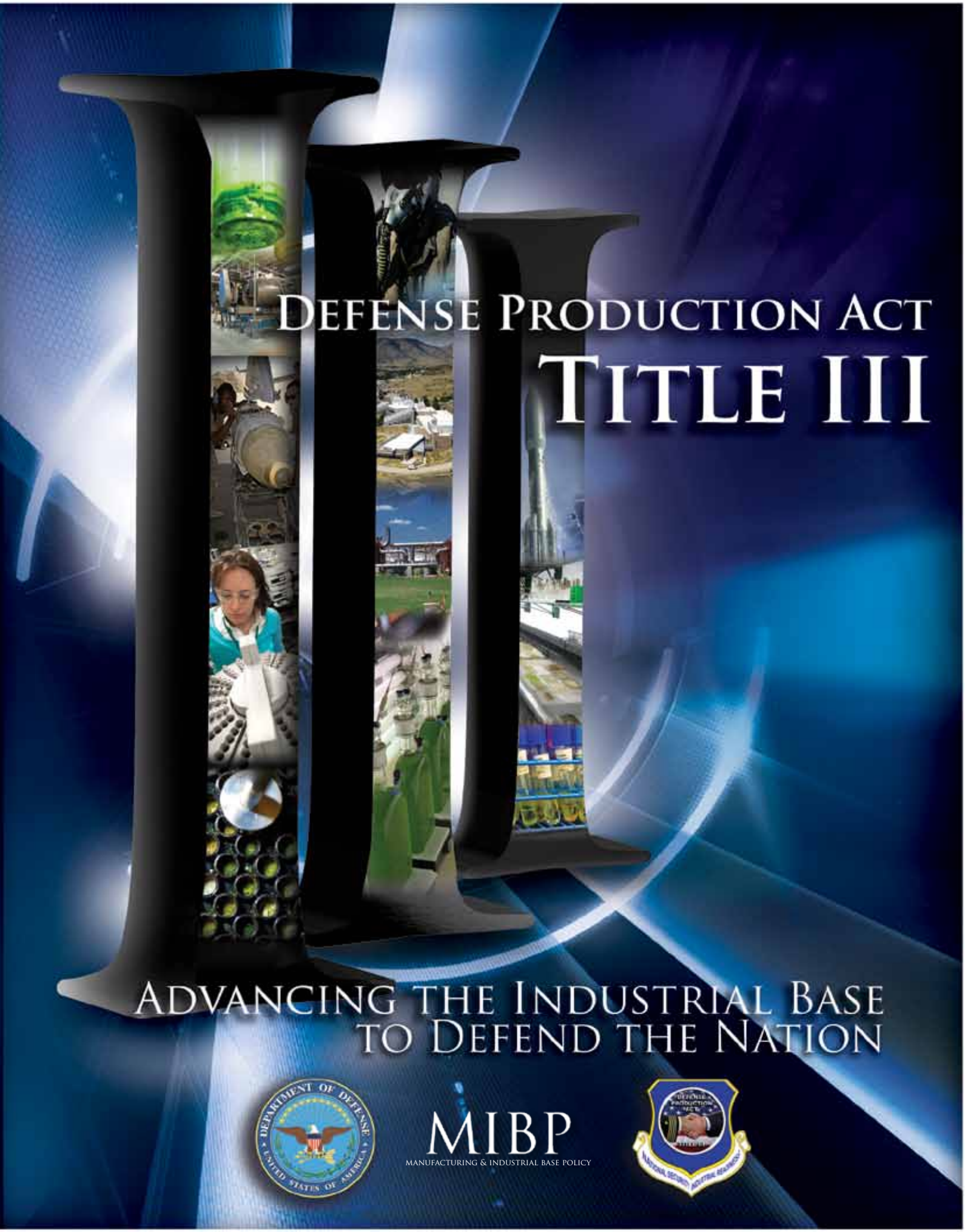

DEFENSE PRODUCTION ACT
TITLE III
ADVANCING THE INDUSTRIAL BASE
TO DEFEND THE NATION
DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA
MIBP
MANUFACTURING & INDUSTRIAL BASE POLICY

Contents

Title III Program
(703) 607-4049

MIBP
MANUFACTURING & INDUSTRIAL BASE POLICY

Title III
Who We Are

The Defense Production Act (DPA)Title III Program is managed within the Office of the Deputy Assistant Secretary of Defense for Manufacturing & Industrial Base Policy (MIBP). The MIBP Office examines risks in industrial capacity to meet burgeoning demand in key defense sectors. Such risks are to be mitigated primarily through direct engagement with military services, agencies, and industry. However, some rare cases involve endemic industrial or technological shortfalls, requiring defense-wide intervention, either through manufacturing innovation or direct capital expenditures to ensure productive capacity to meet warfighter needs.

Title III of the DPA uniquely addresses shortfalls by allowing multiple departments to leverage cost-sharing with the private sector, investing in capital expenditures, such as facility retrofits or wholesale construction. The authority was specifically created to promote industrial production that would meet essential government requirements and help to establish commercial viability for key industries.

The Title III Program, working with other federal departments including the including the Services, other government agencies, and industry, as well as the Department of Energy, has initiated a number of large-scale actions to create or expand domestic production capabilities for essential materials and technologies including radiation hardened electronics, special format batteries, specialty steels, beryllium production, renewable energy sources and advanced electronic materials to name a few.

MIBP activities link together information and insights offered from other elements of the MIBP office: DoD Manufacturing Technology Program, the Joint Defense Manufacturing Technology Panel, and on-going sector-by-sector/tier-by-tier (S2T2) reviews of the industrial base. Investments would then be made to rectify the shortcomings identified by the S2T2 findings and recommendations.

Title III
Our Mission

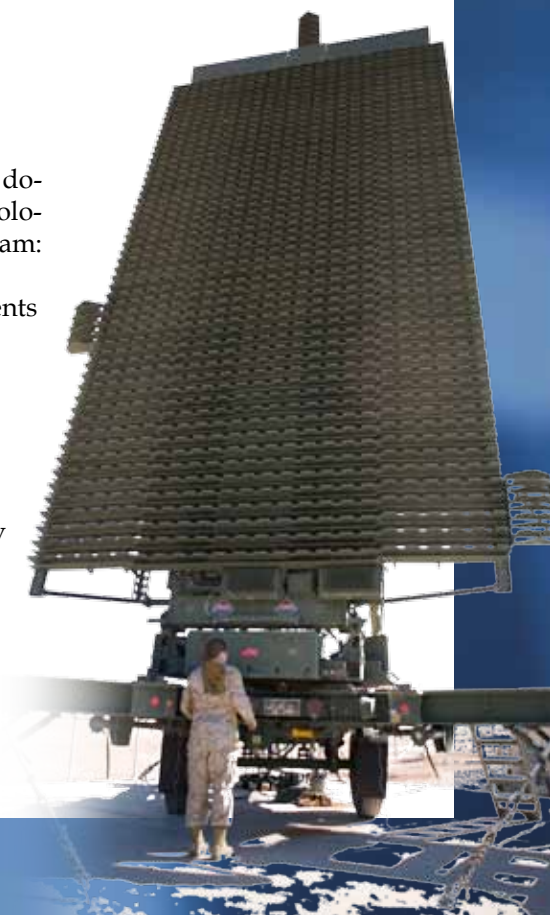
As outlined in Title III of the Defense Production Act of 1950, the mission of the DPA Title III Program is to create assured, affordable, and commercially viable production capabilities and capacities for items essential for national defense. This crucial mission is accomplished by support of these program objectives:

- Create, maintain, expand, protect, or restore the production capabilities of domestic suppliers whose technologies and products are critical to the nation's security;
- Increase the supply, improve the quality, and reduce the cost of advanced materials and technologies;
- Reduce U.S. dependency on foreign sources of supply for vital materials and technologies; and
- Strengthen the economic and technological competitiveness of the U.S. defense industrial base.

Scope

The Title III Program plays an important role in the advancement of domestic production capabilities for a wide range of leading edge technologies necessary to strengthen our national security. The Title III Program:

- Provides financial incentives to industry to make investments in production capabilities and resources;
- Executes projects ranging from process improvement to production plant construction; and
- Targets the most important elements of production as they relate to both the nation's needs and the industry business model.



Impact

The Title III Program complements Department of Defense expenditures which develop new technologies to improve the U.S. government's capabilities. Title III strives to ensure that these new technologies can be produced at affordable costs and in sufficient quantities by domestic firms to meet defense needs. Authorities granted through the Defense Production Act enable the government to utilize funding options and methods that would otherwise be unavailable in support of industrial enterprise and national security objectives.

Candidate Guidelines

Candidate projects are evaluated in terms of DPA criteria:

1. The industrial resource or critical technology item is essential to the national defense; and

2. Without Presidential action under the Title III authority, the United States industry cannot reasonably be expected to provide the capability for the needed industrial resource, material, or critical technology item in a timely manner.

For additional information about Title III opportunities, please see the last page of this brochure or visit www.dpatitle3.com.

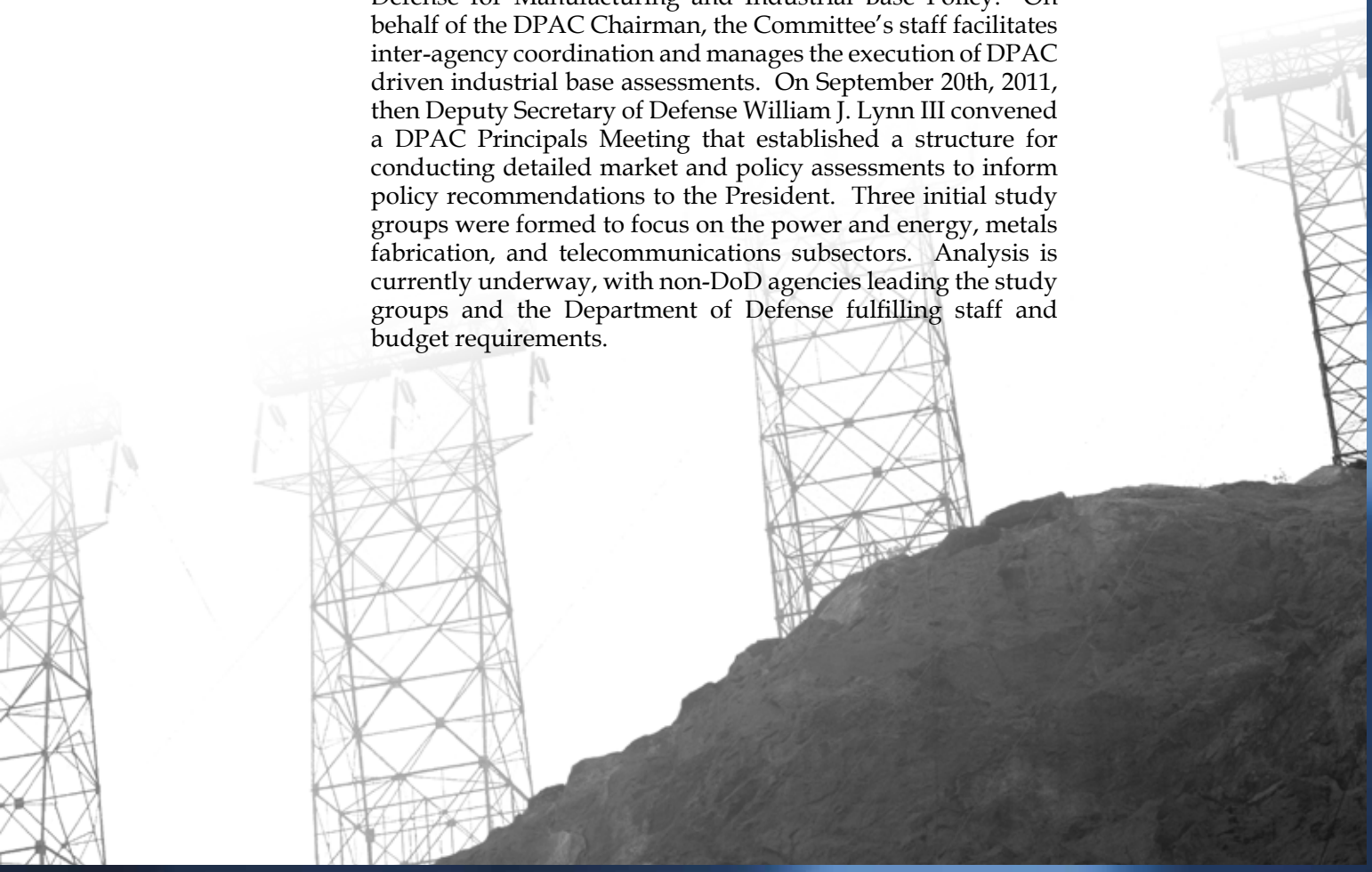
Title III Acknowledgments

We would like to acknowledge the photographic contributions of the following Title III Industry Partners:

- ATK Aerospace Systems
- Cree, Inc.
- International Titanium Powder (ITP)
- Materion Corporation
- Micropore, Inc.
- ON Semiconductor
- Optical Systems Technology, Inc.
- Quallion, LLC
- Specialized Technology Resources, Inc.
- Touchstone Research Laboratories, Inc.

Defense Production Act Committee

The Defense Production Act Committee (DPAC) is an inter-agency body comprised of the heads of federal acquisition departments and agencies. The Committee serves as a multi-departmental forum to (1) identify risks and shortfalls in the domestic industrial base's ability to meet essential government requirements; and (2) make actionable policy recommendations to the President that will respond to these vital supply chain challenges. The DPAC Executive Secretariat is staffed and funded by the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy. On behalf of the DPAC Chairman, the Committee's staff facilitates inter-agency coordination and manages the execution of DPAC driven industrial base assessments. On September 20th, 2011, then Deputy Secretary of Defense William J. Lynn III convened a DPAC Principals Meeting that established a structure for conducting detailed market and policy assessments to inform policy recommendations to the President. Three initial study groups were formed to focus on the power and energy, metals fabrication, and telecommunications subsectors. Analysis is currently underway, with non-DoD agencies leading the study groups and the Department of Defense fulfilling staff and budget requirements.



Title III Participating Organizations

Title III has worked closely with the following organizations to identify, develop, and execute Title III projects and initiatives. Their participation ensures the most effective execution of Title III projects and aids greatly in the success of the overall program.

Army

- Army Armament Research, Development and Engineering Center
- Army Force XXI Battle Command Brigade & Below (FBCB2)
- Army Natick Soldier Research, Development & Engineering Center
- Army Research Laboratory
- Army Tank Automotive Research, Development and Engineering Center

Navy

- Marine Corps Systems Command
- Naval Research Laboratory
- Naval Sea Systems Command
- Naval Surface Warfare Center, Crane Division
- Naval Undersea Warfare Center
- Navy Program Executive Office for Integrated Warfare Systems Above Water Sensors Directorate
- Office of Naval Research

Air Force

- Air Force Energy Program Management Office
- Air Force Research Laboratory
- Air Force Space and Missile Systems Center
- Program Manager Navigation Systems, Program Executive Officer for IEW&S/GPS Directorate User Equipment Group

Other Agencies

- Department of Energy
- Federal Aviation Administration
- Los Alamos National Laboratory
- National Aeronautics and Space Administration

Other DoD

- Department of Defense, Defense Threat Reduction Agency
- Department of Defense, Joint Personnel Recovery Agency
- Department of Defense, Joint Program Executive Officer for Chemical and Biological Defense
- Department of Defense, Missile Defense Agency
- Department of Defense, National Security Agency Trusted Access Program Office (TAPO)
- Department of Defense, Pentagon Renovation & Construction Program Office (PENREN)

Icon Key

Title III Product Environments

The icons below suggest likely environments in which the project's products are most likely to be used. The illuminated icons are applicable to the product, while the gray icons indicate environments that are not applicable.

Land Sea Air Space

BERYLLIUM SUCCESSES

Title III Assists in U.S. Production of High-Quality Beryllium

This project allows the United States and its allies to be assured of an uninterrupted supply of primary (high purity) beryllium metal. Current inventories of National Defense Stockpile beryllium ingots are projected to be exhausted in the near future. Imports of beryllium cannot meet the purity levels required for many defense applications. Essential strategic uses, where there is no suitable substitute for high purity beryllium, include: airborne Forward Looking Infrared (FLIR) systems for fighter aircraft and attack helicopters; guidance systems on existing strategic missiles; surveillance satellites; ballistic missile defense systems; and reflectors for high flux, nuclear test reactors.

The Title III Program entered into a partnership with Materion Corporation (then Brush Wellman, Inc.) in November 2005, thereby initiating construction of the beryllium "Pebbles Plant" in Elmore, Ohio. Since project award, Materion has successfully established the infrastructure, facilities, and equipment necessary to support a production capacity of 160,000 pounds per year of high-purity beryllium metal. Today, the completed plant stands 73 feet tall, contains three levels, has a 51,045 sq. ft. footprint, and contains 124,358 total square feet of floor space. The plant produced its very first batch of beryllium pebbles on 15 April 2011. Beryllium pebble qualification and the Initial Operational Capability of the plant are expected in December 2011.

Solar Cell Successes

Title III Enhances Photovoltaic Solar Cell Encapsulant Production

Title III partnered with Specialized Technology Resources, Inc. (STR) to increase the domestic manufacturing capacity for Ethylene Vinyl Acetate (EVA) based encapsulant and to comply with Presidential Executive Order 13123 (requires the Federal government to reduce its energy consumption). The U.S. industrial base was constrained by a limited supply of encapsulant and the government and U.S. industry faced potential shortages of this important material. EVA encapsulant is used to environmentally protect terrestrial PV solar cells, and is an essential ingredient in their manufacture. EVA encapsulant is critical in protecting both traditional rigid solar cells on silicon substrates as well as newer, flexible thin film solar cells. EVA encapsulant protects solar cells from natural elements, provides electrical isolation, adheres solar cells to glass, remains clear in the sun for over 30 years, and stays flexible throughout its life. Production of EVA encapsulant provides a critical domestic resource to meet U.S. demand for terrestrial PV solar cells used in power generation for DoD and commercial applications.

This multi-phased project successfully established two state-of-the-art manufacturing lines that have exceeded STR's 95% corporate-wide manufacturing yield goal. Both Title III PV encapsulant lines are fully operational and each line now generates an annual capacity in excess of 8.25 million square meters of encapsulant material. This capacity directly translates into 500 megawatts (MW) of PV solar cells, exceeding the operational goal for the project (which was 300 MW). STR's manufacturing processes are very mature, and the Title III lines are functioning at Manufacturing Readiness Level-9 (Full Rate Production capability). The Title III PV encapsulant lines have set production benchmarks for all other PV encapsulant lines in operation globally at STR. The project also proved beneficial to the U.S. manufacturing work force by creating 72 new jobs to support the operation and maintenance of the new production lines.

Reactive CO_2 Successes

Reactive Plastic CO_2 Absorbent

In this project the Title III Program partnered with Micropore, Inc., of Elkton, Maryland to expand domestic production capacity of carbon dioxide (CO_2) absorbent products and develop improvements for several CO_2 absorbent applications. Reactive Plastic CO_2 absorbent material is a technology that secures CO_2 absorbing material to a plastic sheet in a polymer matrix bond. It is used in military scuba, submarine, space, anesthesia, firefighting, and rescue applications to "clean" CO_2 from air needed for breathing.

The Title III Program worked with Micropore to expand their absorbent manufacturing capacity and develop new, improved manufacturing processes and equipment. This capacity expansion allowed the production and timely delivery of emergency submarine curtains for Virginia class submarines. During this project Micropore became ISO 9001:2000 certified and implemented a Quality Management System. This project also allowed Micropore to develop additional applications quickly for Reactive Plastic CO_2 absorbent.

The U.S. Navy utilizes the advantages of Reactive Plastic CO_2 absorbent in SCUBA rebreather gear and emergency submarine use. Advantages to military SCUBA diving over previous products include extended diving duration and reduced diver breathing effort. Compared with previously used absorbent products, the Micropore emergency CO_2 absorbent curtains in use aboard military submarines allow significant space savings, longer product life, easier and safer product handling, and reduced product life cycle costs.

Title III
Project Summaries

Advanced Carbon NanoTube

The purpose of this Title III program is to expand domestic production of Carbon Nanotube (CNT) yarn and sheet material, laying the groundwork for pilot manufacturing. This will be the first step in establishing a high volume production facility for CNT yarn and sheets providing an assured domestic supply of these groundbreaking advanced materials for the U.S. military and other government departments as well as the commercial community.

ALON® and Spinel Optical Ceramics

This Title III project is establishing a domestic production capability for ALON® and spinel optical ceramics. Emphasis is placed on increasing size, quality, yield, and affordability of both ALON®, and spinel and on facilitating component evaluation, qualification, and insertion.

Atomic Layer Depostion Hermetic Coatings

Title III is establishing domestic production capabilities for Atomic Layer Deposition (ALD) hermetic coatings used with advanced microelectronics.

Coal-Based Carbon Foam

The Title III Project is expanding domestic production capability for Coal-Based Carbon Foam (marketed as CFOAM®) materials for both military and commercial applications. This effort will result in a 3X production capacity expansion by fourth quarter 2011.

Conductive Composites Nano-Materials Scale-Up Initiative

The Title III objective is to create a viable domestic source of high-performance chemical vapor deposition (CVD) coated nickel-based conductive nano-materials.

Domestic Armstrong Titanium Production

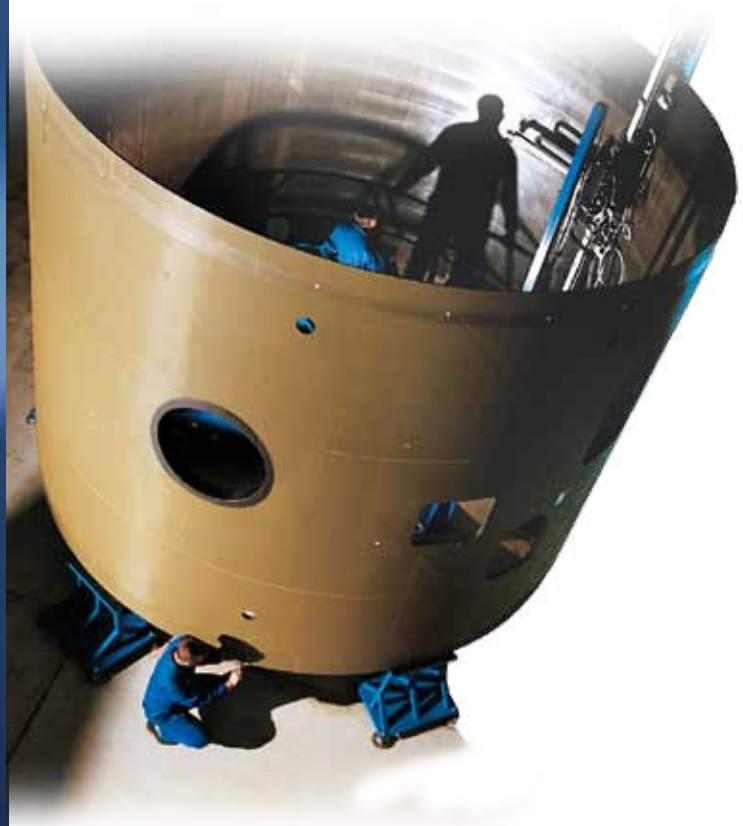
The objective of this Title III project is to expand the domestic capacity to produce low-cost titanium powder. The Armstrong® Process is a unique, continuous process that produces metallic titanium powder directly from chlorinated titanium ore.

Extremely Large, Domestic Expendable and Reusable Structures Manufacturing Center

The Title III Extremely Large Domestic Expendable & Reusable Structures (ELDERS) Manufacturing Center project will ensure a dedicated source for the manufacture of larger-scale diameter composite structures to satisfy defense and non-defense U.S. space industry requirements.

Gallium Nitride on Silicon Carbide Radar /Electronic Warfare Monolithic Microwave Integrated Circuit Production

The purpose of this project is to increase the yield, affordability and availability of monolithic microwave integrated circuits (MMICs) produced on 100 mm Gallium Nitride epitaxy on Silicon Carbide substrates.



Gallium Nitride on Silicon Carbide: X-Band Monolithic Microwave Integrated Circuit Production

The purpose of this project is to increase the yield, affordability and availability of X-band monolithic microwave integrated circuits (MMICs) produced on 100 mm Gallium Nitride epitaxy on Silicon Carbide substrates.

High Homogeneity Optical Glass

High Homogeneity Optical Glass (HHOG) blanks are the basic building blocks in the fabrication of high precision optical lens systems, which are key technology drivers for several commercial, defense, and national-security related applications. The primary goals of this project include increasing manufacturing capacity, optimizing production yields to greater than 70%, and ensuring greater availability of non-active and active HHOG products. Project goals will be achieved via improvements to raw materials and enhancements to production processes and associated control systems.

High Performance Thermal Battery Infrastructure Project

This Title III project is establishing a long-term, viable, world-class manufacturer of high performance cobalt disulfide (CoS_2) thermal batteries. A powder mixture of electrolyte is placed between alternating cathode and anode material. As long as the electrolyte is solid, the battery can be stored indefinitely (20 years+) without loss of power.

Heavy Forgings Capacity Improvement

This Title III project will upgrade and refurbish the domestic heavy forging industry in order to support the DoD. The resulting improvements will support the production of items critical to national defense, such as ship and submarine propulsion shafts, periscope tubes, ring forgings for bull gears, and other military and commercial applications.

Integrated Automated Composite Fiber Placement

This project will expand the U.S. domestic industrial base capability for the production of large aerospace composite products employing advanced fiber placement technologies. This state of the art production equipment will provide manufacturing efficiency improvements of 30% or better.

Lightweight Small Caliber Ammunition Production Initiative

The objective of this effort is to establish a domestic production capability for the manufacture of lightweight ammunition based on polymeric material. The initial focus is the development, production, and qualification of lightweight .50 caliber rounds.

Lithium Ion Battery Production for Military Applications

The scope of this project is to establish a long-term, viable, world-class domestic manufacturer of high energy density lithium ion batteries that is responsive to military and other government customer requirements with respect to performance, reliability, quality, delivery, and price. These batteries will be designed to provide power for long endurance Unmanned Aerial Vehicles for dismount soldiers and personnel, long endurance autonomous systems, and tactical vehicles.

Lithium Ion Battery Production for Space Applications

This five-year Title III project is establishing a viable domestic source of spacecraft-quality rechargeable Lithium Ion (Li Ion) cells and the critical materials required to produce these cells. Li Ion rechargeable battery technology provides higher power for longer durations with lower weight and favorable space constraints when compared to Nickel Cadmium or Nickel Hydrogen rechargeable batteries.

Low Cost Military Global Positioning System Receiver

Military, Global Positioning System (GPS) receivers are a vital piece of equipment for soldiers on the battlefield. GPS receivers allow the Warfighter to perform both strategic and tactical maneuvers with a high degree of confidence of success.

Military Lens Fabrication and Assembly

This Title III program is establishing a domestic resource for mono-spectral and advanced multi-spectral optical systems and lens components.

Miniature Secure Transceiver

This Title III project is establishing a domestic capability for the manufacture of Satellite Communication (SATCOM) Transceivers. A SATCOM Transceiver is a critical technology item that will be used to locate and recover U.S. DoD and Allied/Coalition isolated personnel in harm's way.

Non-Aerospace Titanium for Armor and Structures Transformation Project: Steel-to-Titanium

Title III authority was used to start the titanium industry in the late 1940's in response to the DoD and the then fledging aerospace industry. Similarly today, Title III seeks to expand the domestic capability for the unpredictable titanium market for (non-aerospace) land-based applications.

Production of Miniature Compressors for Electronics and Personal Cooling

Title III is currently supporting an enterprise that will establish a domestic low-volume production facility for mini-refrigerant vapor compressors.

Radiation Hardened Microprocessor

The objective of this Title III program is to develop and field a more powerful, state of the art, radiation hardened microprocessor for critical space applicatons.

Read Out Integrated Circuit Foundry Improvement and Sustainability

This project is continuing to develop the capability to manufacture stitched Large-Format Read Out Integrated Circuits (ROICs) at 0.18 micron or smaller feature sizes at domestic production facilities providing: a long term, known U.S. source, improved production yields, and decreased cycle times for both ROIC manufacturing and design. Additionally, a long-term phase will assure continuous manufacturing and process improvement for this critical technology.

Read Out Integrated Circuit Manufacturing Improvement

This project is working to develop enhanced product design kits for 0.18 micron Large Format (LF) ROIC's, improve the performance of LF ROIC's in cryogenic and radiation environments, increase production yields of 0.18 micron LF ROIC's through continuous improvement, and reduce cycle times for both ROIC manufacturing and design.

Silicon Carbide Powder Production & Ceramic Armor Manufacturing

This Title III project is expanding the domestic manufacturing capacity of submicron alpha silicon carbide (SiC) powder, which is required to produce SiC ceramic armor, in addition to establishing another domestic source for the production of SiC ceramic armor.

Titanium Metal Matrix Composite and Nano Enhanced Titanium Development

The objective of this project is to expand the domestic capacity to produce continuously- and discontinuously reinforced titanium composites, while reducing the cost of this strong, light weight material. It will also develop material properties design databases to enable its use by designers.

Traveling Wave Tube Amplifiers (TWTAs) for Space

This Title III venture is focused on developing the manufacturing processes and tooling infrastructure necessary to domestically produce K-Band Traveling Wave Tube Amplifier (TWTA) products, with the primary objective of improving yield and thus reducing the cost for DoD applications.

Vacuum Induction Melting and Vacuum Arc Re-melting Furnace Capacity

This Title III project is expanding the domestic production capacity for low alloy Vacuum Induction Melting and Vacuum Arc Re-melting (VIM-VAR) steel in order to improve the lead times for various grades of low alloy VIM-VAR steel.

Title III Contractors

ARIZONA

Miniature Secure Transceiver

General Dynamics C4 Systems,
Scottsdale, AZ 85257-3812
(480) 441-5655

CALIFORNIA

Lithium Ion Battery

Quallion, LLC
Sylmar, CA 91342
(818) 833-2013

Read Out Integrated Circuit Foundry Improvement & Sustainability

Jazz Semiconductor
Newport Beach, CA 92660-3007
(949) 435-8741

Traveling Wave Tube Amplifiers for Space

L-3 Electron Technologies, Inc.
Torrance, CA 90505
(310) 517-6000

FLORIDA

Polycrystalline Laser Gain Material

VLOC, Inc.
New Port Richey, FL 34655
(727) 372-4429

Thermal Battery Production

The Enser Corporation
Pinellas Park, FL 33781
(727) 520-1393

IDAHO

Readout Integrated Circuits Manufacturing Improvement/ Foundry Improvement & Sustainability

ON Semiconductor
Pocatello, ID 83201
(208) 239-7083

ILLINOIS

Armstrong Titanium Production

International Titanium Powder (ITP)
Woodridge, IL 60517
(815) 431-9382

IOWA

Low Cost Military GPS

Rockwell Collins
Cedar Rapids, IA 52406
(800)-321-2223

KENTUCKY

Mini-Refrigerant Compressors

Aspen Compressor, LLC
Somerset, KY 42503
(508) 281-5322, ext. 223

Silicon Carbide Powder Production & Ceramic Armor Manufacturing

Superior Graphite
Hopkinsville, KY 42240
(270) 885-7186, ext 207

MASSACHUSETTS

ALON® & Spinel Optical Ceramics

Surmet Corporation
Burlington, MA 01803
(781) 345-5777

Gallium Nitride X-Band Monolithic Microwave Integrated Circuits

Raytheon RF Components
Andover, MA 01810
(978) 684-8722

Atomic Layer Deposition Hermetic Coatings

Raytheon RF Components
Andover, MA 01810
(978) 684-8835

MARYLAND

Reactive Plastic CO_2 Absorbent

Micropore, Inc.
Elkton, MD 21921
(302) 731-4100

MISSISSIPPI

Light-Weight Ammunition & Armor

MAC, LLC
Bay St. Louis, MS 39520-9078
(228) 533-0157

Extremely Large Domestic Expendable and Reusable Structures

ATK Aerospace Systems
Iuka, MS 38852
(801) 775-1822

TITLE III

To speak with a Title III representative about a specific project, call (937) 904-4382

NEW HAMPSHIRE

Advanced Carbon Nanotube Project

Nanocomp Technologies, Inc.
Concord, NH 03301
(603) 442-8992

NORTH CAROLINA

Gallium Nitride on Silicon Carbide Radar /Electronic Warfare Monolithic Microwave Integrated Circuit Production

Cree, Inc.
Durham, NC 27703
(919) 287-7515

OHIO

Beryllium Production

Materion Corporation
Mayfield Heights, OH 44124
(216) 486-4200

PENNSYLVANIA

Non-Aerospace Armor & Structure Transformation

Gautier Specialty Metals, LLC
Johnstown, PA 15901-2200
(814) 535-9200

Military Lens Fabrication & Assembly

Optical Systems Technology, Inc.
Freeport, PA 16229
(724) 295-2880, ext. 251

Vacuum Induction Melting, Vacuum Arc Remelting

Latrobe Specialty Steel
Latrobe, PA 15650
(800) 245-7856

Heavy Forgings Capacity Improvement

Lehigh Heavy Forge Corporation
Bethlehem, PA 18015-1984
(610) 332-8100

High Homogeneity Optical Glass (HHOG)

SCHOTT Advanced Optics
Duryea, PA 18642
(570) 457-7485, ext. 204

TEXAS

Gallium Nitride on Silicon Carbide Radar /Electronic Warfare Monolithic Microwave Integrated Circuit Production

TriQuint Semiconductor Texas
Richardson TX 75080-1324
(972) 994-8656

UTAH

Conductive Composites Nano-Materials Scale-Up Initiative

Conductive Composites
Heber City, UT 84032

Integrated Advanced Composite Fiber Placement

ATK Aerospace Systems
(801) 775-1822

VIRGINIA

Radiation Hardened Microprocessors

BAE Systems
Manassas, VA 20110
(703) 367-2343

WEST VIRGINIA

Titanium Metal Matrix Composites for Aircraft

FMW Composites Systems
Bridgeport, WV 26330-9687
(304) 842-1970, ext. 144

Coal-Based Carbon Foam

Touchstone Research Laboratory, Ltd.
Triadelphia, WV 26059
(304) 547-5800

Defense Production Act
Title III

Thank you for your interest
in the Title III program.

http://www.dpatitle3.com/

MIBP
MANUFACTURING & INDUSTRIAL BASE POLICY

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88ABW-2011-5939