Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Defense Logistics Agency											DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*					R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*							
COST ($ in Millions)	**All Prior Years**	**FY 2012**	**FY 2013#**	**FY 2014 Base**	**FY 2014 OCO ##**	**FY 2014 Total**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**Cost To Complete**	**Total Cost**
Total Program Element	26.484	60.397	72.234	82.700	-	82.700	83.486	79.956	82.888	83.830	Continuing	Continuing
1: *Technology Development*	26.484	27.205	17.415	47.968	-	47.968	48.336	43.718	45.322	45.832	Continuing	Continuing
2: *90nm Next Generation Foundry*	0.000	0.000	20.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
3: *Trusted Foundry*	0.000	33.192	34.819	34.732	-	34.732	35.150	36.238	37.566	37.998	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department has found it critical to National Security to maintain an ability to produce legacy microelectronics long after they are available from commercial foundries which move to more advanced technology levels based upon the global market. The Defense Microelectronics Activity (DMEA) uniquely accomplishes this mission for the Department by providing both a trusted and assured supply of microelectronics parts that are no longer available from, or bid by, commercial sources but are essential to combat operations. This is a critical capability in an atmosphere of increasing worldwide supply chain risks with threats to defense microelectronics. The threats include risks, such as, counterfeiting, Trojan horses, unreliability and rapid obsolescence coming from an unpredictable and unsecure supply chain. As fiscal pressures force the Department to maintain its weapon systems longer than originally planned and their extended combat use increases attrition, the need for DMEA's unique capabilities increases.

Microelectronics is a crucial technology and central for all operations within the Department. Yet, as vital as this technology is to Department operations, the defense market represents less than 0.1% share of the total global semiconductor market. The Department frequently requires legacy microelectronics long after commercial foundries have moved on to advanced technology levels. As such, the semiconductor industry does not respond to the Department's unique needs of ultra-low volumes, long availability time frames, or its high-level security concerns. In these cases, DMEA procures a license to produce technologies in-house that are no longer commercially manufactured or are unavailable due to no-bids owing to low volume requirements. These licenses enable DMEA to be the Department's microelectronics supplier of last resort, providing the Department with a long-term, trusted, and assured source.

DMEA provides increasingly rare microelectronics design and fabrication skills to ensure that the Department is provided with systems capable of ensuring technological superiority over potential adversaries. DMEA provides decisive, quick turn solutions for defense, intelligence, special operations, cyber and combat missions as well as microelectronic components that are unobtainable in the commercial market. DMEA's knowledge of varying military requirements across a broad and diverse range of combatant environments and missions—along with its unique technical perspective—allows it to develop, manage and implement novel microelectronic solutions to enhance mission capability. DMEA can then use these cutting-edge technology capabilities and products in the solutions it develops for its military clientele. After many years of performing analogous efforts, the technical experience, mission knowledge, and practical judgment that are gained from preceding efforts are often incorporated into subsequent technology maturation projects. DMEA's capabilities make it a key tool in the intelligent and rapid development and application of advanced technologies to identified military needs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Defense Logistics Agency	DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*

Working alongside industry, DMEA has created a model partnership that provides this capability for the Department. DMEA's unique flexible foundry supports the Department with a wide variety of integrated circuits using various processes that were developed by commercial manufacturers and which are now assured to remain in one location for as long as they are needed. To obtain these processes, DMEA works closely with U.S. semiconductor industry partners to acquire process licenses. These Government-held licenses allow for the transfer to DMEA of industry-developed intellectual property (IP) and the related processes for Department needs. These licenses ensure no commercial conflicts by including industry's right to bid first on resulting production volumes. DMEA always looks to industry first to see if it can provide the required components. If not, only then does DMEA provide the necessary prototypes and low volume production. A critical element required to make this business model work effectively is protection of the industry partners' valuable IP and processes. DMEA is Government owned and operated, providing the structure and confidence that an industry partner's IP is protected from potential competitors. This strategic and cooperative industry partnership approach allows DMEA to use industry-developed IP and processes by acquiring, installing, and applying them toward meeting the immediate and long-term needs of the Department. This unique capability is essential to all major weapon systems, combat operations, and support needs. As such, DMEA serves the Department, other US Agencies, industry and Allied nations.

DMEA assists hundreds of programs every year. DMEA has provided its unique engineering assistance and capabilities to older systems, current systems, and even to programs not yet in the production phase. This includes the F-18 Super Hornet, F-22 Raptor, F-35, RQ-4 Global Hawk, MQ-9 Reaper, AEGIS Advanced Surface Missile System, Advanced Medium-Range Air-to-Air Missile (AMRAAM), Evolved Sea Sparrow Missile (ESSM), among many other programs. DMEA assists the Combatant Commands (COCOMs) including Special Ops, Cyber, Intelligence, and the Radiation-Hard communities.

B. Program Change Summary ($ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	59.895	72.234	83.168	-	83.168
Current President's Budget	60.397	72.234	82.700	-	82.700
Total Adjustments	0.502	0.000	-0.468	-	-0.468
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• DAWDF - Personnel Continued Sustainment - RMD 700A2 Issue OPS-7508	0.502	-	0.981	-	0.981
• DISA - Field Security	-	-	0.030	-	0.030
• Civilian Pay Raise Rates Economic Adjustment	-	-	-0.107	-	-0.107
• FY 2014 Departmental Fiscal Guidance	-	-	-1.372	-	-1.372

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Defense Logistics Agency	DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*

Change Summary Explanation

- FY 2014 Secretary of Defense Initiatives: -$1.372M
- Increases to the FY 2013-2018 Research, Development, Test and Evaluation (RDT&E) budgets for PE0603720S are due to an approved Program issue--for basic infrastructure updates, equipment replacements, and the acquisition and implementation of process licenses.

Exhibit R-2A, RDT&E Project Justification: PB 2014 Defense Logistics Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*	PROJECT 1: *Technology Development*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
1: *Technology Development*	26.484	27.205	17.415	47.968	-	47.968	48.336	43.718	45.322	45.832	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

With the increase in worldwide asymmetrical operations requiring quick turn, ultra-low volumes and complete trust along with the extension of life for the major weapon systems in all Services, DMEA's unique-in-the-world capability has experienced significant growth in utilization over the last six years. Although DMEA's Technology Development budget has remained steady (with a minor economic growth factor) during that time, DMEA's support for the Department has increased 19.5% per annum over the same period. In order to fund these steadily growing requirements, DMEA has delayed or foregone many basic infrastructure updates, scheduled equipment replacements, and the acquisition and implementation of the IP that is needed to continue to support the Department. This increased budget for DMEA Technology Development extends DMEA's current capabilities to meet the increased demand and keep pace with the rapid pace of microelectronic technologies.

The Microelectronics Technology Development and Support funds provide DMEA with the core resources to execute its primary mission of providing an in-house ability to quickly develop and execute appropriate solutions to keep a system operational, elevate the sophistication level or to meet new threats. These solutions include producing high mix, low volume, unique microelectronics that are endemic to military requirements and are not commercially available. These funds provide for the development and support necessary to ensure rapid prototyping, insertion, and support of microelectronics technologies into fielded systems, particularly as the technologies advance. DMEA maintains critical microelectronics design and fabrication skills to ensure that the Department is provided with systems capable of ensuring technological superiority over potential adversaries. DMEA provides an in-house capability to support these strategically important microelectronics technologies within the Department with distinctive resources to meet the Department's requirements across the entire spectrum of technology development, acquisition, and long-term support. This includes producing components to meet the Department's requirements for ultra-low volume, an extended availability timeframe, and a trusted, assured, and secure supply of microelectronics. These funds provide basic infrastructure updates as well as an in-house technical staff of skilled and experienced microelectronics personnel working in state-of-the-practice facilities providing technical and application engineering support for the implementation of advanced microelectronics research technologies from reverse engineering through design, fabrication, test, assembly, integration and installation. These funds also provide for the recapitalization and modernization of aging microelectronic infrastructure, acquisition and implementation of design and test tools, the development of advanced techniques to reverse engineer circuits, the adaptation of tools and processes to detect increasingly sophisticated counterfeit microelectronics in the defense supply chain, the development of trusted field programmable gate arrays (FPGAs), and the extension of the process technologies that are necessary to keep pace with the needs of defense customers as weapon system support requirements migrate toward current state-of-the-art technologies. DMEA's capabilities make it a key resource in the intelligent and rapid application of advanced technologies to add needed performance enhancements in response to the newest asymmetric threats and to modernize aging weapon systems. DMEA designs, develops, and supports vital classified assets for ongoing and time-sensitive specialized intelligence operations and missions of the Department and the Special Operations Commands. DMEA will comply with DoD Strategic Objective 3.5-2D for any demonstration programs at DMEA.

Exhibit R-2A, RDT&E Project Justification: PB 2014 Defense Logistics Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*	PROJECT 1: *Technology Development*

Today's weapon systems experience extended field operations and/or are required to remain in service beyond planned replacements, driving the need for growth in DMEA's unique capabilities. This need, along with the continual contraction of commercial resources, makes DMEA the only available resource allowing these systems to remain operational. As such, DMEA and its capability are considered a National Critical Asset.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Title: Technology Development Accomplishments/Plans	27.205	17.415	47.968
FY 2012 Accomplishments: DMEA designed, developed, and demonstrated microelectronics concepts, advanced technologies, and applications to solve operational problems. DMEA applied advanced technologies to add performance enhancements in response to the newest asymmetric threats and to modernize aging weapon systems. DMEA accredited trusted sources and the ARMS foundry provided a contingency means to ensure DoD can acquire critical trusted integrated circuits in a variety of process technologies and geometry node-sizes.			
FY 2013 Plans: DMEA will continue to design, develop, and demonstrate microelectronics concepts, advanced technologies, and applications to solve operational problems. DMEA will apply advanced technologies to add performance enhancements in response to the newest asymmetric threats and to modernize aging weapon systems.			
FY 2014 Plans: DMEA will continue to design, develop, and demonstrate microelectronics concepts, advanced technologies, and applications to solve operational problems. DMEA will apply advanced technologies to add performance enhancements in response to the newest asymmetric threats and to modernize aging weapon systems. The increased missions seen in the last several years by Combatant Commands (COCOMs) and Special Operations have caused those organizations to dramatically increase their demands for DMEA's unique capability to provide quick technical solutions to immediate operational needs. To meet these increases, DMEA will add capacity and capability by recapitalizing and modernizing aging microelectronic infrastructure, extending and upgrading process IP, developing advanced techniques to reverse engineer circuits, adapting tools and processes to detect increasingly sophisticated counterfeit microelectronics to ensure a secure supply chain, and developing trusted field programmable gate arrays (FPGAs), all to meet quick turn solutions on which COCOMs and Special Operations can rely.			
Accomplishments/Planned Programs Subtotals	27.205	17.415	47.968

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2014 Defense Logistics Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*	PROJECT 1: *Technology Development*

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2014 Defense Logistics Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*	PROJECT 2: *90nm Next Generation Foundry*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
2: *90nm Next Generation Foundry*	0.000	0.000	20.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) requires the ability to develop semiconductor technologies down to 90 nanometer (nm) node sizes with the Defense Microelectronics Activity (DMEA) low-volume production-capable foundry capability. This is a critical, time-sensitive requirement to support the DoD's strategy to provide an assured (always available) and trusted source of integrated circuits for critical weapon systems, sensors, and specialized electronic equipment. The capability enhancement to DMEA's existing microelectronics foundry will cover a multitude of feature sizes down to 90nm and will be the only assured supply in the world to satisfy critical DOD and US Government program issues for the foreseeable future.

Market demand for more advanced technology drives the need to make microelectronics with more capabilities in smaller sizes. The way this size is measured is called "node size". In addition to utilizing various processes, industry constantly develops newer processes with ever smaller node sizes. The pace of this progress follows what is known as "Moore's Law": the transistor density of integrated circuits doubles every two years.

Most domestic semiconductor foundries will discontinue low-volume, high-mix integrated circuits in as little as two years because there is little or no profit margin left. 90nm is a key node size for defense applications but industry forecasts show that the commercial industry will substantially decrease the production of 90nm chips by 2014, thereby making acquisition of this essential technology extremely difficult or impossible in the future. To keep 90nm technology available, DMEA must immediately begin to extend its current capability to 90nm to allow sufficient time to buy equipment, get the processes in place, transfer IP, etc., and ensure the DoD's ability to use this technology by then. This will also allow DMEA to purchase used equipment at extremely low prices from commercial sources that are closing or have already closed their 90nm process lines. Without enhancing the existing foundry at DMEA to 90nm, in four years the DoD will be without a trusted and assured source for repeatable procurement of the state-of-the-practice integrated circuits that comprise a vast majority of the U.S. arsenal's microelectronics. This, in turn, will severely impact real-world operations. In the meantime, if a Trusted Supplier is available to make a requested component, DMEA will utilize that source of supply first. This enhancement of DMEA capabilities is absolutely necessary to provide assured and secure microelectronics design and fabrication for trusted microelectronics systems and semiconductor components to ensure DOD technological superiority over potential adversaries.

The current DMEA foundry capability will accommodate node sizes down to 180nm. Due to physical limitations in the current DMEA lithography and fabrication equipment, the state-of-the-practice processes down to 90nm that need to be incorporated require an expansion in equipment and facilities to handle the smaller node sizes as well as the larger silicon wafers. This Project will fund expenses associated with planning and implementing the 90nm capability. Initial costs will include design and trade studies, costs associated with implementing force protection standards, floor plan layout and planning activities. Further, it will fund the outfitting of the selected property with the required force protection standards, infrastructure, tenant improvements, furniture, and equipment.

Exhibit R-2A, RDT&E Project Justification: PB 2014 Defense Logistics Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*	PROJECT 2: *90nm Next Generation Foundry*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Title: DMEA 90nm Next Generation Foundry	0.000	20.000	0.000
FY 2012 Accomplishments: N / A.			
FY 2013 Plans: DMEA will procure equipment supporting modernization of a 90nm Next Generation Foundry and begin installation of the acquired equipment.			
FY 2014 Plans: N / A.			
Accomplishments/Planned Programs Subtotals	0.000	20.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2014 Defense Logistics Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*	PROJECT 3: *Trusted Foundry*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
3: *Trusted Foundry*	0.000	33.192	34.819	34.732	-	34.732	35.150	36.238	37.566	37.998	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Department and the National Security Agency (NSA) require uninterruptible access to state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. Under DODI 5200.44, Application Specific Integrated Circuits (ASICs) in critical/essential systems need to be procured from Trusted sources in order to avoid tampered or sabotaged parts. Worldwide competition from foreign, state-subsidized manufacturing facilities (foundries) is making fabless semiconductor companies the norm in the U.S. Sophisticated off-shore design and manufacturing facilities with economic incentives of state subsidies have resulted in outsourcing of electronics component and integrated circuit services to offshore facilities. These trends threaten the integrity and worldwide leadership of the U.S. semiconductor industry by eliminating many domestic on-shore suppliers and reducing access to Trusted fabrication sources for advanced technologies. These trends are of acute concern to the defense and intelligence community. Secure communications and cryptographic applications, among other defense applications depend heavily upon high performance semiconductors where a generation of improvement can translate into a significant force multiplier and capability advantage. Important defense technology investments and demonstrations carry size, weight, power, and performance goals that can only be met through the use of the most sophisticated semiconductors.

The Trusted Foundry program provides the Department and NSA with access to the Trusted state-of-the-art microelectronics design and manufacturing capabilities necessary to meet the confidentiality, integrity, availability, performance and delivery needs of their customers. The program also provides the Services with a competitive cadre of accredited Trusted suppliers that can meet the needs of their mission critical/essential systems for Trusted integrated circuit components. The NSA Trusted Access Program Office, has successfully contracted with commercial sources to satisfy their state-of-the-art semiconductor requirements. It is imperative for a wide range of technologies in ongoing and future Department/ and NSA systems that access to Trusted suppliers continues. Most importantly, Trusted Foundry access is absolutely necessary to meet secure communication and cryptographic needs requiring state-of-the-art semiconductor technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Title: Trusted Foundry	33.192	34.819	34.732
FY 2012 Accomplishments: Began to develop a capability for the reverse engineering of application-specific integrated circuits (ASICs) and continuously refine the utilized methods for efficiency, accuracy, and applicability to multiple processes. Enhance the cadre of trusted suppliers for the critical trusted components and services needed for appropriate defense systems. Enhance Trusted Foundry products to include key specialty processes requested by DoD programs, such as high voltage, extreme environments, and embedded			

Exhibit R-2A, RDT&E Project Justification: PB 2014 Defense Logistics Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603720S: *Microelectronics Technology Development and Support (DMEA)*	PROJECT 3: *Trusted Foundry*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
nonvolatile memory. Enhance trusted design activities to encompass new processing capabilities. Establish a line of trusted catalog components that can be purchased by Defense contractors. ***FY 2013 Plans:*** Award a new contract to provide Trusted access to state-of-the-art microelectronics technologies for DoD and NSA needs. Continue the development of a capability for the reverse engineering of application-specific integrated circuits (ASICs) and continuously refine the utilized methods for efficiency, accuracy, and applicability to multiple processes. Enhance the cadre of trusted suppliers for the critical trusted components and services needed for appropriate defense systems. Enhance Trusted Foundry products to include key specialty processes requested by DoD programs, such as high voltage, extreme environments, and embedded non-volatile memory. Enhance trusted design activities to encompass new processing capabilities. Expand a line of trusted catalog components that can be purchased by Defense contractors. ***FY 2014 Plans:*** Continue the development of a capability for the reverse engineering of application-specific integrated circuits (ASICs) and continuously refine the utilized methods for efficiency, accuracy, and applicability to multiple processes. Enhance the cadre of trusted suppliers for the critical trusted components and services needed for appropriate defense systems. Enhance Trusted Foundry products to include key specialty processes requested by DoD programs, such as high voltage, extreme environments, and embedded non-volatile memory. Enhance trusted design activities to encompass new processing capabilities. Expand a line of trusted catalog components that can be purchased by Defense contractors.			
Accomplishments/Planned Programs Subtotals	33.192	34.819	34.732

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A