

NDIA

govini

VITAL SIGNS 2022



The Health
and Readiness of the
Defense Industrial Base

February 2022

First published in 2022 by NDIA.org, 2101 Wilson Blvd, Suite 700, Arlington, VA 22201, United States of America.
(703) 522-1820

© 2022 by the National Defense Industrial Association. All rights reserved.

This report is made possible by general support to NDIA. No direct sponsorship contributed to this report. This report is produced by NDIA, a non-partisan, non-profit, educational association that has been designated by the IRS as a 501(c)3 nonprofit organization—not a lobby firm—and was founded to educate its constituencies on all aspects of national security. Its research is nonpartisan and nonproprietary. NDIA does not take specific policy positions. Accordingly, all views, positions, and conclusions expressed in this publication should be understood to be solely those of the author(s).

For the link to the PDF, see: [NDIA.org/VitalSigns2022](https://ndia.org/VitalSigns2022)

For more information please visit our website: [NDIA.org](https://ndia.org)

MEDIA QUERIES:

Evamarie Socha

Director of Public Relations and Communications

(703) 247-2579

esocha@NDIA.org

TABLE OF CONTENTS

Table of contents	3
Forewords.....	4
Contributors	5
Executive summary	6
Introduction.....	8
How we score <i>Vital Signs</i>	11
Demand.....	13
Production inputs.....	16
Innovation	23
Supply chain	27
Competition	30
Industrial security.....	35
Political and regulatory	38
Productive capacity and surge readiness	42
Emerging technology.....	47
<i>Vital Signs</i> survey results.....	50
Conclusion.....	56
Appendix	57



ABOUT THE COVER IMAGE

Pictured on the cover is the largest electron-beam welding system in the Western Hemisphere. Located in Huntsville, AL, the 22-foot-long electron beam is capable of welding additively manufactured scramjet sections with materials as thin as aluminum foil to full-scale ship hulls that are five inches thick. This technology will weld hardware for Virginia- and Columbia-class submarines.

FOREWORDS

NDIA

For the first time, because of the evolving impact of the COVID-19 pandemic and the sustained challenges noted in past reports, our *Vital Signs* study has scored the health of the defense industrial base below a passing grade. As this report reflects the challenging environment in which defense companies operate — rather than the companies themselves — this score serves as a wake-up call to all who care about the state of our national security. While the COVID-19 pandemic continues, so does the critical work of the defense industry. The pandemic reinforces the fact that our defense industrial base is not isolated from the American economy or the global business environment: now, more than ever, we must pay heed to the health of our base as it serves our warfighters.

In 2021, our economy was beset with a host of disruptions related to COVID-19 including workforce shortages, inflation, and supply chain disruptions — conditions that we had yet to observe at such a large scale during the first year of the pandemic. At the same time, cybersecurity and intellectual property threats continued unabated. Aggressive military actions by Russia and the rapid

military modernization efforts of China's government continued to alarm policymakers, friends, and allies. These challenges remind us that our industry's work of providing a superior operating environment and products and services to our armed forces, so that they can compete and win in all domains of warfare, can never be taken for granted.

Again, it is important to emphasize *Vital Signs* does not assess the performance of our defense companies. The current health of the defense industrial base renders a sobering challenge to policy makers on Capitol Hill, leaders in the executive branch of government, scholars in academia, and other thought leaders. We hope that *Vital Signs*, and other research efforts by the National Defense Industrial Association, will form part of the remediation process as we discuss and address the impact of COVID-19 and the underlying concerns that remain.

General Herbert “Hawk” Carlisle, USAF (Ret)

NDIA President & CEO

GOVINI

The techno-military confrontation between the U.S. and China will likely not be decided in some contested stretch of the western Pacific, but rather right here at home. If the United States is going to prevail in this confrontation, it must better harness the innovation engine that is the American economy. Successfully doing so, however, is a complex and challenging endeavor.

China is already a more formidable economic competitor than the Soviet Union ever was during the Cold War, and its economic might will likely only continue to grow. The U.S. cannot simply outspend its way to victory this time around. As a result, the U.S. national security enterprise must work more effectively and efficiently with the existing defense industrial base.

But military advantage on future battlefields will not solely stem from who can better churn out a new generation of warships, planes, and tanks. It will also depend on which side can best adapt emerging technologies from the commercial sector for military use. Therefore, the national security enterprise must also broaden the industrial base to incorporate non-traditional partners that are building technologies, such as artificial intelligence, that will define the future.

At the same time, the U.S. must balance efforts to spark and foster innovation with the need to ensure the defense industrial base is sufficiently resilient. And as the COVID-19 pandemic has starkly demonstrated, this resilience must not only protect the industrial base against exploitation or disruption by China, but also enable it to withstand a host of potential economic and environmental shocks.

This is why *Vital Signs 2022* is so, well, vital. Now in its third year, the report's data-driven approach not only provides an empirical assessment of the health and readiness of the defense industrial base over time, but also offers the first real accounting of the damage wrought by the pandemic. Without efforts such as *Vital Signs*, it would be impossible to accurately understand the full extent of the problems facing the defense industrial base or to develop and implement effective solutions. How well the U.S. does so may be the difference between victory or defeat.

Tara Murphy Dougherty

Chief Executive Officer, Govini