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ON

REBUILDING THE ARSENAL OF DEMOCRACY: THE IMPERATIVE TO STRENGTHEN AMERICA'S DEFENSE INDUSTRIAL BASE AND WORKFORCE

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Overview

Chairman Moolenaar, Ranking Member Krishnamoorthi, and distinguished Members of the House Select Committee on the Strategic Competition Between the United States and the Chinese Communist Party, thank you for the opportunity to testify on the importance of America's defense industrial base and strategic competition with China.

Today I am the Vice President for Policy and Strategy at Entanglement, Inc. a company that is breaking the rules to advance next-generation computing, artificial intelligence, and trusted intelligence. Entanglement Inc. solves intractable problems by fusing quantum inspired algorithms and AI and new computing architectures to deliver trusted results, with better accuracy and orders of magnitude less time and energy. Until May of this year, I served in the Biden-Harris Administration as the Deputy Assistant Secretary of Defense for Industrial Base Resilience working with colleagues across the Department of Defense as well as the interagency to strengthen the defense industrial base across key sectors, including strategic and critical materials, technology, workforce, and more. I am delighted to be here to talk about a passion of mine – The Power of Industrial Mobilization.

The 1920 National Defense Act mandated the creation of an industrial mobilization plan to correct the deficiencies experienced during World War I, which included bottlenecks and shortages of supplies that affected both training and combat operations. World War II called upon American industry to essentially stop what it had been doing to support the Allied forces—we are at a similar juncture of history today where our industry has been called upon to support multiple crises around the world such as the unjust invasion of Ukraine.

Growing and solidifying the standing of companies in the defense digital and manufacturing sectors is a key focus of infrastructure policy discussions around the world as evidence by the number of new industrial strategies from various countries.

Generally speaking, industrial policy is government policy to encourage the development and growth of all or part of the economy in pursuit of some public goal. Historically, it has often focused on the manufacturing sector, militarily important sectors, or on fostering an advantage in new technologies. The government takes measures aimed at improving the competitiveness and capabilities of domestic firms and promoting structural transformation.

The geopolitical tensions of the day makes clear that no longer is a laissez-faire approach to industrial policy acceptable. In fact, the 2022 National Security Strategy of the United States was explicit as it said "The private sector and open markets have been, and will continue to be, a vital source of our national strength and key driver of innovation. However, markets alone cannot respond to the rapid pace of technological change, global supply chain disruptions, nonmarket abuses by the PRC and other actors, or the deepening climate crisis. Strategic public investment is the backbone of a strong industrial and innovation base in the 21st Century global economy."

Global Supply Chains and the DIB

International supply chain efforts and global industrial strategies serve a growing community of interest in any of the five key sectors addressed in the DoD's report in response to Executive Order (E.O.) 14017 America's Supply Chain, which are microelectronics, missile and munitions, advance batteries, casting and forging, and critical and strategic materials. Challenges to U.S. industrial mobilization include the relationship between current systems ending production with the development of new technologically advanced systems, and the effect of a globalized lead system integrator model that forfeits sovereignty for cost savings.

The Department of Defense has played a key role in industrial policy for about 100 years. The Office of Industrial Base Resilience within DoD's mission is to work with domestic and international partners to forge and sustain a robust, secure, and resilient industrial base enabling the warfighter, now and in the future. World events such as the COVID-19 pandemic, and the subsequent supply chain shortages that resulted, were some of the catalysts for bringing together the disparate organizations within DoD who partner with the industrial base. But one agency is not enough to combat the general change needed to ensure an industrial base that is ready to mobilize when called upon—a whole of government approach is needed to catalyze production in areas of short supply.

Perhaps one of the best-known supply chain vulnerabilities highlighted by these events was the shortage of manufactured items such as semiconductors, which began in 2021 amidst the pandemic. Even now, semiconductor demand has not slowed, in fact, it is predicted to increase by over 16% this year, spurred on by the continued innovation that we are seeing in the memory, AI, and automotive markets, among others. Part of the innovation we need to encourage is the use of operational technology for our manufacturing sector to avoid interruptions in production, such as Entanglement Inc.'s technology that is proven to detect novel attacks and misconfigured services near real time to help customers discover unknown nation state and supply chain vulnerabilities as they occur.

No one knows better than those in this hearing room what large role components manufactured at the highest levels of precision, and with the most advanced digital capabilities, play in military operations. Among their many uses, key components process and transmit large amounts of data quickly and are used in equipment like advanced radar systems, navigation systems and weaponry that the digital manufacturing base is a critical part of developing. Notably, the shortages of key parts impeded our ability to produce mission critical weapons needed in the Russia-Ukraine war and amplified the growing concern over our depleted stockpile.

As DoD grappled with the lessons learned from these events, we recognized it was imperative to initiate generational change, as the 2022 National Security Strategy calls for, and build a **modernized defense industrial ecosystem.** This ecosystem must be able to deliver the capabilities needed by our warfighters at scale and on time.

A key priority from my time in the DoD was to create and implement the DoD's first-ever National Defense Industrial Strategy, or the NDIS – because DoD must have acronyms for everything -- which was published on January 11th of this year after Deputy Secretary Hicks directed its development in February of 2023. As my team and I developed this strategy, we sought and received significant feedback from DoD, our interagency partners, academia and industry. Those voices, ideas, and concerns were vital in allowing the DoD to better understand the needs of industry and the level of collaboration needed to achieve the priorities laid out in the NDIS given its role in achieving integrated deterrence by guiding defense planners to take on a series of initiatives to retake manufacturing sovereignty for key areas of national security concern.

NDIS as a Roadmap for Rebuilding the DIB

The NDIS lays out four strategic priorities to guide the actions and resource prioritization needed to modernize our industrial base over the next 3-5 years and they need partners, both inside and outside DoD, to work alongside them to realize the vision. These four priorities are building **resilient supply chains**, improving **workforce readiness**, leveraging **flexible acquisition** strategies, and enabling **economic deterrence**.

The first strategic priority is to build **resilient supply chains** that can securely produce the products, services, and technologies at speed, scale, and cost. One action we identified for building resilient supply chains is diversifying the supplier base and investing in new production methods.

Building upon the success of DoD partnerships with the traditional large defense suppliers, they must leverage America's unique economic and technological advantages in next generation technology, IT/OT, advanced manufacturing, and other fields and expand relationships with small businesses and other partners not traditionally in the industrial base.

Though prime contractors have consolidated and decreased, subsystem manufactures and suppliers both small and medium in size have increased leading these prime contractors to specialize in final assembly and as lead system integrators managing hundreds of suppliers and divesting much of their traditional fabrication capabilities. Therefore, government decisionmakers must engage, attract, and understand the pain points of medium sized industrial companies. These companies form a crucial part of the backbone of our defense and yet often find themselves in the difficult position of being too big to qualify for programs aimed at small businesses and not big enough to have the competitive advantages of large corporations.

The U.S. government has an imperative to work with companies of all sizes to achieve a more resilient, industrial base that is economically and environmentally sustainable, receives predictable demand signals, and does not depend on adversarial foreign sources. Another action relevant to those of you in this room is to **manage inventory and stockpile planning to decrease near-term risk.** The DoD will identify stockpiling requirements for critical minerals and components and will partner with industry to expand existing and establish new stockpiles for use in the advanced components being created.

The second strategic priority is **workforce readiness,** which has been a key factor in the manufacturing sector in the United States. Labor and talent shortages are a top challenge to onshoring production and have a substantial impact on productivity and the quality of technology enabled products. Of the five actions identified in the NDIS that support workforce readiness, one of note is **investment in defense-essential skills**, such as manufacturing and science, technology, engineering, and math disciplines. The National Imperative for Industrial Skills (NIIS) helps partner with several stakeholders to tackle the DoD's most pressing industrial workforce challenges. With an annual investment profile exceeding $300 million, it helps promote the prestige of manufacturing careers and accelerate workers through training and development pipelines.

Another way to ensure we have the skilled workforce needed to achieve this vision is to **increase access to apprenticeship and internship programs,** providing opportunities to learn new skills through hands-on experience and training. While DoD currently has apprenticeships tailored toward naval warfare, army engineering, and fleet readiness, they are endeavoring to work with industry and other partners to identify opportunities for these programs in other critical skill sets, such as in the advanced computing and artificial intelligence fields. As design and production skills deteriorate outside of prime contractors, realistic future industry competition is in jeopardy, threatening both innovation and cost control in the defense market so we need to ensure these skills are fully exercised commercially to maintain our ability to mobilize in time of need.

The third strategic priority is **flexible acquisitions**. DoD recognizes the need for evolution in its previous DIB posture and to balance customization, production efficiency, and timing to meet the challenges of the future and support our military's readiness. This flexible acquisition approach will aim to reduce development times, reduce costs, and increase scalability.

The NDIS notes seven actions under flexible acquisitions, and one that the Department will focus on first is **broadening platform standards and interoperability**. Rather than inventing new standards, they will leverage existing industry standards where applicable to facilitate and simplify integration and production efforts such as machine learning which will unlock our ability to integrate new foundational technology enabled by the increase in compute capacity.

While DoD will always have specific needs to ensure mission success and support the warfighter, it also understands the risks associated with excessive customization, a topic that I think will resonate with you. We all recognize that too much customization can hinder the vision of achieving a modern industrial ecosystem. **Balance** is the key word here and we must stay focused on positively contributing to U.S. industry health, and often keep production lines open while providing procurement options that hedge potential developmental delays and difficulties.

We must continue to focus on leveraging the authorities government agencies already have, like the inaugural Defense Industrial Base Consortium, the Defense Production Act Program, or DPA and the Industrial Base Analysis and Sustainment Program, or IBAS. These programs partner with U.S. private industry to mitigate gaps in the domestic supply chain using grants, purchase commitments, loans, or loan guarantees. Last year, through these authorities the DoD invested more than $1B in the industrial base using flexible acquisition strategies and will exceed that amount in the current year thanks to Congressional funding through base and supplemental appropriations; an example being an award of $192M for chemicals vital to defense – and industry makes co-investments under DPA as well.

The fourth and final strategic priority is **economic deterrence** to which we know that manufacturing production aids deterrence. There are several avenues to do this – namely strengthening economic security agreements and strengthening enforcement against adversarial capital and cyberattacks in our innovation ecosystem.

We should all be concerned that predatory adversarial investment and acquisition strategies, often focusing on critical or innovative technologies, will further affect U.S. industrial supply chains and risk our ability to put secure technology in the hands of the warfighter. As always, we all must balance the threats arising from foreign transactions with the openness of the U.S. economy to foreign ideas, talent, and capital. Due to their use in so many military devices, advanced nodes are also often susceptible to cyberattacks. This is why it is so important to not only deter against adversarial ownership but be vigilant about the effects of cyberattacks on our supply chain and industries. One way we can do this is by educating our collective industry on the threats posed by foreign capital, adversarial ownership, and cyberattacks.

I am honored to have been so privileged as to work alongside expert career civilians to set this vision and strategy but that was just the first step. We all have much more to do, and I know the Members of this Committee are fully committed to taking the actions identified today to further enable industry to continue to innovate at the rate that keeps America's industrial markets the most prestigious in the world.

Advantages in Mobilizing the DIB for Asymmetric Advantage

Another key part of realizing the vision of having a secure, robust, modern supply chain with stockpiles of products is sending a more stable demand signal to industry. We have seen the success of expanded use of multi-year procurements, which have typically been reserved for only the most expensive acquisition types, to create more sustained demand signals. We as a collective should make plans to support the onshoring of commercial manufacturing in the U.S. by strengthening the skills and innovation of the workforce. An example being a program for semiconductor workforce development in the defense sector, the Scalable Asymmetric Lifecycle Engagement, or SCALE, program. This network provides unique courses, mentoring, internship matching and targeted research projects for college students interested in machine learning and microelectronics specialty areas.

As you can see, there are many initiatives underway to accelerate the changes and progress we need, but there is room to do more. The challenges we face with our supply chain did not happen overnight, nor will the solutions. We need to invest in our manufacturing capabilities to create asymmetric advantages against adversaries by rapidly pivoting to digitally enabled processes that allow dual-use systems to accelerate the pace of new technology development and integration.

One way of doing this is to dramatically increase funding for our network of Manufacturing USA Institutes such as MxD in Chicago, IL and others that can invest in their local communities' areas of expertise to the advantage of our collective manufacturing capacity. Another is to potentially stand up a congressionally mandated panel or task force on the DIB to quickly study gaps and make recommendations for improvements to the existing and needed authorities to enable industrial mobilization and warm basing at capacity to sustain activity in multiple domains economically and militarily.

Without further study and investment, threats to design capabilities and maintaining a healthy sub-contractor and supplier base during U.S. mobilization will pose significant challenges for U.S. mobilization efforts in the years to come. This is just the continuation in a long history of excellence in U.S. industrial mobilization.

I appreciate the opportunity to share more about my thoughts and our shared vision for the strong and secure industrial ecosystem we need to support the warfighter in times of peace or conflict. I'm excited for what the future holds for the manufacturing and digital industries and have no doubt that the same innovation that led the U.S. to create the first semiconductor chip will propel our digital transformation and manufacturing capabilities to unseen heights.

No longer is industry and the innovation base an afterthought or assumed resource in war planning – now we are at the forefront as a strategic asset in the national security arsenal. Thank you for providing me an opportunity to testify before you today. I look forward to your questions.