Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*

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	126.143	101.760	172.145	58.189	-	58.189	-	-	-	-	-	-
819: *Industrial Base Analysis and Sustainment*	126.143	101.760	172.145	50.189	-	50.189	-	-	-	-	-	-
821: *Microelectronics*	-	0.000	0.000	8.000	-	8.000	-	-	-	-	-	-

Note

FY 2022 new starts include Defense Microelectronics Cross-Functional Team, established in January 2021, and Rare Earth Elements - Heavy Element Separation.

A. Mission Description and Budget Item Justification

Industrial Base Analysis and Sustainment Support (IBAS) was established in accordance with 10 USC Sec 2508 Industrial Base Fund. The mission is to strengthen the posture of the U.S. Defense Manufacturing and Industrial Base to respond at will in support of the Warfighter today and tomorrow. The IBAS Program provides the Department with a unique capability to achieve the strategic aims of the 2021 National Defense Strategy calling for a strong, resilient, responsive and healthy U.S. Industrial Base (IB) that underpins current and future U.S. force readiness. This program is uniquely positioned to improve the U.S. Industrial Base's competitiveness and ability to respond to the Department's needs by applying focused investments to 1) monitor and assess the current state of the IB, 2) address critical issues in the IB relating to Urgent Operational Needs, 3) address supply chain vulnerabilities, and 4) support efforts to expand the Industrial Base.

Manufacturing dominance underpins technical dominance. IBAS is fundamental to achieving a modern IB that integrates traditional and emerging sectors to be able to respond at will to National Security Requirements. A healthy manufacturing and defense industrial base and resilient supply chains are essential to the economic strength and national security of the United States. The ability of the United States to maintain readiness, and to surge and sustain in response to an emergency, directly relates to the capacity, capabilities, and resiliency of our manufacturing and defense industrial base and supply chains.

IBAS investments focus on addressing Industrial Base issues that support defense needs by identifying and closing gaps in defense manufacturing capabilities and creating and sustaining reliable sources. Key areas of IBAS investment will include: 1) Continue advancement and sustainment of both traditional and emerging defense manufacturing sectors; 2) Continue preservation of critical and unique manufacturing and design skills; 3) Continue the support and expansion of reliable sources; and 4) Continue Identification and mitigation of supply chain vulnerabilities

The IBAS program uses a multi-pronged approach to identify projects. We: 1) conduct assessments of the national technology and industrial base using the OUSD Acquisition & Sustainment (A&S), Office of Deputy Assistant Secretary of Defense (ODASD) Industrial Policy as directed by 10 U.S. Code 2505; 2) work in close partnership with defense programs; and 3) work directly with industry. ODASD (Industrial Policy) collaborates with the services and agencies to perform assessments under the Title 10 USC Section 2505 program to identify elements of the industrial base critical to a healthy and resilient defense industrial base in order to address: 1) gaps in national-security-related domestic manufacturing capabilities; 2) threatened, single, or sole source capabilities especially within the lower tiers; 3) foreign dependency from high risk sources or countries; and 4) education and manufacturing workforce skills needs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z *I Industrial Base Analysis and Sustainment Support*

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	104.051	9.151	9.896	-	9.896
Current President's Budget	101.760	172.145	58.189	-	58.189
Total Adjustments	-2.291	162.994	48.293	-	48.293
• Congressional General Reductions	-	-0.006			
• Congressional Directed Reductions	-0.018	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	163.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.500	-			
• SBIR/STTR Transfer	-2.773	-			
• Program Adjustments	-	-	48.293	-	48.293

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: 819: *Industrial Base Analysis and Sustainment*		
Congressional Add: *Program Increase*	7.479	15.000
Congressional Add: *Submarine Workforce Development*	8.000	20.000
Congressional Add: *Manufacturing Engineering*	12.500	-
Congressional Add: *Advanced Armor Piercing Penetrator/ Risk Reduction for Tungsten Defense Products*	12.000	5.000
Congressional Add: *Lead-free Electronics*	5.000	10.000
Congressional Add: *Precision Optics Manufacturing*	7.500	4.000
Congressional Add: *Machine Tooling and Advanced Manufacturing*	20.000	20.000
Congressional Add: *Automated textile manufacturing*	9.000	10.000
Congressional Add: *Interdisciplinary center for advanced manufacturing systems*	5.000	7.500
Congressional Add: *Rare Earth Elements from Coal Ash*	5.000	-
Congressional Add: *Shape Memory Alloys*	-	5.000
Congressional Add: *High Performance Weldable Armor*	-	5.000
Congressional Add: *Weldable Ultra Hard Armor*	-	10.000
Congressional Add: *Industrial Skills*	-	3.500
Congressional Add: *Pilot Mask Technology*	-	10.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z *I Industrial Base Analysis and Sustainment Support*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Congressional Add: *Active Matrix Organic Light Emitting Diode*	-	5.000
Congressional Add: *Advanced nanomaterials manufacturing*	-	10.000
Congressional Add: *Munitions Supply Chain Expansion*	-	2.000
Congressional Add: *Advanced manufacturing workforce development*	-	6.000
Congressional Add: *Frequency Selective Limiters*	-	5.000
Congressional Add: *Freeze Dried Plasma*	-	10.000
Congressional Add Subtotals for Project: 819	91.479	163.000
Congressional Add Totals for all Projects	91.479	163.000

Change Summary Explanation

Program changes support Defense Microelectronics Cross-Functional Team and Rare Earth Elements - Heavy Element Separation.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense			Date: May 2021
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	Project (Number/Name) 819 / *Industrial Base Analysis and Sustainment*	

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
819: *Industrial Base Analysis and Sustainment*	126.143	101.760	172.145	50.189	-	50.189	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

IBAS program investment strategies are informed by findings from the Executive Order (EO) 13806 report, "Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States," and follow-on industrial base and technology assessments. IBAS uses the report's foundational risk framework to identify and address risks and inform investments.

National Imperative for Industrial Skills. Addressing a cross-cutting need of the Department as impacted by the pervasive shortages of skilled industrial workers, especially in the manufacturing trades, and affecting all major DoD Acquisition systems and operations and sustainment sectors, the IBAS program established an integrated portfolio of workforce development investment projects as part of a broad initiative. Titled the "National Imperative for Industrial Skills," the initiative's objective is to help rapidly catalyze an effective public-private response that builds-out a robust national industrial skills workforce development ecosystem to 1) close existing industrial workforce skill gaps, with a particular (but not sole) focus on the skilled manufacturing trades on which the DoD relies (for example, precision machining, welding of all types, and metrology), and 2) leverage these gap-closing efforts to create the conditions for sustained, multi-sector growth of national production capacities and improved industrial resiliency. The operational and aspirational goals of the initiative are to appropriately apply DoD's credibility, convening power and catalyzing strength to help: 1) promote prestige of manufacturing and related careers and inspire the next generation of industrial skills professionals; 2) accelerate workers into and through training/development pipelines, at appropriate scale and velocity; and 3) elevate U.S. manufacturing to world-leading status. To properly bound the effort, the majority of investments are aligned with the Department's programs of record to help close known or projected industrial workforce gaps and mitigate associated workforce risks; additional, targeted investments are focused on meeting important crosscutting workforce development needs that benefit multiple acquisition and sustainment programs. Examples include partnering with and assisting industry, academia, regional, state, local and other federal activities in establishing new and/or expanded defense-relevant curricula and programs, and performing data analytics to inform future investments and action. In FY 2020, the IBAS program office issued a single, overarching Cornerstone Initiative Request (CIR) supporting this initiative. The CIR utilizes 10 U.S.C. § 2371b Other Transaction (OT) prototyping authorities and serves as a standing (five-year) acquisition platform. Twelve IBAS funded projects have been awarded under this solicitation. Subsequent supporting project calls in FY 2021 and future years will follow a progressive, building block approach based on the initiative's progress against requirements, lessons learned, and the overall maturation of the industrial skills workforce development ecosystem supporting defense industrial base needs. The initiative leverages segments of both its baseline IBAS funding as well as any workforce development-focused congressional interest item funds.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Industrial Base Analysis and Sustainment (IBAS) Support (core program, excludes Congressional Adds)	10.281	9.145	50.189
Description: IBAS currently focuses efforts and investments for all fiscal years in the categories listed below:			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
1) Supply Chain Vulnerabilities Mitigation: Continuing investments to mitigate supply chain risks findings from the Executive Order (EO) 13806 and on-going assessments for both traditional defense sectors and cross-cutting sectors. Primary focus areas are ships and subs, casting and forgings, workforce skills for the trades including welding and machining, and machine tools. 2) Radars, Sensors, and Electronics Sectors: Continuing investments to expand the sub-tier supply chain by improving production process efficiencies; establishing open standards; and implementing modular and scalable technology. 3) Materials Sector: Continuing investments to address the technical risk associated with the dependence on materials from foreign non-allied countries for DoD ground, air, and space assets. Heavy Rare Earth Elements is a primary focus, supported by a Congressional add in FY 2020, and a one-year increased investment in FY 2022 funded via internal DoD reprogramming. 4) Munitions and Missiles Sector: Continuing efforts to improve existing production processes, exploring advanced materials for higher performance; and upgrading outdated technology for missile components.			
FY 2021 Plans: 1) Supply Chain Vulnerabilities Mitigation: Industrial Skills Development and Acceleration (National Imperative for Industrial Skills initiative) (NIIS): In FY 2020, the IBAS program office issued a single, overarching Cornerstone Initiative Request (CIR) supporting a new initiative entitled the “National Imperative for Industrial Skills.” NIIS addresses impacts to the DoD driven by shortages of skilled industrial base workers, as described in Section A narrative above. IBAS has awarded nine projects to-date valued at nearly $27 million under this solicitation. Subsequent supporting project calls will follow a progressive, building-block approach based on the initiative’s progress against requirements, lessons learned, and the overall maturation of the industrial skills workforce development ecosystem. These efforts continue through FY 2021, FY 2022 and future fiscal years, providing multiyear focus to partner with industry, academic institutions and other organizations. The focus of these continuing efforts is to prototype and expand education and workforce development pipelines that accelerate entrance into and through the pipeline for Defense critical industrial workforce skills including machining, welding, specialty welding and metrology. 2) Radars, Sensors and Electronics Sector: Radar Affordability Land/Sea: Continuing multi-year effort to improve overall DoD radar supplier resilience. Enables the DoD to leverage small to medium size companies from defense and adjacent industrial markets by establishing common cross-service system requirements; developing commons standards for those requirements; and creating open and modular architectures based on detailed system engineering models. Implements a Radar Supplier Resiliency Plan by establishing the Joint Radar Industrial Base Working Group (JRIBWG) to conduct comprehensive assessments of foreign and domestic radar technical positions and industrial base capabilities. Directed Energy (DE) Supply Chain Assurance: Continuing multi-year effort to improve sub-tier supplier resilience. A cross-service working group was convened to identify supply chain requirements for meeting service program milestone requirements,			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
assessing and prioritizing risks for mitigation strategies. FY 2021 activities also included developing mitigation and investment strategies, harmonizing service requirements for DE fielding, and identifying subcomponents for development of common standards and processes to enable a more robust supply chain. ***FY 2022 Plans:*** 1) Supply Chain Vulnerabilities Mitigation: Industrial Skills Development and Acceleration (National Imperative for Industrial Skills initiative) (NIIS): Addressing the pervasive shortages of skilled industrial workers, especially in the manufacturing trades, that negatively affect all major DoD Acquisition systems, operations, and sustainment sectors. FY 2022 continues and expands NIIS multiyear efforts that were initiated in prior years, as addressed in Section A narrative and in FY 2021 Plans above, to partner with industry, academic institutions and other organizations to prototype and expand training development pipelines that accelerate entrance into and through education and workforce development pipelines for Defense critical industrial workforce skills including machining, welding, specialty welding and metrology. 2) Radars, Sensors and Electronics Sector: Radar Affordability Land/Sea: Implementation of Radar Supplier Resiliency Plan and execution of the priorities and decisions of the Department's Joint Radar Industrial Base Working Group (JRIBWG); conduct comprehensive assessments of the foreign and domestic radar technical positions and industrial base capabilities. Directed Energy (DE) Supply Chain Assurance: Continuing multi-year effort to improve sub-tier supplier resilience. A cross-service working group was convened to identify supply chain requirements for meeting service program milestone requirements, assessing and prioritizing risks for mitigation strategies. FY 2021 activities also included developing mitigation and investment strategies, harmonizing service requirements for DE fielding, and identifying subcomponents for development of common standards and processes to enable a more robust supply chain. 3) Materials Sector: Rare Earth Elements - Heavy Element Separation: Continuing investments to address the technical risk associated with the dependence on materials from foreign non-allied countries for DoD ground, air, and space assets. Heavy Rare Earth Elements is a primary focus, supported by a Congressional add in FY 2020, and a DoD funded increase in FY 2022 ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase reflects realignment to fund the efforts for Rare Earth Elements - Heavy Element Separation, a joint effort with the Defense Production Act Procurement account.			
Accomplishments/Planned Programs Subtotals	10.281	9.145	50.189

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

	FY 2020	FY 2021
Congressional Add: Program Increase ***FY 2020 Accomplishments:*** Applied to additional workforce development efforts, Columbia class propulsion, and supply chain analysis in multiple sectors including COVID-19 supply chain requirements. ***FY 2021 Plans:*** Apply to supply chain analysis in multiple sectors including radar resiliency, direct energy supply chain resiliency, and additional workforce development efforts.	7.479	15.000
Congressional Add: Submarine Workforce Development ***FY 2020 Accomplishments:*** Established partnership to identify workforce needs through industry champions and senior executives who have decision-making authority and are passionate about the submarine industrial sector. The Public Private Partnership with Regional States focuses on mitigating shortfalls within the submarine workforce supply chain. This Next Generation Partnership continuously assesses Submarine Shipbuilding workforce needs. Stakeholders develop prototypes for expanding skilled trades' workforce training and up-skilling at velocity in the Submarine Shipbuilding supplier base. The effort will ensure work-ready individuals for the regional Submarine Shipbuilding sector. ***FY 2021 Plans:*** FY 2020 Accomplishments description applies also to FY 2021 Plans. Public private partnership with states mitigating workforce shortfalls within the submarine supply chain.	8.000	20.000
Congressional Add: Manufacturing Engineering ***FY 2020 Accomplishments:*** Created workforce development pipelines for engineering and critical technicians. The COVID-19 pandemic has accelerated and accentuated a fundamental change that has been underway — a change in the education and skills needed to be successful in the DoD workforce today and into the future. Automation technologies, higher levels of digital skills and globally integrated markets are transforming manufacturing requirements at a speed unparalleled in history. In response to these requirements, IBAS initiated a full spectrum approach which incorporates leading edge technologies with academia to provide the DoD with current and next generation workforce to deliver the technology edge to our Warfighter and Nation.	12.500	-
Congressional Add: Advanced Armor Piercing Penetrator/ Risk Reduction for Tungsten Defense Products ***FY 2020 Accomplishments:*** Improved tungsten penetrator production efficiencies and capacities for munitions. As part of this large-scale development effort, an assessment of high performance materials for enhanced armor piercing terminal effects identified tungsten carbide as the material of choice. This initiative enhances and optimizes the manufacturing process of a tungsten carbide component while simultaneously increasing the capacity from 1.5 million to 5 million parts per year to meet the Army's minimum forecasted requirements. The	12.000	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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	FY 2020	FY 2021
resulting technology and industrial capabilities develops overmatch capabilities to enable DoD to defeat threats with the new AP ammunition. ***FY 2021 Plans:*** FY 2020 Accomplishments description applies also to FY 2021 Plans. Improve tungsten penetrator production efficiencies and capacities for munitions.		
Congressional Add: Lead-free Electronics ***FY 2020 Accomplishments:*** Established standards to mitigate risk associated with lead-free electronics. Established a public-private partnership framework between the U.S. Government and a new Defense Electronics Consortium (DEC) for electronics to mitigate industrial base risks. The DEC management is provided by a not-for-profit or nonprofit firm. To demonstrate the practical management and operations capabilities of the DECM, the DECM will plan and execute a “pilot” effort on lead-free electronics. ***FY 2021 Plans:*** FY 2020 Accomplishments description applies also to FY 2021 Plans. Establish standards to mitigate risk associated with lead-free electronics.	5.000	10.000
Congressional Add: Precision Optics Manufacturing ***FY 2020 Accomplishments:*** FY 2020 Accomplishments: The objective of the precision optics prototype effort was to evaluate the precision optics manufacturing industrial/technology base and provide a roadmap to ensure DoD requirements were addressed in the areas of electro-magnetic apertures (e.g. sensor windows and domes), directed energy weapons (DEW), and counter-DEW (C-DEW). Precision optics are essential technologies for our nation, which has experienced a steady loss of domestic optics manufacturing at precisely the same time that these technologies are becoming critical to the DoD. Across a broad spectrum of defense applications vulnerabilities exist in the areas of optics supply chain, standards development and implementation, the development of effective workforce training, and certification programs to address existing and emerging skills gaps. ***FY 2021 Plans:*** National Imperative for Industrial Skills (NIIS) - Precision Optics are used in almost every DoD platform but collapse of the commercial optics community and decades of decreased DoD investment has endangered domestic capability for skilled workers and stable suppliers. Multi-prong approach to improve industrial base resilience and expands workforce development programs. First effort will focus on scaling workforce to meet defense needs.	7.500	4.000
Congressional Add: Machine Tooling and Advanced Manufacturing ***FY 2020 Accomplishments:*** Machine Tools Component: Executive Order (EO) 13806 study results found critical and continuing erosion of domestic machine tool industry. In response, this effort established a DoD	20.000	20.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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	FY 2020	FY 2021
partnership with Department of Energy (DoE) Oak Ridge National Lab (ORNL) called “America’s Cutting Edge (ACE).” ACE applies the robust functional capacity of the Manufacturing Demonstration Facility (MDF) as a Hub for a Public-Private Partnership that can leverage an existing $1.5 billion DoE Research and Development (R&D) Partnership to restore U.S. machine tool prominence. Acquisition process and standup was completed in March 2020. ACE has made substantial progress on efforts to: increase productivity of existing industry systems, create design rules and control for hybrid manufacturing processes, and design and test a new “open” machine tool and transfer mechanism for large parts. In support of COVID-19 response, ACE also conducted opportune research by developing and proving tooling and processes to mitigate current and anticipated medical supply and device shortages of N95 masks, face shields, and mask fiber products. Workforce Component: 1) Promote prestige of applying skills relevant to machine tools used in manufacturing and related careers to inspire the next generation of industrial skills professionals; 2) Accelerate workers into and through training and development pipelines to meet requirements; 3) Elevate U.S. manufacturing to world-leading status. ***FY 2021 Plans:*** FY 2020 Accomplishments description applies also to FY 2021 Plans. Advance machine tools capabilities for DoD specific applications; lower the barrier to entry for small and medium manufacturers to adopt new machine tool capabilities; workforce development		
Congressional Add: Automated textile manufacturing ***FY 2020 Accomplishments:*** Integrated automated manufacturing capability with high end advanced fibers. Established partnership to prototype and implement automated manufacturing processes for advanced textiles needed for defense use and develop associated workforce curricula and training programs needed for successful industry adoption and use. ***FY 2021 Plans:*** FY 2020 Accomplishments description applies also to FY 2021 Plans. Integrate automated manufacturing capability with high end advanced fibers.	9.000	10.000
Congressional Add: Interdisciplinary center for advanced manufacturing systems ***FY 2020 Accomplishments:*** Established partnership to lower the barriers for entry to small and medium manufacturers (SMM) to adopt digital and Internet of Things (IOT) 4.0 capabilities. This effort used a multi-prong approach to close the gap of the digital divide between large manufacturers and small and medium	5.000	7.500

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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	FY 2020	FY 2021
manufacturers. It also closes the gap in the educational pipeline needed to develop the associated workforce pipeline. ***FY 2021 Plans:*** FY 2020 Accomplishments description applies also to FY 2021 Plans. Lower the barriers for entry to small and medium manufacturers to adopt manufacturing capabilities including 5-axis, additive, digital and Internet of Things (IOT) 4.0 capabilities		
Congressional Add: Rare Earth Elements from Coal Ash ***FY 2020 Accomplishments:*** This prototype initiative is part of the DoD's framework to establish a reliable and resilient domestic source of supply for Rare Earth Elements (REE). This cross-cutting prototype project, in parallel with other DoD and Federal projects, was designed to develop REE sources of supply to reduce reliance on foreign sources. In support of the desired end state, the enabling objectives encompass addressing critical issues in: mining capabilities; chemical technology processing; and expansion of the Industrial Base to develop a secure and reliable supply chain for the DoD and the nation's manufacturing base. As a derivative, this project developed several needed Science, Technology, Engineering and Mathematics (STEM) and manufacturing skills within the REE mining and processing workforce.	5.000	-
Congressional Add: Shape Memory Alloys ***FY 2021 Plans:*** Multi-year effort that builds on previous ACE work in hybrid processes. Develop the materials and manufacturing processes to rapidly manufacture complex SMA geometries.	-	5.000
Congressional Add: High Performance Weldable Armor ***FY 2021 Plans:*** Expand workforce for welding of specialty metals.	-	5.000
Congressional Add: Weldable Ultra Hard Armor ***FY 2021 Plans:*** Expand Ground vehicle light weight armor SC. Develop full-scale manufacturing process for producing an ultra-hard armor that is weldable.	-	10.000
Congressional Add: Industrial Skills ***FY 2021 Plans:*** National Imperative for Industrial Skills (NIIS) - Assess requirements, expand recruitment, expand and accelerate training in key sectors as needed.	-	3.500
Congressional Add: Pilot Mask Technology ***FY 2021 Plans:*** Sustain Life Support Supply Chains for Pilot Masks - contracted due to limited investment for pilot masks and related technology. Today's aircraft have surpassed older, obsolete technology.	-	10.000
Congressional Add: Active Matrix Organic Light Emitting Diode	-	5.000

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	FY 2020	FY 2021
FY 2021 Plans: Sole Source - Improve and stabilize the single domestic source of organic light emitting diode manufacturing which supports numerous DoD combat platforms.		
Congressional Add: Advanced nanomaterials manufacturing ***FY 2021 Plans:*** Expand SC - No domestic capability exists for mature metal organic frameworks (MOF) compound to meet soldier CBRN filter requirements. Funds will establish domestic capability for to incorporate into M61 filters.	-	10.000
Congressional Add: Munitions Supply Chain Expansion ***FY 2021 Plans:*** Establish Domestic Capability - support F35A 25mm round production to be moved from Switzerland to Camden, AR.	-	2.000
Congressional Add: Advanced manufacturing workforce development ***FY 2021 Plans:*** National Imperative for Industrial Skills (NIIS) - Accelerate production of skilled technicians for defense needs.	-	6.000
Congressional Add: Frequency Selective Limiters ***FY 2021 Plans:*** Expand Defense Industrial Base - Frequency Selective Limiters (FSL) are used to strengthen EW systems against EMI attacks. Current production rates of the substrate Gadolinium Gallium Garget (GGG) used to grow the Yttrium Iron Garnet (YIG) films are insufficient to meet DoD requirements. Effort will expand capacity from 4,000 units to greater than 50,000 units.	-	5.000
Congressional Add: Freeze Dried Plasma ***FY 2021 Plans:*** Onshore Foreign Capability.	-	10.000
Congressional Adds Subtotals	91.479	163.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

NA

D. Acquisition Strategy

NA

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense			Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IBAS Baseline Program Efforts - Sectors Total	C/Various	various : various	110.974	-		-		-		-		-	-	-	-
Boron Carbide US Sourcing	C/FFP	IAP Worldwide Services : FL	0.500	0.700	Jun 2020	-		-		-		-	-	-	-
Directed Energy Supply Chain Assurance	C/FFP	Systems Innovation Engineering : NJ	-	0.491	Aug 2020	0.356	Apr 2021	0.350	Apr 2022	-		0.350	-	-	-
Heavy Rare Earth Elements Supply Chain Resiliency	C/FFP	(1) MP Mine Operations LLC and (2) Lyonas USA LLC : (1) California and (2) Texas	0.541	0.779	Jul 2020	-		-		-		-	-	-	-
Radar Affordability: Land and Sea	C/FFP	Consortium Management LLC : VA	0.295	0.554	Apr 2020	1.000	Apr 2021	0.610	May 2021	-		0.610	-	-	-
Radar Affordability: Airborne Radars	C/FFP	Systems Innovation Engineering : NJ	0.361	0.125	Aug 2020	-		-		-		-	-	-	-
Silicon Interposer - Congressional Add FY19	C/FFP	JCAMB Inc BRIDGE : Kissimmee, FL	3.275	1.875	Jul 2020	-		-		-		-	-	-	-
Enhanced Manufacturing of Tungsten Carbide Penetrators - Congressional Add - Advanced Armor Piercing	C/FP	do not publish : do not publish	-	9.450	Sep 2020	5.000		-		-		-	-	-	-
Enhanced Manufacturing of Tungsten Carbide Penetrator - Army Support	MIPR	ARDEC : PICATINNY ARSENAL NJ	-	0.900	Apr 2020	-		-		-		-	-	-	-
Automated Textile Manufacturing - Congressional Add	C/FFP	Next Defense Solutions, LLC : NJ	-	6.709	Sep 2020	10.000	May 2021	-		-		-	-	-	-
Automated Textile Manufacturing - Project Management	MIPR	CCDC-Soldier Center and CCDC-AC : MA	-	1.000	Apr 2020	-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense			Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Interdisciplinary Center for Advanced Manufacturing Systems - Congressional Add	C/FFP	Auburn University : AL	-	4.268	Aug 2020	7.500	May 2021	-		-		-	-	-	-
Lead-Free Electronics - Congressional Add - Defense Electronics Consortium Management	C/FFP	U.S. Partnership for Assured Electronics : Washington DC	-	3.900	Sep 2020	10.000	May 2021	-		-		-	-	-	-
Machine and Advanced Manufacturing - Congressional Add - Machine Tools	FFRDC	Oakridge National Laboratory : TN	-	13.693	Mar 2020	16.000	May 2021	-		-		-	-	-	-
Machine and Advanced Manufacturing - Congressional Add - Workforce Component	C/FFP	Institute for Advanced Composites : TN	-	3.361	Aug 2020	4.000	May 2021	-		-		-	-	-	-
Manufacturing Engineering - Congressional Add	C/FFP	Vermont Technical College : Vermont	-	7.969	Aug 2020	-		-		-		-	-	-	-
Manufacturing Engineering - Congressional Add - Hyper Velocity Prototype for Welding	C/FFP	Institute for Advanced Learning and RESE : VA	-	0.993	Aug 2020	-		-		-		-	-	-	-
Manufacturing Engineering - Congressional Add - Experiment Station	C/FFP	Texas A&M Engineering : TX	-	0.879	Aug 2020	-		-		-		-	-	-	-
Manufacturing Engineering - Congressional Add - Systems Engineering Technicians	C/FFP	Auburn University : AL	-	0.500	Aug 2020	-		-		-		-	-	-	-
Accelerated Training in Defense Manufacturing - Manufacturing Engineering Congressional Add	C/FFP	Institute for Advanced Learning : VA	-	2.577	Aug 2020	-		-		-		-	-	-	-
Manufacturing Engineering - Congressional Add -	C/FFP	Aeromarc LLC : WI	-	0.031	Aug 2020	-		-		-		-	-	-	-

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Electronic Manufacturing and Technical Education															
Precision Optics Manufacturing - Congressional Add	C/FFP	TBD : TBD	-	6.086	Oct 2020	4.000	May 2021	-		-		-	-	-	-
Rare Earth Elements (FY20 is Congressional Add)	C/FFP	TBD : TBD	-	4.043	Apr 2021	-		41.000	Nov 2021	-		41.000	-	-	-
Submarine Workforce Development - Congressional Add	C/FFP	Southeastern New England Defense Industry Assoc : Rhode Island	-	6.822	Aug 2020	20.000	Jun 2021	-		-		-	-	-	-
Mobile Nuclear Reactor Supply Chain Analysis	C/FFP	Lockheed Martin : FL	-	1.170	Sep 2020	-		-		-		-	-	-	-
Project Management Support Costs (multiple efforts) - Congressional Adds	MIPR	multiple/various : multiple/various	-	1.747	Apr 2020	-		-		-		-	-	-	-
Supply Chain Risk Management - Health Supplier Illumination - General Increase Congressional Add	C/FFP	202 Group LLC/ Exiger : Washington DC	-	2.927	Apr 2020	-		-		-		-	-	-	-
Supply Chain Illumination Health Suppliers - General Increase Congressional Add	C/FFP	TBD : TBD	-	3.300	Sep 2020	-		-		-		-	-	-	-
Enterprise Machine Learning Analytics and Professional Services - General Increase Congressional Add	Option/ FFP	Advana : VA	-	0.750	Aug 2020	-		-		-		-	-	-	-
Hypersonics Readiness Study - General Increase Congressional Add	C/FFP	TBD : TBD	-	0.695	Sep 2020	-		-		-		-	-	-	-

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Shape Memory Alloys	FFRDC	Oakridge National Laboratory : TN	-	-		5.000	May 2021	-		-		-	-	-	-
Advanced Nanomaterials Manufacturing - Congressional Add	C/FFP	TBD : TBD	-	-		10.000		-		-		-	-	-	-
High Performance Weldable Armor - Congressional Add	C/FFP	TBD : TBD	-	-		5.000		-		-		-	-	-	-
Weldable Ultra Hard Armor - Congressional Add	C/FFP	TBD : TBD	-	-		10.000		-		-		-	-	-	-
Freeze Dried Plasma - Congressional Add	C/FFP	TBD : TBD	-	-		10.000		-		-		-	-	-	-
Frequency Selective Limiters - Congressional Add	C/FFP	TBD : TBD	-	-		5.000		-		-		-	-	-	-
Pilot Mask Technology - Congressional Add	C/FFP	TBD : TBD	-	-		10.000		-		-		-	-	-	-
Munitions Supply Chain Expansion - Congressional Add	C/FFP	TBD : TBD	-	-		2.000		-		-		-	-	-	-
Program Increase - Congressional Add - Workforce Development Efforts	C/FFP	TBD : TBD	-	-		15.000		-		-		-	-	-	-
Advanced Manufacturing Workforce Development - Congressional Add	C/FFP	TBD : TBD	-	-		6.000		-		-		-	-	-	-
Industrial Skills - Congressional Add	C/FFP	TBD : TBD	-	-		3.500		-		-		-	-	-	-
Manufacturing Skills/ Accelerated Industiral Skills Development	C/FFP	TBD : TBD	-	0.986	Dec 2019	3.500		3.386		-		3.386	-	-	-

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Supply Chain Analysis - Workforce Ship Sector	C/FFP	Poplicus Inc/Govini : VA	-	0.600	Dec 2020	-		-		-		-	-	-	-
Active Matrix Organic Light Emitting Diode	C/FFP	TBD : TBD	-	-		5.000		-		-		-	-	-	-
		Subtotal	115.946	89.880		167.856		45.346		-		45.346	-	-	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FY 2020 Congressional Add efforts: Cornerstone 1% contracting and admin fee	MIPR	Army Contracting Command Rock Island : ILL	-	0.560	Mar 2020	-		-		-		-	-	-	-
		Subtotal	-	0.560		-		-		-		-	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OSD SETA support plus Army/Navy Program Management support	Various	various : various	9.947	5.364	Sep 2019	4.166	Sep 2020	4.593	Oct 2021	-		4.593	-	-	-
ODASD(Industrial Policy) Finance and Budget Support	C/T&M	Interactive Process Technology : VA	-	0.286	Jun 2020	-		-		-		-	-	-	-
ODASD(Industrial Policy) Senior Executive Service	C/T&M	SMA : VA	-	0.822	Sep 2020	-		-		-		-	-	-	-
ODASD(Industrial Policy) Program Support	Option/ T&M	UGroup LLC : VA	-	1.000	Aug 2020	-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense			Date: May 2021
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OUSD(A&S) Admin and Analytical Support Services	Option/ T&M	Logistics Management Institute : VA	-	3.593	Apr 2020	-		-		-		-	-	-	-
Joint Army NASA Air Force (JANNAF) Executive Committee Support	C/FFP	Johns Hopkins : MD	0.250	0.255	Sep 2020	0.123	Sep 2021	0.250		-		0.250	-	-	-
		Subtotal	10.197	11.320		4.289		4.843		-		4.843	-	-	N/A

	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	126.143	101.760		172.145		50.189		-		50.189	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Planning in Progress							[redacted]																					

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
All Sectors				
Boron Carbide - US Sourcing	1	2020	4	2021
Directed Energy Supply Chain Assurance	1	2020	4	2022
Heavy Rare Earth Elements Supply Chain Resiliency	1	2020	4	2025
Industrial Skills Development and Acceleration	1	2020	4	2025
Manufacturing Skills Challenge	1	2020	4	2023
Radar Affordability	1	2020	4	2025
Congressional Adds FY 2020				
Automated Textile Manufacturing	4	2020	3	2023
Enhanced Manufacturing of Tungsten Carbide Penetrators	4	2020	3	2023
Interdisciplinary Center for Advanced Manufacturing Systems	4	2020	4	2022
Lead-Free Electronics	4	2020	3	2023
Machine and Advanced Manufacturing	2	2020	3	2023
Manufacturing Engineering - Hyper Velocity Prototype for Welding	4	2020	4	2021
Manufacturing Engineering - Experiment Station, Engineering Technicians, Electronic Mfg & Technical Education	4	2020	4	2024
Precision Optics Manufacturing	1	2021	3	2023
Rare Earth Elements from Coal Ash	1	2021	3	2023
Submarine Workforce Development	4	2020	4	2022
FY 2021 Congressional Adds				
Planning in Progress	3	2021	3	2024

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense			Date: May 2021
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	Project (Number/Name) 821 / *Microelectronics*	

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
821: *Microelectronics*	-	0.000	0.000	8.000	-	8.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2022 new start to support Defense Microelectronics Cross-Functional Team.

A. Mission Description and Budget Item Justification

Microelectronics components are the foundation of modern military systems. The Department of Defense (DoD) is exposed to various vulnerabilities that threaten the ability to source microelectronics needed to sustain programs of record. In order to prepare the Department for Great Power Competition, the DoD must take action to ensure access to the microelectronic components needed to sustain our defense programs and systems effectively and affordably. The Department also needs a better strategy to transition leading edge technology developed by both government and industry to DoD programs of record, to ensure the Department maintains a competitive edge.

As part of the response to Executive Order 13806, "Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States," July 21, 2017, the Office of the Under Secretary of Defense for Acquisition and Sustainment (OUSD(A&S)) undertook a study of the global microelectronics industry, the state of the defense microelectronics supply chain, and the Department's ability to sustain programs of record. The study revealed the domestic microelectronics industry is shrinking, with the United States consuming 34 percent of global demand and producing less than 12 percent of supply. The DoD:

• is heavily reliant on microelectronics produced in foreign countries or by firms coming increasingly under the influence of foreign adversaries. A large number of these parts are present in many key DoD systems;
• has very poor supply chain visibility;
• could find critical components needed to sustain or build programs of record unavailable due to a conflict, embargo, or natural disaster due to the reliance foreign parts; and
• has few sources of the radiation-hardened microelectronics and limited radiation test facilities resources needed by systems for nuclear modernization, our highest priority.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Microelectronics Cross Functional Team	-	-	8.000
Description: A Cross-Functional Team (CFT) was established effective January 2021 to develop a DoD strategy and implementation and transition plan to minimize vulnerabilities within the Department's microelectronic supply chain. The transition plan will be comprehensive, and include a budget plan. The CFT will function as an advisory body to the Deputy Secretary of Defense, the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), and the Under Secretary of Defense			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
for Research and Engineering (USD(R&E)) in order to strengthen the domestic microelectronics Defense Industrial Base and to develop and transition leading-edge microelectronics technology into DoD systems to prepare the Department for Great Power Competition. ***FY 2022 Plans:*** The CFT was established in January 2021 by detailing subject matter experts from the Services to the CFT, and executed contracts for studies to supply the analysis necessary to inform the DoD strategy development. In FY 2022, the CFT will continue to develop the DoD strategy, and develop a roadmap to execute, which includes funding, policy, and legislation to ensure the strategy is successfully executed. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increase FY 2021 to FY 2022 was funded via realignment within DoD RDT&E resources to support the success of the Cross-Functional team established by SECDEF direction.			
Accomplishments/Planned Programs Subtotals	-	-	8.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense			Date: May 2021
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Public Private Partnership Study	C/BPA	CTC Aero : Port Jefferson, NY	-	-		-		0.500	Dec 2021	-		0.500	-	-	-
Strategic Initiatives Assessment	C/BPA	Boston Consulting Group : Boston, MA	-	-		-		0.500	Dec 2021	-		0.500	-	-	-
Microelectronics Policy Assessment	C/BPA	Potomac Institute : Arlington, VA	-	-		-		0.500	Dec 2021	-		0.500	-	-	-
		Subtotal	-	-		-		1.500		-		1.500	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Reimburse Program Management Support from Various DoD Organizations	MIPR	Various : Various	-	-		-		2.500	Dec 2021	-		2.500	-	-	-
SETA Program Management Support via FFRDC	FFRDC	Various : Various	-	-		-		1.000	Dec 2021	-		1.000	-	-	-
SETA Program Management Support Contract	C/CPFF	Various : Various	-	-		-		3.000		-		3.000	-	-	-
		Subtotal	-	-		-		6.500		-		6.500	-	-	N/A

	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		8.000		-		8.000	-	-	N/A

Remarks

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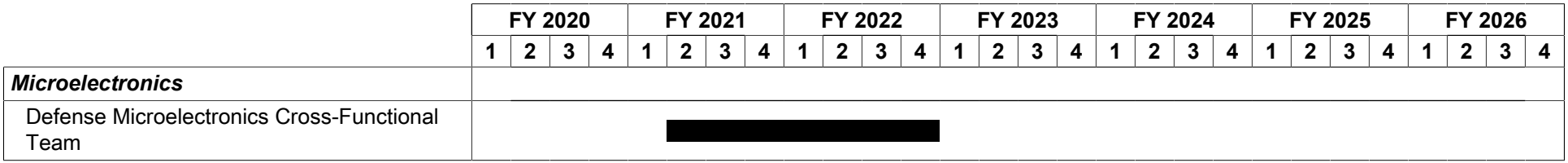

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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Microelectronics				
Defense Microelectronics Cross-Functional Team	2	2021	4	2022