* 1) In-line tow coating equipment modified and it demonstrated a 3.5x increase in fiber coating length, 2) 3-D airfoil inspection sensor-rotor tilt table developed and completed with follow-on system testing and integration. 3) optimization of production-scale coating of Silicon Carbide (SiC) fabrics for Ceramic Matrix Composite (CMC) material handling, and 4) Non-destructive evaluation (NDE) Phase 2 specimen design and fabrication refined and completed with NDE process optimized. *FY 2010 Plans:* 1) Full scale concept validation on modified tow coating, finalize real time process metrology, 2) 3-D airfoil inspection system process and functionality demonstration with measurement of new process key characteristics, 3) demonstration of 80m capability of SiC fabric coating with reduction					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
of acceptance time/cost and next generation equipment definition, and 4) Non-destructive evaluation (NDE) - Procure material (panels) with 3 porosity levels, machine final process test specimens, inspect and conduct mechanical tests, correlate NDE with test results then develop conclusions and recommendations.					
Low Observable Material Manufacturing Initiative Manufacturing Scale-up for Low Observable (LO) Materials and Platforms Program Outputs: Three key areas: 1) precision component fabrication; 2) multi-spectral LO integration; and 3) minimization of sustainment cost and cycle time drivers. Investment in the three key areas is projected to have a significant multi-million dollar payback throughout the Future Years' Defense Plan and beyond. Technology is expected to mature beginning in FY 2010. *FY 2009 Accomplishments:* Completed initial scale-up of the key project to meet near-term flight demonstration. Completed producibility assessment to establish process control, quality goals, and variability reductions. Initial evaluation of pertinent key performance parameters was conducted. *FY 2010 Plans:* Final scale-up of the key project to meet initial DoD-level needs. Additional testing. Overall goal of 50 times increase in throughput and ten times reduction in cost.	1.339	0.889	0.000	0.000	0.000
System-On-Chip (SOC) Enable smaller, less costly Global Positioning Systems (GPS) for artillery platforms by developing the manufacturing technologies to enable reduced weight, size and power consumption to provide leap-ahead communication and sensor capability by maturing technologies that move heavy, high volume/ power demand systems to small, power efficient System-On-Chip (SOC) packaging technology.	1.159	1.446	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Program Outputs: Move the basic packaging technology from Manufacturing Readiness Level (MRL) 3 to qualification for application in the Ground-Based GPS Receiver Application Module (GB-GRAM) 105mm Smart artillery round (PKG II) as the initial adopter. Defense Wide Manufacturing S&T investments will refine the fabrication process, develop design rules for complex integration of non-optimized mixed devices on same silicon, and accelerate the development and integration of the transmit and receive module that can be used for downstream system application. *FY 2009 Accomplishments:* Approved Jaguar ASIC (Rockwell Collins proprietary version) security architecture. First pass RF (Radio Frequency) module design was completed and module Printed Wiring Boards were delivered. For Phase 2, the first-pass RF module build was successful. Preliminary testing on first pass RF module was moderately successful. Jaguar stable netlist was completed. Second pass RF module design was completed. *FY 2010 Plans:* Complete the RF module development and testing. Prepare for the GPS module build. Complete GB-GRAM development and integration. Make go/no go decision on use of the new packaging for the GB-GRAM.					
Prosthetics and Orthotics Manufacturing Initiative This project was previously titled "Custom Composite Orthotics and Prosthetics" in the FY 2009 President's Budget. New manufacturing technologies are required for the development of custom composite orthotics and prosthetics for injured men and women of the armed services. Orthotics and prosthetics present a two-fold challenge in that they contain a high degree of customization in design and a labor intensive means of manufacturing. Recent advances in solid modeling, reconfigurable tooling, room temperature resin chemistry, automated fabrication of custom fiber architectures, and novel resin infusion methods	1.632	1.012	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
have created the potential to develop a highly integrated, low cost, custom orthotic and prosthetic technology to address the unique requirements and needs of the armed services. Rapid prototyping technologies and new composite manufacturing solutions have shown the potential to provide a 24-hour turnaround time for component fabrication. The current state of the art for orthotics is to thermoform plastic materials such as polypropylene to create a custom fit orthotic. New manufacturing techniques integrated with advanced polymer composite technologies have allowed for initial prototyping work using woven glass reinforced adiprene. These new materials are compliant, but sufficiently rigid for use with prosthetics. The integration of composite materials could provide up to a 20 percent weight savings and an approximate 40 percent reduction in skin contact over current thermoform plastic solutions. Outcome: New rapid prototyping and affordable manufacturing processes resulting in 20 percent weight savings and 40 percent reduction in skin contact. Improved reliability of new composite prosthetics. *FY 2009 Accomplishments:* Materials were identified to improve comfort and facilitate post fabrication modifications that compliment the newly developed rapid prototyping and manufacturing solutions. *FY 2010 Plans:* Evaluate materials for their strength compared to traditional prosthetic resins. Once qualified, these will be used at Navy Medical Center San Diego, allowing both users and prosthetists to evaluate these materials and proposed manufacturing solutions.					
Direct Digital Manufacturing Inspection and Distortion Control	0.595	0.889	1.107	0.000	1.107
Develop methods to enable inspection of electron beam free form fabrication (EBFFF) of metallic components prior to rough machining for air, sea, and land based systems to ensure quality parts. Develop thermal control strategies to alleviate thermal residual stresses built up via EBFFF that would					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
put the part out of dimensional tolerances and sacrifice structural properties required for service applications. *FY 2009 Accomplishments:* Initiated efforts in inspection and distortion control of EBFFF metallic components. *FY 2010 Plans:* Explore several inspections and several distortion control methods for their suitability with EBFFF metallic components and down select to the top approach. *FY 2011 Base Plans:* Demonstrate 90% probability of detection of defects at a 95% confidence level on EBFFF deposits that are several inches thick.					
Emerging Manufacturing Emerging Manufacturing is a series of new efforts addressing advanced manufacturing technologies and enterprise business practices for defense applications. Initiatives and projects under development will continue to identify and transition advanced manufacturing processes/technologies that will achieve significant productivity and efficiency gains in the defense manufacturing base. The key focus areas are: power and energy, disruptive green and electronic technology, survivability, directed energy, manufacturing technologies to accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk of our major defense acquisition programs. In directed energy, manufacturing improvements are sought for ground, sea, air, and space based directed energy weapons to enable fielding of these weapons on cost and schedule In addition, manufacturing improvements are also sought for human and sensor protection against directed energy threats	1.619	4.199	4.025	0.000	4.025

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
In survivability, manufacturing improvements are sought for ballistic protection for both personnel and weapon systems, for low observables, and for countermeasures so that our personnel and systems can be protected affordably and on schedule. In disruptive green and electronic technology, manufacturing improvements are sought for improvements in power and energy sources such as lithium ion batteries, solar cells, and fuel cells to enable affordable and reliable fielding of these energy sources, in green technologies such as lead free solder, nanotechnology for electronics, and other environmentally friendly manufacturing methods to reduce the hazardous waste stream in the industrial base and in the logistics depots, and in fuel efficiency through lightweight structures and advanced propulsion for ground, sea, air, and space structures, in electronics for chip scale atomic clock manufacturing throughput improvements. *FY 2009 Accomplishments:* Initiated the Emerging Manufacturing program and coordinated for rapid start-up of FY 2010 projects. Awarded phase 2 of out of Autoclave Bismaleimide program to develop out of autoclave aerospace composites with service temperature uses of up to 350F. Released requests for proposal for Carbon Nanotube Cables to develop a lightweight alternative to copper wire and Extreme Breakover Diode (XBOD) Solid State Switches to develop more reliable and cheaper switches for use with directed energy weapon. *FY 2010 Plans:* Complete Solder-Free Electronics program and developed copper and copper/aluminum nanoparticle based pastes to replace traditional leaded solder which is being phased out due to environmental concerns . Launch programs in the areas of Carbon Nanotube Cables and XBOD Solid State Switches. Develop process control methods for carbon nanotube cable fabrication. Optimize manufacturing processes for XBOD switches. Demonstrate large scale fabrication with typical aerospace features on the Out of Autoclave Bismaleimide program.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: Demonstrate the use of carbon nanotube cables as a replacement for coaxial cables. Demonstrate the capability of the XBOD switches. Launch programs in directed energy, survivability, and disruptive green and electronic technology.					
Chip Scale Atomic Clock Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems require precise timekeeping even when the Global Positioning System (GPS) is unavailable. The size, weight, power, and cost components of conventional atomic clocks are too high for tactical applications. Chip Scale Atomic Clock (CSAC) provides improved long-term frequency stability that gets integrated into long-term time accuracy. The focus of this project is to leverage DARPA investments in the CSAC technology to reduce operational costs and transition beyond custom fabrication of the current CSAC. Mass manufacturing capabilities will be enabled with the development of batch processes, manufacturing tools, and automated assembly and test. Development of a network of multiple vendors to foster competition and ensure a viable supply base is a complementary goal. Successful performance will enable an environment of continued operation of critical C4ISR systems, regardless of the presence or absence of GPS. The ability to rapidly reacquire GPS military code in a hostile Electro Magnetic Interference (EMI) environment is an additional targeted benefit. *FY 2009 Accomplishments:* Coordinated project roadmap with DARPA. Drafted Request for Proposal. *FY 2010 Plans:* Award contract in February 2010. Increase manufacturing readiness by improving current manual assembly in a lab environment to mass manufacturing capability. Focus will be on developing batch processes, manufacturing tools, and automated assembly and test of the physics package.	0.082	2.963	8.576	0.000	8.576

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: Demonstrate a production ready manufacturing process for resonance cell and physics package fabrication on chip scale atomic clocks.					
Fiber Placement of Out of Autoclave Composites An alternative to the traditional use of autoclaves in the production of large carbon fiber composites is Out of Autoclave (OOA) processing, which uses far less expensive ovens. Fabrication of large carbon fiber composite parts is limited by the small number of existing large autoclaves that are currently tied up with Boeing 787 and F-35 production. In addition, the high capital cost of buying large autoclaves is prohibitive. The ability to use less expensive ovens, coupled with the use of resins at lower cure temperatures, will allow more suppliers to enter the market and fabricate a greater number of larger carbon fiber composite parts at lower costs. Outcomes: The initial phase of this project focuses on the development of the fiber placement process. The goal is to demonstrate the lay down rates required to meet projected requirements and the fabrication of quality laminates with autoclave-equivalent mechanical performance. Candidate aircraft for this technology are: Air Force/Army Joint Future Theatre Lift (C-130 successor) – 180' wingspan and 140' fuselage; National Aeronautics and Space Administration (NASA) Ares V - 33' diameter; Navy P-8 Raked Wing Tip. *FY 2009 Accomplishments:* Initial contract awarded. *FY 2010 Plans:* Develop the manufacturing methods for the use of fiber placement with out of autoclave composites. Demonstrate the ability to fabricate a full scale aerospace component.	0.149	1.333	0.000	0.000	0.000
Rapid Manufacturing of Structures	0.000	1.148	2.230	0.000	2.230

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Allow faster and more affordable access to low-volume, state-of-the-art production capabilities for acquisition of defense unique technologies for low density, high demand systems. Rapid prototyping includes many different fabrication technologies. Stereo Lithography (SL), selective laser sintering (SLS), laminated object manufacturing (LOM), and fused deposition modeling (FDM) are a few examples. These Rapid Prototyping processes have already had the effect of both improving products and reducing their development time. Rapid Manufacturing is an attempt to transition these prototyping techniques to the manufacturing floor. This form of manufacturing can be incredibly cost-effective and the process is far more flexible than conventional manufacturing. Rapid Prototyping processes have been shown to be economically feasible for use in the manufacture of non structural parts in quantities. This Rapid Manufacturing effort will focus on the use of these Rapid Prototyping processes in the fabrication and/or assembly of Aerospace Structures. *FY 2009 Accomplishments:* Broad Area Announcement call for Rapid Manufacturing released to industry. *FY 2010 Plans:* Initiate programs to demonstrate the use of rapid manufacturing in the fabrication and/or assembly of aerospace structures. Examples of parts that could be fabricated include but are not limited to control surfaces, edges, and ducting. *FY 2011 Base Plans:* Develop demonstration articles to validate the ability of rapid manufacturing techniques to fabricate timely affordable structural components.					
High Performance Manufacturing Technology Initiative Identify, advance, and accelerate manufacturing processes and technologies and business practices that will achieve productivity and efficiency gains in the defense manufacturing base. Activities include	0.000	0.000	2.978	0.000	2.978

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
maturing manufacturing process development, strategic planning and roadmapping, development of prototypes and test beds, workshops, incentives, and outreach, model based enterprise, supply chain management, and technical data package development. FY 2009 and FY 2010 funded through congressional add (as adjusted for DoD Appropriation General Provisions). FY 2011 and beyond funded out of President's budget. *FY 2009 Accomplishments:* See congressional add identified below. *FY 2010 Plans:* See congressional add identified below. *FY 2011 Base Plans:* Launch programs in supply chain analysis, advanced system cost modeling, and model based enterprise.					
Accomplishments/Planned Programs Subtotals	10.742	14.446	18.916	0.000	18.916

	FY 2009	FY 2010
Congressional Add: High Performance Manufacturing Technology Initiative	6.400	7.500
FY 2009 Accomplishments: Broad Area Announcement (BAA) call released to industry. Established additional network centric manufacturing pilot demonstrations in conjunction with other services and agencies. Delivered model based enterprise tools for: integration of design models with analysis tools; identification of critical design features based on technology and manufacturing maturity, cost, quality, reliability or schedule risk; visualization of assembly operations at multiple levels of detail; integration of high fidelity cost		

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
models at all levels of design and system integration; and, prediction and analysis of supply chain risks. Description: This effort is to extend the state of the art in modeling and simulation as it is applied during the systems acquisition process. This includes, but is not limited to: integration of design models with analysis tools; identification of critical design features based on technology and manufacturing maturity, cost, quality, reliability or schedule risk; visualization of assembly operations at multiple levels of detail; integration of high fidelity cost models at all levels of design and system integration; and, prediction and analysis of supply chain risks. The effort will specifically seek to improve the following processes: cost modeling & analysis, composites cost modeling, producibility analysis, preservation and manufacturing of legacy components, tool integration, visualization environments, and supply chain simulation / war gaming. In addition, the effort will improve the ability to move, share, and manipulate data between different 3D technical data packages. *FY 2010 Plans:* FY 2010 Congressional: Develop and demonstrate modeling and simulation tools that address the project goals. Promote the increased use of such tools.		
Congressional Add: California Enhanced Defense Small Manufacturing *FY 2010 Plans:* Implement congressional add for California Enhanced Defense Small Manufacturing	0.000	1.600
Congressional Adds Subtotals	6.400	9.100

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• (BA3) 0603680F: *Air Force ManTech*	56.376	39.913								Continuing	Continuing

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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• (BA7) 0708045A: *Army ManTech*	90.782	68.466								Continuing	Continuing
• (BA7) 0708011N: *Navy ManTech*	61.713	56.691								Continuing	Continuing
• (BA7) 0708011S: *DLA ManTech*	55.130	20.514								Continuing	Continuing

D. Acquisition Strategy

Not applicable for this item. Outyear data for "Other Program Funding" is contained within the Service budgets.

E. Performance Metrics

The majority of project performance metrics are specific to each effort and include measures identified in the project plans. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates. In addition, generic performance metrics applicable to the Manufacturing Science and Technology (MS&T) program includes attainment of Strategic Objective 4-3 approved, "Speed technology transition focused on warfighting needs". The metrics for this objective and the objective of MS&T is to transition 30% of completing demonstrations program per year. Due to the relatively new time frame of the MS&T program, transition rates for completed efforts for this new project are not available yet.