Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Office of the Secretary Of Defense	Date: February 2019
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	0.000	59.516	95.959	175.032	-	175.032	66.949	66.891	67.287	68.716	Continuing	Continuing
812: *Trusted Mask Trust Approach*	0.000	0.000	2.000	2.000	-	2.000	2.000	2.000	0.000	0.000	Continuing	Continuing
809: *New Trust Approach Demonstration*	0.000	59.516	13.098	13.381	-	13.381	23.215	23.101	25.547	25.724	Continuing	Continuing
822: *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*	-	0.000	80.861	159.651	-	159.651	41.734	41.790	41.740	42.992	Continuing	Continuing

A. Mission Description and Budget Item Justification

Funding for the Microelectronic Innovation for National Security and Economic Competitiveness (MINSEC) activities were re-aligned from Project Number 809 to Project Number 822.

This Program Element (PE) supports activities to ensure critical and sensitive integrated circuits are available to meet the DoD's needs. It refines strategies and management planning activities that will: (1) provide support to acquisition programs to address trusted and assured microelectronics supply needs; (2) improve capability to evaluate and validate assurance of microelectronic parts and advance standards to incentivize the commercial marketplace to recognize hardware assurance as a competitive design standard; (3) develop and demonstrate alternative approaches to the DoD Trusted Foundry program to assure the microelectronics supply chain; and (4) provide access to advanced microelectronics that are vital to the national security and economic competitiveness for the U.S. government (USG) in order to enable DoD and broader USG access to commercial state-of-the-art (SOTA) microelectronics technology.

This PE supports the 2018 National Defense Strategy's (NDS) line of effort to build a more lethal force through modernization of key capabilities and the NDS defense objective of establishing an unmatched twenty-first century National Security Innovation Base that effectively supports Department operations and sustains security and solvency.

This activity will be coordinated by the Office of the Under Secretary of Defense for Research and Engineering, and will include performers from the DoD Components, the Defense Microelectronics Activity (DMEA), the Joint Federated Assurance Center (JFAC), the Defense Advanced Research Programs Agency (DARPA), other DoD and Intelligence Community science and technology (S&T) organizations and laboratories, the defense industry, and the broader commercial industrial base. It will integrate the functions of the DoD Trusted Foundry Program, the Trusted Supplier accreditation program, JFAC, and related science and technology (S&T) activities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Office of the Secretary Of Defense	Date: February 2019
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605294D8Z *I Trusted and Assured Microelectronics*

This activity implements, maintains, and updates the DoD's long-term microelectronics strategy. Additionally this activity places emphasis on incentivizing and proving new microelectronics technology solutions. Recognizing that ensured access to a trusted and assured supply of microelectronics is a USG-wide concern, this activity will interface with interagency partners to take into account interagency requirements, opportunities for collaboration, and strategic decisions that can be made to limit the overall cost of these requirements to the USG.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	61.084	56.178	57.194	-	57.194
Current President's Budget	59.516	95.959	175.032	-	175.032
Total Adjustments	-1.568	39.781	117.838	-	117.838
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	40.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.450	-			
• FFRDC Reduction	-0.118	-0.219	-	-	-
• Other Program Adjustments	-	-	-0.162	-	-0.162
• Adjustment for MINSEC P822	-	-	118.000	-	118.000

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2018	FY 2019
Project: 822: *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*		
Congressional Add: *Next Generation Microelectronics*	-	40.000
Congressional Add Subtotals for Project: 822	-	40.000
Congressional Add Totals for all Projects	-	40.000

Change Summary Explanation

FY 2019 funding in the amount of $40 million was added to support acceleration efforts for MINSEC activities. FY 2020 funding in the amount of $118 million was added to support a high-mix, low-volume enhanced microelectronics manufacturing domestic capability and a proactive awareness and security effort to identify and mitigate critical microelectronics supply chain threats.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense			Date: February 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 812 / *Trusted Mask Trust Approach*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
812: *Trusted Mask Trust Approach*	0.000	0.000	2.000	2.000	-	2.000	2.000	2.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project staffs and supports operation of a new secure (SECRET-level) photomask manufacturing capability at an existing SOTA commercial photomask manufacturing supplier to secure the masks and design intellectual property (IP) of acquisition programs when using commercial microelectronic fabrication facilities other than the Trusted Foundry. This capability can be used in conjunction with one or more leading-edge commercial foundries. This capability will address trusted masks at technology node sizes less than 130 nanometers (nm) down to 14nm.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Trusted Mask Trust Approach	0.000	2.000	2.000
FY 2019 Plans: Equipping and staffing of the new secure (SECRET-level) photomask manufacturing capability at the SOTA commercial photomask manufacturing supplier will be continued. DMEA will also continue to provide management and technical support, as required, to procure secure mask data parsing services for the Department, as well as other Federal entities, through operation of this Trusted photomask capability.			
FY 2020 Plans: Continuation of FY 2019 plan to equip and staff the new secure (SECRET-level) photomask manufacturing capability at the SOTA commercial photomask manufacturing supplier.			
FY 2019 to FY 2020 Increase/Decrease Statement: Level of effort is consistent between FY 2019 and FY 2020.			
Accomplishments/Planned Programs Subtotals	0.000	2.000	2.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 812 / *Trusted Mask Trust Approach*

E. Performance Metrics

Performance for this project is monitored in the following ways:

- Number of photomasks created using the secure photomask manufacturing capability.
- Number of acquisition programs using the secure photomask manufacturing capability.
- Number of technology node sizes supported by the secure photomask manufacturing capability.
- Number of foundries supported by the secure photomask manufacturing capability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 812 / *Trusted Mask Trust Approach*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Trusted Mask Trust Approach	MIPR	Defense Microelectronics Activity (DMEA) : California	-	0.000		2.000	Mar 2019	2.000	Mar 2020	-		2.000	Continuing	Continuing	-
		Subtotal	-	0.000		2.000		2.000		-		2.000	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		2.000		2.000		-		2.000	Continuing	Continuing	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 812 / *Trusted Mask Trust Approach*

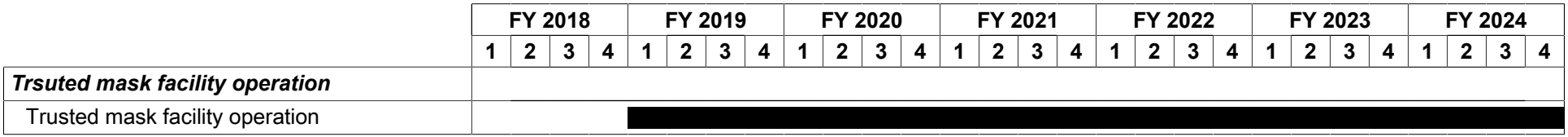

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 812 / *Trusted Mask Trust Approach*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Trsuted mask facility operation				
Trusted mask facility operation	1	2019	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense			Date: February 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 809 / *New Trust Approach Demonstration*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
809: *New Trust Approach Demonstration*	0.000	59.516	13.098	13.381	-	13.381	23.215	23.101	25.547	25.724	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds a program of research to develop and demonstrate the next generation, technology-driven approach to microelectronics trust and assurance, to include state-of-the-art (SOTA) microelectronics, to ensure continued access to SOTA microelectronic technologies, while maintaining the required level of assurance in all environments. DoD's ability to access commercial technology for its custom secure, trusted and assured needs is diminishing as SOTA suppliers become fewer and more focused on serving the global commercial market. DoD's technology needs are broad, and relying on a single source supplier is not feasible. Alternative, advanced manufacturing methods, technologies, and design tools are needed to produce secure, trusted and assured SOTA parts from commercial sources and to preserve access to these advanced nodes while protecting DoD and Defense Industrial Base (DIB) intellectual property (IP) from exploitation. It is also intended to dramatically improve the capabilities of the Joint Federated Assurance Center (JFAC) with regard to verification and validation in support of microelectronics assurance.

This program of research will demonstrate innovative design, manufacturing, imaging, tagging, and control and assessment approaches for protecting DoD's microelectronics supply chain and IP, including alternatives for trusted, strategic radiation-hardened electronics in advanced technology nodes for next-generation strategic systems, obfuscation and disaggregation technologies, and other assurance mitigations. It will demonstrate advanced imaging technologies and forensics, Design for Assurance techniques, active hardware assurance controls, electronic component markers, and a data and analysis capability to enable auditing and independent verification and validation of commercial designs. It also demonstrates and implements concepts for the cost-effective production of custom microelectronics in low volumes and protection of sensitive IP from exploitation.

Assurance technologies that can be applied in a broad range of trusted and commercial environments can mitigate the risks associated with sole-source suppliers, and increase the ability of the U.S. Government (USG) to leverage commercial capabilities. The suite of demonstrated technologies, e.g., alternative manufacturing methods and design tools, will enable DoD to obfuscate the purpose of sensitive devices, verify their origin and function, and protect sensitive IP from exploitation even while using the global supply chain for most hardware. In cases where the risk involved precludes that level of commercial collaboration, low-volume manufacturing technologies demonstrated under this project would permit DoD to more cheaply produce low volumes of sensitive microelectronics in trusted environments. The project will also support demonstration of a repository of third-party IP and electronic design automation (EDA) tools to expedite circuit design and transition promising technologies to use.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: New Trust Approach Demonstration	59.516	13.098	13.381
FY 2019 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 809 / *New Trust Approach Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Primary activities will continue to include demonstration of acquisition program pilots and technology demonstrations, followed by transition of these capabilities to new programs in the following fiscal years. These activities will continue to mature and evaluate assurance technologies and techniques through efforts that may include the conduct of studies, broad agency announcements (BAAs), and other efforts to coordinate research programs across USG R&D organizations, academia and industry. ***FY 2020 Plans:*** Continuation of FY 2019 activities including the following: • Demonstrate acquisition program pilots and technology demonstrations, followed by transition of these capabilities to new programs in the following fiscal years • Evaluate assurance technologies and techniques through efforts that may include the conduct of studies, broad agency announcements (BAAs), and other efforts to coordinate research programs across USG R&D organizations, academia and industry • Identify potential transition issues and aid in transition through joint collaboration between research teams and stakeholders with a focus on evaluations of prototypes, test articles and beta versions of tools, IP, techniques, methods, etc. and their use in operationally-realistic scenarios. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Level of effort is consistent between FY 2019 and FY 2020. Small changes reflect minor budget fluctuations.			
Accomplishments/Planned Programs Subtotals	59.516	13.098	13.381

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance for this project is monitored in the following ways:
• Effectiveness of developed technologies, as measured by:
- The speed and reliability of new validation and verification techniques in identifying known microelectronics issues (e.g., tampering) in laboratory and non-laboratory situations.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 809 / *New Trust Approach Demonstration*

- Successful testing of advanced, alternative manufacturing techniques, such as disaggregated manufacturing.
- Resilience of microelectronics protected by new trust approach technologies in red teaming exercises.

• Adoption of next-generation assurance technologies, as measured by:

- The number of DoD and other USG programs employing these assurance technologies, design approaches, or best practices.
- The volume and criticality of components employing these technologies, design approaches, or best practices.
- Promulgation in DoD guidance and program protection plans.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 809 / *New Trust Approach Demonstration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
New Trust Approach Demonstration Program Support	MIPR	Various (DARPA, Air Force, Army, Navy, NSA) : Various	-	59.516	Mar 2018	13.098	Mar 2019	13.381	Mar 2020	-		13.381	Continuing	Continuing	-
		Subtotal	-	59.516		13.098		13.381		-		13.381	Continuing	Continuing	N/A

Remarks

NA

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	59.516		13.098		13.381		-		13.381	Continuing	Continuing	N/A

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 809 / *New Trust Approach Demonstration*

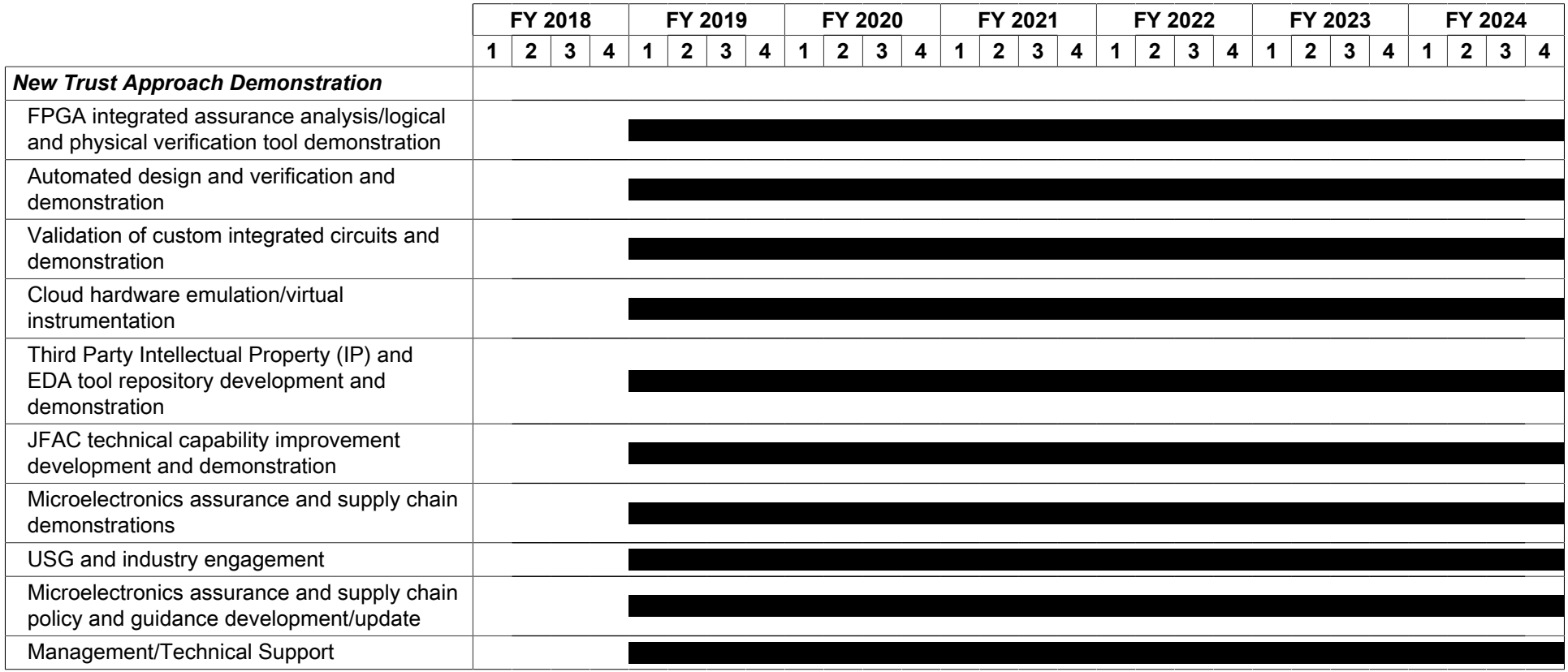

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 809 / *New Trust Approach Demonstration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
New Trust Approach Demonstration				
FPGA integrated assurance analysis/logical and physical verification tool demonstration	1	2019	4	2024
Automated design and verification and demonstration	1	2019	4	2024
Validation of custom integrated circuits and demonstration	1	2019	4	2024
Cloud hardware emulation/virtual instrumentation	1	2019	4	2024
Third Party Intellectual Property (IP) and EDA tool repository development and demonstration	1	2019	4	2024
JFAC technical capability improvement development and demonstration	1	2019	4	2024
Microelectronics assurance and supply chain demonstrations	1	2019	4	2024
USG and industry engagement	1	2019	4	2024
Microelectronics assurance and supply chain policy and guidance development/update	1	2019	4	2024
Management/Technical Support	1	2019	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense			Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 822 / *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
822: *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*	-	0.000	80.861	159.651	-	159.651	41.734	41.790	41.740	42.992	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the DoD microelectronics strategy by ensuring the availability of and access to the advanced, assured microelectronics that are critical for DoD and national security systems. It will support the development and delivery of tools to protect the intellectual property (IP) confidentiality and integrity for a broad range of systems and missions and will provide a path for the production of these articles. It will allow the DoD to 1) maintain technological leadership and a secure domestic microelectronics ecosystem; 2) promote access to all necessary current and future semiconductor technologies, including design, fabrication, packaging, and testing, from a robust base of suppliers; 3) provide multiple options for programs and the Defense Industrial Base to quickly upgrade microelectronic components; 4) create a competitive industrial base of microelectronics suppliers that can rapidly adjust to the dynamics of the industry including the initiation of modernization pilots with DoD programs and industry to deliver new capabilities in artificial intelligence (AI) processors, co-development of advanced commercial-off-the-shelf (COTS) programmable devices, and addressing select IP obsolescence risks; and 5) provide DoD's captive specialty needs suppliers and dedicated facilities with cost-effective upgrade capabilities and resources so they can deliver advanced technologies.

This project supports a broader national strategy to focus resources, policies, and incentives to enhance current and next generation defense capability by 1) maintaining access to U.S. domestic production of state-of-the-art (SOTA) technology; 2) enhancing state-of-the-practice (SOTP) foundries in the U.S. to produce more advanced technologies to better serve low-volume customers in the aerospace and defense community; 3) investing in research and development (R&D) for the next generation of microelectronics for new materials, devices, architectures, and designs in coordination with the Defense Advanced Research Projects Agency (DARPA) Electronics Resurgence Initiative (ERI); 4) promoting threat awareness, proactive protection, and supply chain security to ensure these investments continue to benefit the U.S.; and 5) exploring incentives for market growth through dual-use technologies, piloting acquisition reforms and providing incentives for cooperative R&D and trade.

MINSEC activities are categorized into the following focus areas: next generation disruptive R&D; capture and secure microelectronics R&D; new microelectronics development, demonstration, and capability insertion; COTS programmable integrated circuit (IC) co-development; microelectronics obsolescence and replacement; microelectronics-focused workforce development; radiation hardening by process (RHBP) and radiation hardening by design (RHBD); and radio frequency (RF) and optoelectronic (OE) microelectronics.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 822 / *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*

This project received additional funding in FY 2019 to support MINSEC efforts in the COTS programmable IC co-development focus area. FY 2020 funding for this project will continue the ongoing FY 2019 MINSEC COTS programmable IC co-development activities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC)	-	40.861	159.651

Description: This project's activities will mature and evaluate microelectronics assurance technologies and techniques through efforts that may include the conduct of studies and Broad Agency Announcements (BAAs) and other efforts to coordinate research programs across USG R&D organizations, academia, and industry.

FY 2019 Plans:
This project will initiate and support MINSEC activities in the COTS programmable integrated circuit co-development technical focus area, to include a pilot program to secure design capabilities using commercially-available cloud-based services and supply chain tools with/at commercial co-development partners. These activities with key industry partners will support secure co-design efforts of their components' security features and capabilities that are required to meet future DoD needs.

FY 2020 Plans:
This project will continue the following R&D activities in the COTS programmable IC co-development focus area:
• Pilot secure co-design capabilities and supply chain tools using commercially-available cloud-based services with/at commercial co-development partners to secure commercial IP.
• Develop and promote security features and software and hardware assurance tools and capabilities that meet future DoD needs.
• Support proactive awareness and security of the microelectronics supply chain including supply chain intelligence/ counterintelligence, crypto-provenance/tracking, informed authorities, and standards.
• Stand up a small targeted team, co-led by DoD and the Office of the Director of National Intelligence, to define the full end-to-end supply chain issues and address critical security threats.
• Leverage and enhance investments from local, state, federal government, and industry to develop domestic and agile high-mix, low-volume microelectronics manufacturing and packaging capabilities.

This project will engage early on with potential stakeholders to identify potential transition issues and aid in transition through joint collaboration between research teams and stakeholders with a focus on evaluations of prototypes, test articles, and beta versions of tools, IP, techniques, methods, etc. and their use in operationally-realistic scenarios.

FY 2019 to FY 2020 Increase/Decrease Statement:
Additional FY 2019 funding in the amount of $40 million was added to support acceleration efforts for MINSEC COTS co-development activities. FY 2020 funding in the amount of $118 million was added to support a high-mix, low-volume enhanced

Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 822 / *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
microelectronics manufacturing domestic capability and a proactive awareness and security effort to identify and mitigate critical microelectronics supply chain threats.			
Accomplishments/Planned Programs Subtotals	-	40.861	159.651

	FY 2018	FY 2019
Congressional Add: Next Generation Microelectronics	-	40.000
FY 2019 Plans: • Enhance service lab design (demonstration hardware) and verification (formal verification, layout, etc.) expertise through on-site subject matter experts and engagement with commercial entities. • Evaluate specialized field programmable gate array designs from multiple commercial vendors for potential benefits and vulnerabilities.		
Congressional Adds Subtotals	-	40.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance for this project is monitored in the following ways:
• Expanded access to leading SOTA technology and enhanced availability of essential SOTP design and fabrication capabilities.
• Number of qualified SOTA IP and COTS programmable devices for DoD applications.
• Test articles for JFAC verification and validation.
• Number of secure design environment pilots/programs initiated.
• Expanded library of assured IP and security features for DoD use.
• Number of DoD and other USG programs employing assured access to SOTP and SOTA technologies, design approaches, and best practices developed in cooperation with commercial partners.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 822 / *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Innovation and Development	MIPR	DARPA, Air Force, Army, Navy, NSA : Various	-	-		80.861	Mar 2019	159.651	Mar 2020	-		159.651	Continuing	Continuing	-
		Subtotal	-	-		80.861		159.651		-		159.651	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		80.861		159.651		-		159.651	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 822 / *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*

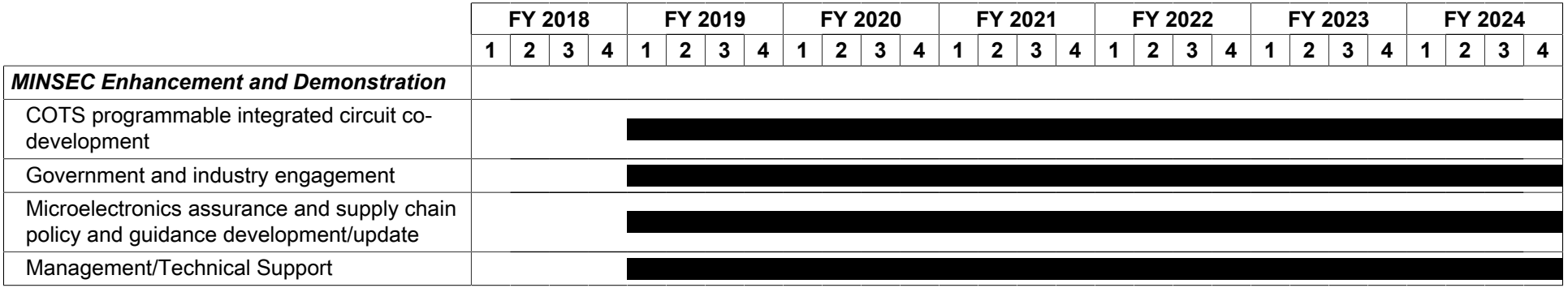

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Office of the Secretary Of Defense		Date: February 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 822 / *Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) Enhancement and Demonstration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MINSEC Enhancement and Demonstration				
COTS programmable integrated circuit co-development	1	2019	4	2024
Government and industry engagement	1	2019	4	2024
Microelectronics assurance and supply chain policy and guidance development/update	1	2019	4	2024
Management/Technical Support	1	2019	4	2024