Department of Defense
Fiscal Year (FY) 2018 Budget Estimates

May 2017

Office of the Secretary Of Defense

Defense-Wide Justification Book Volume 1 of 2

Defense Production Act Purchases

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Volumes

Volume 1 Table of Contents

THIS PAGE INTENTIONALLY LEFT BLANK

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base
Defense Production Act Purchases	76,680	76,534	76,534
Total Defense-Wide	76,680	76,534	76,534

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
Defense Production Act Purchases				
Total Defense-Wide				

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO
Defense Production Act Purchases	76,534	76,534		76,534
Total Defense-Wide	76,534	76,534		76,534

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Defense Production Act Purchases	37,401		37,401
Total Defense-Wide	37,401		37,401

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: Defense Production Act Purchases

Budget Activity	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base
01. Defense Production Act Purchases	76,680	44,065	44,065
20. Undistributed		32,469	32,469
Total Defense Production Act Purchases	76,680	76,534	76,534

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: Defense Production Act Purchases

Budget Activity	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
01. Defense Production Act Purchases				
20. Undistributed				
Total Defense Production Act Purchases				

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: Defense Production Act Purchases

Budget Activity	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO
01. Defense Production Act Purchases	44,065	44,065		44,065
20. Undistributed	32,469	32,469		32,469
Total Defense Production Act Purchases	76,534	76,534		76,534

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: Defense Production Act Purchases

Budget Activity	FY 2018 Base	FY 2018 OCO	FY 2018 Total
01. Defense Production Act Purchases	37,401		37,401
20. Undistributed			
Total Defense Production Act Purchases	37,401		37,401

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: 0360D Defense Production Act Purchases

Line No	Item Nomenclature	Ident Code	FY 2016 Base + OCO Quantity	FY 2016 Base + OCO Cost	FY 2017 PB Request with CR Adj Base Quantity	FY 2017 PB Request with CR Adj Base Cost	FY 2017 Total PB Requests* with CR Adj Base Quantity	FY 2017 Total PB Requests* with CR Adj Base Cost	Sec
	Budget Activity 01: Defense Production Act Purchases								
	Defense Production Act Purchases								
1	Defense Production Act Purchases	A		76,680		44,065		44,065	U
	Total Defense Production Act Purchases			76,680		44,065		44,065	
	Budget Activity 20: Undistributed								
	Undistributed								
2	Adj to Match Continuing Resolution	A				32,469		32,469	U
	Total Undistributed					32,469		32,469	
	Total Defense Production Act Purchases			76,680		76,534		76,534	

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: 0360D Defense Production Act Purchases

Line No	Item Nomenclature	Ident Code	FY 2017 PB Request with CR Adj OCO Quantity	FY 2017 PB Request with CR Adj OCO Cost	FY 2017 Total PB Requests* with CR Adj OCO Quantity	FY 2017 Total PB Requests* with CR Adj OCO Cost	FY 2017 Less Enacted Div B P.L.114-254** OCO Quantity	FY 2017 Less Enacted Div B P.L.114-254** OCO Cost	FY 2017 Remaining Req with CR Adj OCO Quantity	FY 2017 Remaining Req with CR Adj OCO Cost	Sec
Budget Activity 01: Defense Production Act Purchases											
	Defense Production Act Purchases										
1	Defense Production Act Purchases	A									U
	Total Defense Production Act Purchases										
Budget Activity 20: Undistributed											
	Undistributed										
2	Adj to Match Continuing Resolution	A									U
	Total Undistributed										
	Total Defense Production Act Purchases										

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: 0360D Defense Production Act Purchases

Line No	Item Nomenclature	Ident Code	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA Quantity	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA Cost	FY 2017 Total PB Requests* with CR Adj Base + OCO Quantity	FY 2017 Total PB Requests* with CR Adj Base + OCO Cost	FY 2017 Less Enacted Div B P.L.114-254** OCO Quantity	FY 2017 Less Enacted Div B P.L.114-254** OCO Cost	FY 2017 Remaining Req with CR Adj Base + OCO Quantity	FY 2017 Remaining Req with CR Adj Base + OCO Cost	Sec
Budget Activity 01: Defense Production Act Purchases											
Defense Production Act Purchases											
1	Defense Production Act Purchases	A		44,065		44,065				44,065	U
Total Defense Production Act Purchases				44,065		44,065				44,065	
Budget Activity 20: Undistributed											
Undistributed											
2	Adj to Match Continuing Resolution	A		32,469		32,469				32,469	U
Total Undistributed				32,469		32,469				32,469	
Total Defense Production Act Purchases				76,534		76,534				76,534	

Defense-Wide
FY 2018 President's Budget Request
Exhibit P-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

17 May 2017

Appropriation: 0360D Defense Production Act Purchases

Line No	Item Nomenclature	Ident Code	FY 2018 Base Quantity	FY 2018 Base Cost	FY 2018 OCO Quantity	FY 2018 OCO Cost	FY 2018 Total Quantity	FY 2018 Total Cost	Sec
	Budget Activity 01: Defense Production Act Purchases								
	Defense Production Act Purchases								
1	Defense Production Act Purchases	A		37,401				37,401	U
	Total Defense Production Act Purchases			37,401				37,401	
	Budget Activity 20: Undistributed								
	Undistributed								
2	Adj to Match Continuing Resolution	A							U
	Total Undistributed								
	Total Defense Production Act Purchases			37,401				37,401	

Line Item Table of Contents (by Appropriation then Line Number)

Appropriation 0360D: Defense Production Act Purchases

THIS PAGE INTENTIONALLY LEFT BLANK

Line Item Table of Contents (Alphabetically by Line Item Title)

THIS PAGE INTENTIONALLY LEFT BLANK

Office of the Secretary Of Defense • Budget Estimates FY 2018 • Procurement
Exhibit P-1, Procurement Program
(Listing by Appropriation, then Line Number)

Appropriation 0360D: Defense Production Act Purchases
BA 01: Defense Production Act Purchases / BSA 10: Defense Production Act Purchases

				Cost ($ in Millions)									
				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	
Line#	Cost Type	Line Item #	Line Item Title	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
1	A	TitleIII	Defense Production Act Purchases	-	76.680	-	44.065	-	37.401	-	-	-	37.401
Total: Defense Production Act Purchases / Defense Production Act Purchases				-	76.680	-	44.065	-	37.401	-	0.000	-	37.401

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit P-40, Budget Line Item Justification: FY 2018 Office of the Secretary Of Defense	Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D: Defense Production Act Purchases / BA 01: Defense Production Act Purchases / BSA 10: Defense Production Act Purchases	**P-1 Line Item Number / Title:** TitleIII / Defense Production Act Purchases

ID Code (A=Service Ready, B=Not Service Ready):	Program Elements for Code B Items: 0902199D8Z	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	1,695.275	76.680	44.065	37.401	-	37.401	38.972	35.999	30.309	31.008	Continuing	Continuing
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	1,695.275	76.680	44.065	37.401	-	37.401	38.972	35.999	30.309	31.008	Continuing	Continuing
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**1,695.275**	**76.680**	**44.065**	**37.401**	**-**	**37.401**	**38.972**	**35.999**	**30.309**	**31.008**	**Continuing**	**Continuing**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Title III of the Defense Production Act (DPA) provides the Department of Defense (DoD) with a powerful tool to ensure the timely creation and availability of domestic production capabilities for technologies that have the potential for wide-ranging impact on the operational capabilities and technological superiority of U.S. defense systems. DPA Title III is unique in that it is the sole DoD program focused on creating, maintaining, protecting, and expanding or restoring domestic production capacity to strengthen domestic industry and to establish the industrial base capacity for essential national defense capabilities.

The Defense Production Act is authorized by 50 U.S.C. Sections 4501-4568. This budget includes essential transformational initiatives using the authorities of Title III of the DPA. The multi-year projects in this budget will incentivize domestic sources to establish, strengthen, and expand domestic industrial base capabilities for key technologies that support transformational initiatives and maintain the technological superiority of U.S. defense systems.

In accordance with the provisions of the Defense Production Act of 1950, as amended, (50 U.S.C. Sections 4501-4568), notification to Congress of the intent of the DoD to execute any of the projects described in this exhibit to correct domestic industrial base shortfalls for technologies and/or materials essential for the execution of the national security strategy of the United States will be provided via letter notification before the referenced projects are initiated.

Exhibit P-40, Budget Line Item Justification: FY 2018 Office of the Secretary Of Defense	Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D: Defense Production Act Purchases / BA 01: Defense Production Act Purchases / BSA 10: Defense Production Act Purchases	**P-1 Line Item Number / Title:** TitleIII / Defense Production Act Purchases

ID Code (A=Service Ready, B=Not Service Ready):	Program Elements for Code B Items: 0902199D8Z	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule					Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)
P-5	1 / Defense Production Act Purchases				- / 1,695.275	- / 76.680	- / 44.065	- / 37.401	- / -	- / 37.401
P-40	**Total Gross/Weapon System Cost**				**- / 1,695.275**	**- / 76.680**	**- / 44.065**	**- / 37.401**	**- / -**	**- / 37.401**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
Strategic overview:

DPA Title III investments for DoD are informed by the Department's key investment strategy documents including the Quadrennial Defense Review (QDR) and the Long Range Research and Development Plan (LRRDP). Investments for DoD will enable the production of capacity for technologies and materials emerging from the technology base when the private sector is unable to respond within DoD timelines. Technology focus areas include space, undersea, air dominance, strike, missile defense, and emerging technologies.

The National Security Space Industrial and Supply Base (NSS ISB) Risk Mitigation Program was developed by the DoD to formulate a systematic process to fund mitigation efforts to rectify shortcomings in the space industrial and supply base. The objective is to ensure access to critical technologies and capabilities in the quality, quantity, and timeframes required to support U.S. Government space programs. Projects in this program are addressing cross-platform, multi-agency/Service requirements. Projects are developed in response to risk mitigation determinations and prioritized critical requirements of stake holders in DoD and other agencies, as represented through the Department's Space Industrial Base Working Group.

Program Change Summary ($ in Millions)

FY 2018 resources ($M):
$ 37.401 FY 2018 Request*
*includes $15M realignment for the National Security Space Industrial and Supply Base - Space Industrial Base Capabilities, $3M for Navy's Next Generation Jammer gallium nitride (GaN) monolithic microwave integrated circuits (MMICs) and wideband circulator technologies for Next Generation Jammer (NGJ) program requirements, and a $.301M for Advanced Weapon Component/Materials Production.

FY 2017 resources ($M)
$ 20.141 FY 2017 Request
+ $15.000 Support for the National Security Space Industrial and Supply Base - Space Industrial Base Capabilities
+ $7.200 Support for a DoD advanced microelectronics Trusted Foundry
+ $2.000 Navy's Next Generation Jammer gallium nitride (GaN) monolithic microwave integrated circuits (MMICs) and wideband circulator technologies for Next Generation Jammer (NGJ) program requirements
- $.276 Efficiencies and Inflation Adjustments
$ 44.065 Total FY 2017 President's Budget Request

Exhibit P-40, Budget Line Item Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D: Defense Production Act Purchases / BA 01: Defense Production Act Purchases / BSA 10: Defense Production Act Purchases	P-1 Line Item Number / Title: TitleIII / Defense Production Act Purchases	
ID Code (A=Service Ready, B=Not Service Ready):	Program Elements for Code B Items: 0902199D8Z	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A		

FY 2016 resources ($M):
$ 46.680 FY 2016 Request
+ 30.000 Congressional increase
$ 76.680 Total FY 2016 Appropriated

FY 2016 $30M Congressional Increase was applied to the following projects, whose values exceeded the amount of the Congressional increase:
Sustainable Adenovirus Vaccine Production Capability ($15.421)
Next Generation Solider Protection ($16.449)

This budget includes essential transformational initiatives using the authorities of Title III of the DPA. Project descriptions are provided below for each of the P5 exhibit projects listed, and the single or multi-year cost phasing of each of the projects is addressed in the P5 exhibit.

FY 2018 Project Descriptions:

NSS ISB - Electron Beam Direct Write (FY 2016 – FY 2019): This project addresses a need for an advanced lithography tool for government integrated circuit developments. It will have benefits in vastly reduced mask costs, improved design turn-around times, improved yield & reliability, improved design security (trust), and increased die sizes. Production versions of this tool would be inserted in U.S. integrated circuit foundries fabricating parts for space and defense applications at a relatively low cost (versus commercial advanced lithography solutions in development) per system. The proposed project will accomplish the first such insertion. The project is to complete the development of a piece of lithography equipment that uses multiple electron beams (e-beams) to enable the direct transfer ("writing") of integrated circuit layer descriptions to a physical wafer being processed. Accomplishing this project brings a host of benefits when coupled with 1 D (1-dimensional or "unidirectional") layout techniques as part of a complementary ebeam write (CEBW) methodology.

NSS ISB - Photovoltaic Substrates Supply Chain Diversification (FY 2016 – FY 2021): The purpose of this effort is to improve national security by addressing a critical gap in the North American supply chain for defense-critical, high-purity germanium (Ge) metal used for space-qualified photovoltaics in a wide range of warfighting and surveillance assets. Those assets include ground-based infrared (IR) optics for night vision operations, airborne IR windows and optical systems, space-based IR optics, and high-efficiency, multi-junction (M-J) photovoltaics (solar cells) used on over 95% of all space satellite assets, both Government and commercial. The investment will ensure the long-term domestic supply of space-qualified Ge substrates by successfully diversifying into higher-margin products that will maintain profitability and allow the company to serve Ge wafer markets.

NSS ISB - Next Generation Reaction Wheel Assemblies (RWA) (FY 2016 – FY 2021): This project addresses a need for a multiple-phase Next-Generation scalable Reaction Wheel (NGRW) project to provide a systematic comprehensive, low cost/risk investment affording potential for high return on investment. The goal is to generate or revive a domestic competitor, or to expand the existing vendor's product line, with a focus on smaller wheels using advanced technologies. In addition, investigate encouraging a business partnership to maintain a second source in the U.S. Also, the project will investigate using another product controlled by a U.S. company.

NSS ISB - Radiation-Hardened Digital/Analog Production & Qualification (FY 2016 –FY 2021): It is imperative that government organizations responsible for national security, e.g., intelligence acquisition, missile early warning, missile defense, and other space requirements maintain a strong industrial base to supply technology necessary to design, develop, and fabricate Trusted, radiation hardened, high reliability and DoD space qualified Application Specific Integrated Circuits (ASIC), Application Specific Standard Products (ASSP), such as very high speed data switches, and Multi-Core General Purpose Processors (MC-GPP) at the less than or equal to 45nm technology node to support onboard processing and other critical applications. The objective of this project is to enhance the Radiation Hardened By Design 45nm ASIC/ ASSP design flow, optimize selected circuit designs to reduce power and increase performance and complete the design, fabrication, test and qualification of certain critical devices to include the MC-GPP. In addition to achieving an estimated improvement in performance of > 25% for power and performance for some specific designs, the proposed effort will support life-time acquisition buys of these critical circuits for some identified systems with attendant reductions in system technical, cost and schedule risks.

Exhibit P-40, Budget Line Item Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D: Defense Production Act Purchases / BA 01: Defense Production Act Purchases / BSA 10: Defense Production Act Purchases	P-1 Line Item Number / Title: TitleIII / Defense Production Act Purchases	
ID Code (A=Service Ready, B=Not Service Ready):	Program Elements for Code B Items: 0902199D8Z	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A		

NSS ISB - Trusted Field Programmable Gate Arrays (FPGAs) (FY 2016 – FY 2021): The DoD and Intelligence Community have identified FPGAs as a critical enabling technology across a wide variety of present and future systems. Advanced, commercially available FPGAs do not meet the DoD requirements for Trusted systems as they are manufactured off-shore and are considered vulnerable to tampering and insertion of malicious software and/or hardware. This program seeks to improve the security posture and reduce the risk associated with FPGA technology by addressing security concerns in the design, development, fabrication and supply lifecycle of FPGA devices. The objective of this program is to develop and demonstrate an approach to ensure the availability of advanced "Trusted" and space qualified reprogrammable FPGA technology to support DoD/IC applications including satellite and strategic missile systems. Concerning this effort "Trust" is defined as assurance of the integrity and availability, of a product wherein that product will reliably operate as intentionally designed and not contain any malicious hardware and/or software that will compromise the intended application; e.g., exfiltration of sensitive data, etc.

NSS-ISB – Radiation Test Facilities (FY 2017 – FY 2021): Radiation test facilities remain a critical asset to NSS and all of DoD to be able to quantify and qualify the radiation hardness of electronic components. This funding will upgrade and sustain these facilities to fulfill this need. As program budgets shrink in upcoming years, programs are less willing to sustain these facilities, leaving the burden on SMC and the NRO to fund them out of their ever shrinking O&M budget. Without assistance, one of the critical facilities will close (costing over $1B to reconstitute). Without the current test infrastructure, the DoD would be very under capacity for this capability.

NSS ISB – High Strength/High Modulus (HS/HM) Carbon Fibers (FY 2017 – FY 2020): This investment program will ensure there is a domestic industry of qualified to produced High Strength and High Modulus (HS/HM) carbon fibers for NSS and Defense applications. The program's purpose is to reduce inherent supply chain risks associated with a sole source foreign producer in Japan of unique and proprietary level materials while making available to DoD existing domestic second sources of similar materials that are reportedly higher quality, better performing and less expensive. This DoD investment program also supports greater U.S.-Japan (government and industry) defense supply chain security cooperation. If this investment is not made, programs will continue to utilize the sole foreign source, making it unlikely that new programs will consider sourcing from domestic suppliers. This puts NSS and Defense supply at continued risk of disruption due to foreign government controls as well as potential factory closures due to natural and manmade peacetime disasters as well as potential regional conflicts. Any one of these supply disruption scenarios could result in severe and long-lasting supply disruptions affecting multiple programs and their related costs, schedules and performance requirements-in addition to delaying important capabilities to our warfighters.

NSS ISB –Mercury Cadmium Telluride Infrared Sensors (Prior Years - FY2016):
The goal of this program is to establish and maintain a high quality production capability for Mercury Cadmium Telluride (MCT) epitaxy grown on Cadmium Zinc Telluride (CZT) substrates via molecular beam epitaxy (MBE) at key US-owned and operated foundries in order to assure the necessary supply of strategic focal plane arrays (FPAs) to National Security Space (NSS) agencies when needed. The primary goal is to demonstrate on-shore MCT detectors are equivalent in performance to FPAs utilizing off-shore substrates.

Projects Other (non-NSS):

Secure Composite Shipping Containers Production Capacity (prior years and FY 2017 –FY 2019): Developed under funding from the Department of Homeland Security (DHS) Advanced Research Projects Agency (HSARPA), the Secure Hybrid Composite Container (SHCC) is an intermodal ISO shipping container providing advanced security features, while meeting all the operational, structural, and customs requirements of standard steel 20ft and 40ft shipping containers. The security system is designed to confirm the integrity of the container and report breaches to the cognizant authorities. The container includes the capability to be tracked during its shipment and alert officials to track deviations and alarms. The ultimate goal of the container is to provide the level of security to law enforcement officials to ensure contraband products and malicious agents have not been inserted into the container for smuggling into the US. Investment under Title III to establish initial production capability for the secure hybrid composite container can help satisfy an estimated 3,000 container per year initial government need from the Department of Defense, Department of State, and the Intelligence Community agencies requiring secure shipping containers. A production line with an output of approximately 100 containers per year output is planned. Previously budgeted FY2016 funding was executed with prior year funds.

Advanced Weapon Component/Materials Production (FY 2016, FY 2018 – Continuing): The purpose of this continuous effort is to use DPA Title III authorities to make investments in the domestic industrial base that maintain the timely availability of critical-need, technologically superior production capabilities that are independently available within the U.S. for both current and future weapon systems, as informed by the Department's key investment strategy documents including the Quadrennial Defense Review (QDR) and the Long Range Research and Development Plan (LRRDP). These resources will focus on projects that

Exhibit P-40, Budget Line Item Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D: Defense Production Act Purchases / BA 01: Defense Production Act Purchases / BSA 10: Defense Production Act Purchases	P-1 Line Item Number / Title: TitleIII / Defense Production Act Purchases	
ID Code (A=Service Ready, B=Not Service Ready):	Program Elements for Code B Items: 0902199D8Z	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A		

span multiple agencies, weapons platforms, and Service needs, enabling the production of capacity for technologies and materials emerging from the technology base that the private sector is unable to respond to within DoD timelines. Technology focus areas include space, undersea, air dominance, strike, missile defense, and emerging technologies.

Next Generation Jammer GaN MMIC and Wideband Circulator (Prior Years and FY 2017- FY 2019): This project is an investment in production technology and capacity expansion for gallium nitride (GaN) monolithic microwave integrated circuits (MMICs) and wideband circulator technologies for Next Generation Jammer (NGJ) program requirements. The objective is to establish/expand one or more domestic sources for GaN integrated circuit components to ensure the availability of critical components required for the Next Generation Jammer and other electronic warfare systems. Additionally, this initiative will mitigate program risk by ensuring on-shore availability of critical components, maintain secure sources for these essential electronic components through oversight of sources and processes, and address process and quality improvements to drive down costs.

Next Generation Soldier Protection (FY 2016 - FY 2018): The purpose of this project is to create a manufacturing capacity to produce lightweight, high-strength, inherently fire-resistant co-polymer aramid fibers to provide lightweight force protection for Soldiers and air, ground, and naval platforms and bases. Examples include lighter and stronger body armor, helmets, pelvic protection, enhanced combat vehicle survivability, enhanced aviation platform survivability, and integrated base protection. A next generation of co-polymer aramid fibers would provide a step-change increase in tenacity over existing fibers, a key attribute for enabling lighter-weight ballistic protection.

FY 2017 Project Descriptions

NSS ISB - Radiation-Hardened Transistors & Diodes (FY 2016 – FY 2017): Many present and future DoD and intelligence systems have identified Rad Hard components as a critical base technology. There are very few remaining suppliers of Rad Hard space qualified components such as diodes, Metal Oxide on Silicon Field Effect Transistors (MOSFET), insulated-gate bipolar transistor (IGBT), Optocouplers and other Optical devices, Glassless diodes, JANKC diode dies, and more. These components are used almost universally to provide power and conditioned signals to Application-Specific Integrated Circuit (ASIC) and Field Programmable Gate Arrays (FPGA) circuits. Since this is an extremely niche market, a single company is the only manufacturer of components that designs and produces entirely with US persons in a US facility, and specializes in military, aerospace and space. The company also provides products to commercial space, to companies such as Boeing, Lockheed Martin, and Space Systems Loral. The reduction in demand for strategic radiation hardened electronics (RHE) (e.g., >1Mrad total ionization dose) over the past 15 years has resulted in a substantial decrease of the industrial base, which is down to two main suppliers, and only one supplier, which designs and manufactures their components in the USA today and has a proven process for Rad Hard by Design products.

Projects Other (non NSS-ISB):

Advanced Microelectronics Trusted Foundry (FY 2017): This project supports the Department's efforts to maintain domestic trusted sources of advanced microelectronics production. AT&L's strategy is focused on improving capability to evaluate and validate trust of microelectronics parts and advance standards to incentivize the commercial marketplace to recognize trust as a competitive design standard, and develop alternative approaches to the current manufacturing-driven means of trust to enable broader DoD access to commercial state of the art technology.

FY 2016 Project Descriptions

NSS ISB - Cadmium Zinc Telluride Substrates (Prior Years – FY 2016): The purpose of this project is to enhance the ability of the domestic industrial base to produce large format, space-qualified cadmium zinc telluride (CZT) substrates for use in government satellite systems. Due to evolving National Security Space (NSS) threat requirements, several agencies responsible for missile early warning, missile defense, and other space requirements need to maintain a strong industrial base for mercury cadmium telluride (MCT) based infrared detector technology. A key material for the MCT detector arrays is the lattice-matching substrate CZT on which the detector array is grown. Existing domestically-produced CZT substrates do not meet the size and quality requirements necessary to produce large, space-quality infrared focal plane arrays. The focus of this effort will be on the expansion of CZT boule growth and large format, (211)-oriented substrate production; the stretch objective is the production of 9cm x 9.5cm substrates from 150mm diameter boules.

Exhibit P-40, Budget Line Item Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D: Defense Production Act Purchases / BA 01: Defense Production Act Purchases / BSA 10: Defense Production Act Purchases	**P-1 Line Item Number / Title:** TitleIII / Defense Production Act Purchases	
ID Code (A=Service Ready, B=Not Service Ready):	**Program Elements for Code B Items:** 0902199D8Z	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

NSS ISB - Next-Generation Star Trackers System (Prior Years – FY 2016): This project will establish the development and production of an affordable and reliable modular, Next Generation Star Tracker System (NGSTS) that uses advanced domestically-produced Complementary Metal Oxide Semiconductor (CMOS) detectors with a capability that meets the specifications of the DPA Title III Advanced CMOS Capability Project. This involves adherence to the Staring Technology for Enhanced Linear Line-of-site Angular Recognition (STELLAR) specification. A NGSTS with CMOS technology is needed to meet military and civil US Government (including National Security Space) and commercial market demands for the foreseeable future, and will reassert the viability and competitiveness of the domestic industrial base.

Projects Other (non NSS-ISB):

Harsh Environment Transceivers (FY 2016): The purpose of this program is to install additional manufacturing capability to meet the critical demands of Department of Defense (DoD) Space, Missile and Aerospace programs for a Quad-Channel Electro-Optic Transceiver. This project will also create the infrastructure to maintain all of the procedures, process and control systems and certifications required by DoD customers.

Sustainable Adenovirus Vaccine Production Capability (FY 2016): The purpose of this project is to create a domestic capability to modernize production of a new Adenovirus vaccine. Adenovirus Vaccine is administered to virtually every enlisted basic trainee of the military Services; it is highly effective and safe and, as a consequence of its use, the military Services avoid the loss of training days to disease and the costs of outpatient and inpatient treatment. Modernization of the Adenovirus vaccine manufacturing process will reduce vaccine cost and reduce the risk associated with the aging of unique production equipment in the current process.

Exhibit P-5, Cost Analysis: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D / 01 / 10	**P-1 Line Item Number / Title:** TitleIII / Defense Production Act Purchases	**Item Number / Title [DODIC]:** 1 / Defense Production Act Purchases
ID Code (A=Service Ready, B=Not Service Ready) :	**MDAP/MAIS Code:**	

Resource Summary	Prior Years(+)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	1,695.275	76.680	44.065	37.401	-	37.401
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	1,695.275	76.680	44.065	37.401	-	37.401
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**1,695.275**	**76.680**	**44.065**	**37.401**	**-**	**37.401**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Budget Years Cost values do not sum to the represented total intentionally:
(+) Prior Years Cost Delta: 1,650.401 million

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2016			FY 2017			FY 2018 Base			FY 2018 OCO			FY 2018 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - National Security Space (NSS) Industrial & Supply Base (ISB) Risk Mitigation Program Cost																		
Non Recurring Cost																		
NSS ISB: Electron Beam Direct Write	-	-	-	-	-	11.348	-	-	6.135	-	-	8.714	-	-	-	-	-	8.714
NSS ISB: Photovoltaic Substrates Supply Chain Diversification	-	-	-	-	-	0.865	-	-	1.609	-	-	0.501	-	-	-	-	-	0.501
NSS ISB: Next Generation Reaction Wheels Assembly	-	-	-	-	-	0.540	-	-	0.503	-	-	0.523	-	-	-	-	-	0.523
NSS ISB: Radiation-Hardened Digital/ Analog Production & Qualification	-	-	-	-	-	2.918	-	-	4.325	-	-	1.502	-	-	-	-	-	1.502
NSS ISB: Cadmium Zinc Telluride Substrates	-	-	7.890	-	-	2.702	-	-	-	-	-	-	-	-	-	-	-	-
NSS ISB: Next Generation Star Trackers	-	-	12.367	-	-	10.699	-	-	-	-	-	-	-	-	-	-	-	-
NSS ISB: Trusted Field Programmable Gate Arrays	-	-	-	-	-	1.621	-	-	1.307	-	-	2.604	-	-	-	-	-	2.604

Exhibit P-5, Cost Analysis: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D / 01 / 10	P-1 Line Item Number / Title: TitleIII / Defense Production Act Purchases	Item Number / Title [DODIC]: 1 / Defense Production Act Purchases
ID Code (A=Service Ready, B=Not Service Ready) :		MDAP/MAIS Code:

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2016			FY 2017			FY 2018 Base			FY 2018 OCO			FY 2018 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
NSS ISB: Radiation-Hardened Transistors & Diodes	-	-	-	-	-	2.161	-	-	1.006	-	-	-	-	-	-	-	-	-
NSS ISB: Radiation Test Facilities	-	-	-	-	-	-	-	-	0.300	-	-	0.314	-	-	-	-	-	0.314
NSS ISB: HS/HM Carbon Fibers	-	-	-	-	-	-	-	-	2.011	-	-	1.828	-	-	-	-	-	1.828
NSS ISB: Mercury Cadmium Telluride	-	-	1.350	-	-	0.648	-	-	3.804	-	-	5.509	-	-	-	-	-	5.509
Subtotal: Non Recurring Cost	-	-	*21.607*	-	-	*33.502*	-	-	*21.000*	-	-	*21.495*	-	-	-	-	-	*21.495*
Subtotal: Hardware - National Security Space (NSS) Industrial & Supply Base (ISB) Risk Mitigation Program Cost	**-**	**-**	***21.607***	**-**	**-**	***33.502***	**-**	**-**	***21.000***	**-**	**-**	***21.495***	**-**	**-**	**-**	**-**	**-**	***21.495***
Hardware - Other Cost																		
Non Recurring Cost																		
Secure Composite Shipping Containers	-	-	7.267	-	-	-	-	-	1.989	-	-	3.001	-	-	-	-	-	3.001
Advanced Weapon Component/Materials Production	-	-	-	-	-	6.168	-	-	-	-	-	2.901	-	-	-	-	-	2.901
Advanced Microelectronics Trusted Foundry	-	-	-	-	-	-	-	-	7.158	-	-	-	-	-	-	-	-	-
Next Generation Jammer Gallium Nitride (GaN) MMIC & Wideband Circulator Technologies	-	-	16.000	-	-	-	-	-	1.988	-	-	3.001	-	-	-	-	-	3.001
Harsh Environment Transceivers	-	-	-	-	-	5.140	-	-	-	-	-	-	-	-	-	-	-	-
Next Generation Soldier Protection	-	-	-	-	-	16.449	-	-	11.930	-	-	7.003	-	-	-	-	-	7.003
Sustainable Adenovirus Vaccine Production Capability	-	-	-	-	-	15.421	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Non Recurring Cost	-	-	*23.267*	-	-	*43.178*	-	-	*23.065*	-	-	*15.906*	-	-	-	-	-	*15.906*
Subtotal: Hardware - Other Cost	**-**	**-**	***23.267***	**-**	**-**	***43.178***	**-**	**-**	***23.065***	**-**	**-**	***15.906***	**-**	**-**	**-**	**-**	**-**	***15.906***

Exhibit P-5, Cost Analysis: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation / Budget Activity / Budget Sub Activity: 0360D / 01 / 10	**P-1 Line Item Number / Title:** TitleIII / Defense Production Act Purchases	**Item Number / Title [DODIC]:** 1 / Defense Production Act Purchases
ID Code (A=Service Ready, B=Not Service Ready) :	**MDAP/MAIS Code:**	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2016			FY 2017			FY 2018 Base			FY 2018 OCO			FY 2018 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Gross/Weapon System Cost	-	-	1,695.275	-	-	76.680	-	-	44.065	-	-	37.401	-	-	-	-	-	37.401

THIS PAGE INTENTIONALLY LEFT BLANK