

Forward Sustainment for Future Conflict:

Designing a Resilient, Digitally Enabled Maintenance and Repair Enterprise for

Indo-Pacific Conflict Scenarios

13

REVIEWED BY DOD

DEFENSE OFFICE OF PREPUBLICATION AND OFFICE OF SECURITY REVIEW

NO CLASSIFIED INFORMATION FOUND

Oct 03, 2025

The appearance of external hyperlinks does not constitute endorsement by the United States Department of Defense (DoD) of the linked websites, or the information, products or services contained therein. The DoD does not exercise any editorial, security, or other control over the information you may find at these locations.

Review of this material does not imply Department of Defense endorsement of factual accuracy or opinion.



The Dwight D. Eisenhower School

for National Security and Resource Strategy

National Defense University

Fort McNair, Washington, D.C. 20319-5062

The views expressed in this paper are those of the authors and do not reflect the official policy or position of the National Defense University, the Department of Defense, or the U.S. Government.

AY 2024-2025

ES 6700 - INDUSTRY STUDY COURSE

ORGANIC INDUSTRIAL BASE

SPRING SEMINAR #16

DR. STEVEN BLOOM and DR. MICHAEL CAMPBELL

Word Count: 8,551

LtCol Nicole Bastian, U.S. Marine Corps

LTC Scotty F. Boler, U.S. Army

CDR Alexandra 'Lexy' Cherry, U.S. Coast Guard

LTC Michael V. Gallucci, U.S. Army

Col Jungmi Ha, Republic of Korea Air Force

Lt Col Alexis Johnson, U.S. Air Force

COL Sani Kalgo, Nigeria Air Force

Lt Col Justin Meihaus, U.S. Air Force

LTC Carl 'C-Mo' Moses II, U.S. Army

Mr. Brad Parker, Department of State

Mr. Anthony 'Tony' Sabatina, Defense Logistics Agency

CAPT Colleen Smith, Royal New Zealand Navy

Ms. Julie Workmeister, Department of Army

Guest Speakers, CONUS and OCONUS Field Study Practicum

- Joint Staff Director of Logistics (JS-J4): Lt Gen Leonard J. Kosinski, (Ret.) USAF
- National Defense Industrial Association (NDIA): Maj Gen Lee Levy (Ret.) USAF
- Center for Joint and Strategic Logistics (CJSL): Mr. George Topic, Vice Director
- Government Accountability Office (GAO): Ms. Diana Maurer (Director, Defense Capabilities & Management), with Senior Analysts Jeff Carr, Mike Dworman, Nicole Volchko, and Delia Zee
- Anniston Army Depot: COL Craig Daniel (Commander), Mr. Phil Trued (Deputy Commander), with senior depot leadership
- Army Materiel Command (AMC) HQ: Ms. Elizabeth Miranda, Executive Deputy to the Commanding General, Ms. Stephanie Hoaglin, Director of OIB Modernization Task Force, COL Dan Bidetti, Military Deputy of OIB MTF, with other AMC colleagues
- OUSD-ASD-Sustainment: HON (Ret) Christopher Lowman, with U.S. Army LTG (Ret) Mitchell Stevenson
- OUSD Product Support Directorate: Dr. Nelson Williams, Mr. Eric Fleming, and Mr. Anthony Lee II
- HQ USAF: Lt Gen Tom Miller, USAF, Deputy Chief of Staff for Logistics, Engineering, and Force Protection
- DASD for Materiel Readiness (Sustainment): Mr. Patrick Kelleher, with XO Col LA Smith and Mr. Desmond Keyes, Chief of Staff
- Mid-Atlantic Regional Maintenance Center (MARMC): Mr. Ken Halloway, Waterfront Portfolio Manager, and Mr. Sean Greenaway, Deputy Executive Director

- Huntington Ingalls Shipbuilding (HII): Mr. Mark Colombo, Corporate Director for Customer Affairs, Aircraft Carrier Programs, and Mr. Bryan Caccavale, Vice President for Program Management
- Colonna's Shipyard: Mr. Vance Hull, Director of Business Development
- United States Coast Guard Aviation Logistics Command (USCG-ALC, Elizabeth City, NC): CDR Daniel Lavender with colleagues
- House Armed Services Committee (HASC) Professional Staffers – Various
- U.S. Department of State: Mr. Seth Bailey, Korea Desk
- Embassy of Korea (Washington, D.C.): COL Yong-Sun Kim, RoK Army, Defense Cooperation Attache to the U.S.
- IndoPacom HQ: BG Martine Kidd, CAPT Drew Phillips, and members of USPACFLT, USARPAC, USPACAF, USMARFORPAC, USFJ, and USFK
- COMPACFLT: RDML Daniel Ettlich, Director of Fleet Maintenance, Indo-Pacific
- JPO F-35 Program Office: Mr. Bill Greene, Deputy JPO Program Manager with Mr. Kyle Matyi and various JPO team members, also with colleagues from Lockheed Martin and Pratt Whitney
- United States Coast Guard (USCG-Baltimore Shipyard): CAPT David Obermeier (Commanding Officer) and CAPT Andrew Pecora (Commander, Surface Forces Logistics Center)

CONUS & OCONUS Field Study:

- Tinker Air Force Base (AFB) (Oklahoma): Brig Gen Brian Moore, Commander, Oklahoma City Air Logistics Complex (ALC), Tinker AFB, OK, Col Jeffery Anderson, Deputy Commander, Oklahoma City Air Logistics Complex (ALC), and various ALC senior managers
- American Airlines Tech Ops (Oklahoma): Mr. Robert Calhoun III, Director of Hangars 5 & 6, with various senior managers

- McAlester Army Ammunition Plant (MCAAP) (Oklahoma): Mr. Brian D. Lott (Deputy to Commander), with senior managers of various MCAAP operations
- Caterpillar Defense (HQ) (Dallas, Texas): Mr. Randy Tymofichuk, (VP & GM Caterpillar Defense)
- Lockheed F-35 Manufacturing Line at USAF Plant 4 (Ft. Worth, Texas): Mr. Evan Miller (VP – F-35 Sustainment Integration), Mr. Scott Coon (Strategy and Business Development), with various operations colleagues
- US Embassy-Seoul, Republic of Korea (RoK): COL Christopher Hobgood, Chief, JUS-MAG-Korea, CDR Steven Choi, LTC David Wilkinson, & JUSMAG-K team joined by U.S. State Department team
- Republic of Korea, Ministry of National Defense Seoul, RoK: Mr. Gabsu Lee, Director General, Logistics Bureau, with COL Youngkun Song, MRO Representative
- Korean Airlines (KAL) (Busan, RoK): Mr. Jin Kyu Lim, Managing Vice President for Defense Business, Aerospace Business Division, with several senior directors and managers performing under USAF maintenance contracts
- Hanwha Aerospace (Changwon, RoK): Mr. Yi Won Jae, Ph.D., Mr. Il Seong Baek, Mr. Seung Su Lee, and other senior managers
- Hanwha Systems (Gumi, RoK): Mr. Bo Sub Jang, Mr. Eric H. Yun, and other senior managers
- Hyundai Shipbuilding (Ulsan, RoK): Mr. Y.Y. Park, Executive Vice President, Naval Business Unit & Mr. Kisu Kim, Senior Manager, Business Planning Dep't, Naval & Special Ship Business Unit

- Materiel Support Command Korea (MSC-K) U.S. Army (Waegwan, RoK): COL Brian T. Donahue (MSC-K Commander), Mr. David Pack (MSC-K Deputy to the Commander), Mr. Tom Robertson, Director for Maintenance, with other senior depot managers

Executive Summary

Requirement: Recent policy signals underscore this urgency. The 2022 National Defense Strategy (NDS) calls for resilient logistics networks and a robust industrial base.¹ The FY22 National Defense Authorization Act (NDAA) promotes sustainment transparency and acquisition reform.² Executive Orders 14265, 14267, 14268, 14269, and 14278 emphasize innovation, skilled labor, allied cooperation, maritime revitalization, and regulatory streamlining.³ These directives make clear that sustainment modernization is now a national priority.

These recommendations align with the President’s Executive Orders of February 25, 2025 and April 9, 2025, the Secretary of Defense’s “Message to the Force” dated January 25, 2025, and the Army Transformation Initiative of May 1, 2025.⁴ Implementation could be resourced through the Secretary of Defense’s directive to reduce service-level outlays by 8 percent annually over five years, along with consolidation savings and the divestment of obsolete systems. Together, these actions can enable a modern, flexible, and forward-ready sustainment enterprise.

This report reflects a year of Eisenhower School research, drawing from Maintenance, Repair, and Overhaul (MRO) site visits, commercial and interagency engagements, and international partner consultations. Strategic frameworks and economic models were applied to assess readiness. The findings reveal that the current system is not prepared for a prolonged Indo-Pacific conflict. The report offers a framework of three interdependent reforms: Integrated

¹ U.S. Department of Defense, *2022 National Defense Strategy*.

² U.S. Congress, *FY22 National Defense Authorization Act*.

³ Executive Orders 14265 through 14278, White House, April 2025. Also see Appendix C.

⁴ Department of Defense, *Message to the Force*, January 2025, and Army Transformation Initiative, May 2025.

Sustainment, Human Capital, and Infrastructure Recapitalization, to deliver an enterprise capable of sustaining joint force operations as early as 2027.

Methodology: This report draws on semester-long Eisenhower School research, including field engagements with depots, defense contractors, human capital experts, advanced manufacturing leaders, interagency officials, and international partners in the Republic of Korea. Analysis leveraged frameworks such as structure-conduct-performance, Porter’s Five Forces, and Strategic Game Board, supplemented by wargames, sustainment scenarios, executive orders, Fiscal Year Defense Planning (FYDP) budget data, and National Defense Strategy guidance.

Key Findings: The current sustainment system faces three persistent, interconnected shortfalls: (1) lack of integrated enterprise-wide visibility across OIB, CIB, and FAP, leading to fragmented planning and underused capacity; (2) aging and undersupplied sustainment human capital with inadequate replacement pipelines; and (3) outdated, poorly aligned infrastructure vulnerable to disruption. Compounding factors, such as intellectual property (IP) restrictions, limited allied integration, and disjointed funding leave the enterprise reactive, underprepared, and unable to scale for peer conflict.

Recommendations: To address these challenges, the report outlines a three-part framework focused on:

1) Integrated Sustainment:

- Establish Joint Program Executive Office for Integrated Sustainment (JPEO-IS) to coordinate to align policy, improve enterprise visibility, establish and enforce data interoperability standards, and facilitates partner integration (especially FAP via NTIB). The JPEO-IS would not issue operational tasking or control budgets.

- Develop Sustainment Tracking, Repair Integration, & Knowledge Exchange (STRIKE), a real-time sustainment visibility platform to optimize global MRO routing, labor allocation, and parts production using data meshing that integrates data from existing Department of Defense systems.
- Expand National Technology and Industrial Base (NTIB) as a forward sustainment asset through pre-negotiated MRO agreements, Depot Resource of Repair (DSOR) reform, and allied integration.

2) Human Capital Initiatives: Regenerate the sustainment labor force through workforce development and retention:

- Launch a National Call to Build, a federally led, regionally executed initiative creating artisan pipelines, high school dual enrollment, and DoD-aligned apprenticeships near major depot hubs.
- Stand-up the Civil Reserve Sustainment Readiness Program (CRSRP) to establish a surge-ready, credentialed labor pool during wartime or national emergency.
- Expand targeted retention incentives, accelerate federal hiring timelines, and integrate labor force metrics into readiness reporting frameworks to address the acute skilled labor shortage across the sustainment enterprise.

3) Infrastructure Recapitalization: Modernize and harden sustainment infrastructure aligned to forward operations:

- Establish Contested Logistics and Sustainment Integration Fund to consolidate and flexibly allocate the Pacific Deterrence Initiative (PDI), Defense Working Capital Fund (DWCF), and Operations and Maintenance (O&M) resources across recapitalization priorities.

- Accelerate depot upgrades based on Indo-Pacific chokepoints and surge-critical platforms, including modular MRO nodes in Guam, Japan, and Australia.
- Integrate climate and cyber resilience features such as energy independence, hardened networks, and redundant utilities in forward repair facilities.

Problem Statement

The Department of Defense is not prepared to sustain the joint force in a large-scale, prolonged conflict in the Indo-Pacific. The sustainment enterprise remains fragmented across the Defense Industrial Base, limiting the ability to deliver forward, agile, and resilient maintenance and repair. Workforce shortfalls are growing, with too few trained personnel to meet future demands or surge in crisis. At the same time, depot infrastructure is outdated and not built for modern, expeditionary, or software-intensive systems.

Thesis

Success in a prolonged Indo-Pacific conflict requires transformation across three fronts: an integrated sustainment enterprise that enhances visibility across the Defense Industrial Base, human capital initiatives to rebuild and mobilize the skilled labor force, and infrastructure revitalization to support modern, forward-based maintenance. Together, these efforts will deliver the resilient and agile sustainment enterprise needed to deter and prevail in a 2027 Indo-Pacific conflict.

Table of Contents

<i>Title Page</i>	<i>I</i>
<i>Guest Speakers, CONUS and OCONUS Field Study Practicum</i>	<i>III</i>
<i>Executive Summary</i>	<i>VII</i>
<i>I. Introduction</i>	<i>1</i>
<i>II. Strategic Environment</i>	<i>3</i>
A. Current OIB Industry Status, Key Issues, & Forecast	3
B. Innovation Trends in the OIB	5
C. OIB Supply Chain Issues	7
D. OIB Factor Conditions	7
E. Strategic Competition: United States, China, and Russia	9
1) China Strategic Competition.....	9
2) Russia Strategic Competition.....	9
<i>III. Stakeholder Interests</i>	<i>10</i>
A. OIB Business-Government Relations	10
B. OIB 21st Century Mobilization Preparedness	11
<i>IV. Maintenance, Repair, and Overhaul Market and Industry Analysis</i>	<i>12</i>
A. MRO Market and Industry Definition	12
1) Market.....	12
2) Industry	13
B. Structure, Conduct, and Performance Analysis	13
C. Structure	14
1) Market Structure Analysis.....	14
2) Industry Analysis using Porter’s Five Forces (OIB-CIB-FAP)	16
D. Conduct	19
1) Strategic Game Board	19
E. Performance	20
1) OIB Readiness Model	20
2) Production Function Model.....	22
3) Theory of Constraints.....	23
<i>V. Recommendations</i>	<i>25</i>
A. Integrated Sustainment	26
1) Establish the Joint Program Executive Office for Integrated Sustainment.....	26
2) Sustainment Tracking, Repair Integration, and Knowledge Exchange	29
3) Integrated Sustainment Governance and NTIB Activation	32
B. Workforce Modernization and Strategic Talent Initiatives	35
1) Launch the Civil Reserve Sustainment Readiness Program (CRSRP)	35
2) Launch the National Call to Build	37
3) Retention as a Readiness Imperative	39

C. Strengthening Infrastructure Recapitalization and Resilience for the Indo-Pacific .	41
1) Establish a DoD Sustainment Infrastructure Realignment Authority.....	41
2) Expand Bilateral Sustainment Agreements with Indo-Pacific Allies	42
3) Transform the Pacific Deterrence Initiative into a Logistics Capital Account.....	43
4) Deploy Modular and Mobile Sustainment Detachments	43
VI. Conclusion	44
VII. Bibliography.....	46
VIII. APPENDICES.....	46
Appendix A: Strategic Implications of Artificial Intelligence for the OIB.....	54
Appendix B: Abbreviated Recommendation List	55
Appendix C: OIB Statutes and Policies	56
Appendix D: OIB Locations and Capabilities	66
Appendix E: RSF Locations and Capabilities	67
Appendix F: OIB Individual Research Paper Abstracts.....	70
Appendix G: Generative AI Use	84
Appendix H: Wargaming	85
Appendix I: Glossary of Terms.....	86
Appendix J: National Call to Build	96
Appendix K: Resourcing the Recommendations	97

Table of Figures

Figure 1 - Structure-Conduct-Performance Sub-Frameworks.....	14
Figure 2 - Types of Market Structures across the Competition Continuum.....	15
Figure 3 - Pre-Award versus Post-Award Market Structure.....	15
Figure 4 - Porter's Five Forces.....	16
Figure 5 - Strategic Game Board	19
Figure 6 - OIB Readiness Model	21
Figure 7 - Production Function Model.....	22
Figure 8 - Theory of Constraints.....	24
Figure 9 - Theory of Constraints Applied to the OIB.....	24

I. Introduction

The tyranny of distance in the Indo-Pacific fundamentally reshapes the sustainment calculus for prolonged large-scale peer conflict in that area of operations. For decades, the U.S. Defense Industrial Base (DIB), including the Organic Industrial Base (OIB), government-owned depots, arsenals, and shipyards, has played a central role in supporting U.S. national security. However, the changing character of warfare and the potential for a high-tempo, prolonged conflict in the Indo-Pacific demand a transformed sustainment enterprise.

Victory against a peer adversary such as the People’s Republic of China (PRC) will depend on speed, scale, and resiliency in sustainment. Official assessments warn that a conflict over Taiwan could begin with little warning and intense early demands, leaving no time for industrial ramp-up. China’s long-range precision fires and cyberattacks are likely to disrupt logistics and degrade readiness. Modern platforms such as the F-35, Aegis destroyers, and unmanned systems are software-intensive and maintenance-heavy. Theater-based sustainment will be essential. The traditional CONUS-centric model is insufficient. Instead, forward sustainment with trusted allies like the Republic of Korea and regional partners, leveraging frameworks such as the Regional Sustainment Framework (RSF) and other Persistent Sustainment Infrastructure (PSI), must be operationalized.

Recent policy signals underscore this urgency. The 2022 National Defense Strategy (NDS) calls for resilient logistics networks and a robust industrial base.⁵ The FY22 National Defense Authorization Act (NDAA) promotes sustainment transparency and acquisition reform.⁶ Executive Orders 14265, 14267, 14268, 14269, and 14278 emphasize innovation, skilled labor,

⁵ U.S. Department of Defense, *2022 National Defense Strategy*.

⁶ U.S. Congress, *FY22 National Defense Authorization Act*.

allied cooperation, maritime revitalization, and regulatory streamlining.⁷ These directives make clear that sustainment modernization is now a national priority.

These recommendations align with the President’s Executive Orders of February 25, 2025 and April 9, 2025, the Secretary of Defense’s “Message to the Force” dated January 25, 2025, and the Army Transformation Initiative of May 1, 2025.⁸ Implementation could be resourced through the Secretary of Defense’s directive to reduce service-level outlays by 8 percent annually over five years, along with consolidation savings and the divestment of obsolete systems. Together, these actions can enable a modern, flexible, and forward-ready sustainment enterprise.

This report reflects a year of Eisenhower School research, drawing from MRO site visits, commercial and interagency engagements, and international partner consultations. Strategic frameworks and economic models were applied to assess readiness. The findings reveal that the current system is not prepared for a prolonged Indo-Pacific conflict. The report offers a framework of three interdependent reforms: Integrated Sustainment, Human Capital, and Infrastructure Recapitalization, to deliver an enterprise capable of sustaining joint force operations as early as 2027.

Problem Statement

The Department of Defense (DoD) is not optimized to sustain the joint force in a large-scale, prolonged conflict in the Indo-Pacific. The sustainment enterprise remains uncoordinated across the DIB, limiting the ability to deliver forward, agile, and resilient maintenance and repair. Workforce shortfalls are growing, with aging artisans, and too few trained personnel to

⁷ Executive Orders 14265 through 14278, White House, April 2025. Also see Appendix C.

⁸ Department of Defense, *Message to the Force*, January 2025, and Army Transformation Initiative, May 2025.

meet future demands or surge in crisis. At the same time, depot infrastructure is outdated and not built for modern, expeditionary, or software-intensive systems.

Thesis

Success in a prolonged Indo-Pacific conflict requires transformation across three fronts: an integrated sustainment enterprise that enhances visibility across the DIB, human capital initiatives to rebuild and mobilize the skilled labor force, and infrastructure revitalization to support modern, forward-based maintenance. Together, these efforts will deliver the resilient and agile sustainment enterprise needed to deter and prevail in a 2027 Indo-Pacific conflict.

II. Strategic Environment

Sustainment readiness is shaped by four interrelated factors: industrial capacity, innovation, adversary behavior, and geographic reality. Each of these factors affects the Department's ability to repair, resupply, and restore combat power in the Indo-Pacific theater.

A. Current OIB Industry Status, Key Issues, & Forecast

A foundational weakness across the Maintenance, Repair, and Overhaul (MRO) enterprise is the lack of system integration across the OIB, Commercial Industrial Base (CIB), and Foreign Allies and Partners (FAP). Governance remains fragmented, data systems are siloed, and sustainment initiatives operate without centralized oversight. PSI efforts such as the RSF, Partnership for Indo-Pacific Industrial Resilience (PIPIR), and the Global Enterprise Network for Universal Sustainment (GENUS) aim to improve coordination, but they remain underfunded and poorly aligned. Service-specific platforms do not share common architectures, making cross-service transparency and decision-making difficult. Without a federated data mesh or unified common operational picture (COP), sustainment routing, capacity visibility, and repair tasking

remain reactive and fragmented. There are other FAPs with much to offer in sustainment support too that could ultimately enhance supply chain resilience or partner for other PSIs, like Eventually, PSIs could extend to other FAPs, like Nigeria. To continue ensuring foreign sustainment integration depends on political access, infrastructure readiness, and proximity to regional hubs in a coordinated constellation of services.⁹

Labor shortages represent an equally acute constraint. Over half of the skilled trades workforce is projected to retire by 2035, and many depots already report challenges recruiting machinists, welders, and avionics technicians.¹⁰ Programs such as Pathways, certified apprenticeships, and partnerships with technical institutions have shown promise at select depots, but remain unevenly scaled and lack sustained funding.¹¹ Working Capital Fund (WCF) authorities allow for workforce investment, yet structural limitations in federal hiring practices, especially lengthy onboarding timelines and inflexible compensation, continue to hinder readiness and prevent agile workforce surge during crisis.¹²

Finally, the physical infrastructure of the OIB is aged and capacity-limited. Many depots still operate in facilities built during World War II or the Cold War, with inefficient layouts, constrained utilities, and minimal automation.¹³ These conditions restrict throughput, limit modernization, and make reconfiguration for surge or new platform support slow and costly.

⁹ Sani Kalgo, “*Leveraging Nigeria as a Strategic Partner for OCONUS MRO Services in AFRICOM: Enhancing Regional Sustainment Readiness*” (research paper, The Dwight D. Eisenhower School for National Security and Resource Strategy, National Defense University, April 2025).

¹⁰ Justin C. Meihaus, *Forging the Future Force: Rebuilding the U.S. Organic Industrial Base Workforce for the 21st Century Readiness* (research paper, Dwight D. Eisenhower School for National Security and Resource Strategy, AY 2024–2025).

¹¹ Ibid. See also, Nicole V. Bastian, *Disinterest in Military Service and Trade Skills Is a National Security Vulnerability* (research paper, Dwight D. Eisenhower School for National Security and Resource Strategy, December 2024).

¹² Carl Moses, *Reforming the Working Capital Fund: Resourcing the OIB for Strategic Competition* (research paper, Dwight D. Eisenhower School for National Security and Resource Strategy, April 2025).

¹³ Michael Gallucci, *Transforming the Organic Industrial Base for Great Power Competition* (research paper, Dwight D. Eisenhower School for National Security and Resource Strategy, April 2025).

Despite targeted recapitalization through Military Construction (MILCON) and WCF reinvestment, infrastructure upgrades are inconsistently funded and misaligned with emerging operational demands. Without accelerated recapitalization, existing bottlenecks will directly impede the OIB's ability to absorb surge repair workloads.

These challenges will only intensify in an Indo-Pacific conflict with the PRC.

Wargaming and campaign analysis project that MRO requirements could increase by 200–300 percent during the opening phases of Indo-Pacific combat operations. Without integrated systems, a ready workforce, and modern infrastructure, the current sustainment enterprise is not postured to meet that demand.¹⁴ The tyranny of distance in the Indo-Pacific, therefore, elevates sustainment to a decisive vulnerability.¹⁵

B. Innovation Trends in the OIB

Innovation within the MRO enterprise is progressing, but it remains uneven, disconnected, and insufficiently scaled. Many promising initiatives, such as the Marine Corps' advanced manufacturing detachments, the Air Force's Maintenance, Repair, and Overhaul initiative, and the Coast Guard's depot modernization pilots, have been developed in isolation, without a unified strategy for system-wide integration.¹⁶ Existing platforms remain largely service-specific and fail to support cross-enterprise data interoperability. There is no central architecture or governance body to synchronize innovation across the MRO enterprise. This

¹⁴ RAND Corporation, *Sustaining the U.S. Defense Industrial Base Amid Strategic Competition* (Santa Monica, CA: RAND, 2023).

¹⁵ Parsons Corporation, *The IndoPac Region: A Strategic Imperative for U.S. Security*, last modified April 2025, <https://www.parsons.com/2025/04/the-indopac-region-a-strategic-imperative-for-u-s-security/>.

¹⁶ Anthony Vincent Sabatina, *Navigating the Future: Leveraging Artificial Intelligence to Revolutionize Predictive Workload Planning in the Organic Industrial Base for U.S. Naval Shipbuilding & Maintenance, Repair & Overhaul (MRO)* (research paper, National Defense University, April 19, 2025), 3–6. Also see Marine Corps Logistics Command, *Additive Manufacturing Readiness Brief*, 2024; OIB IS AY24 Seminar 15 Report; and Air Force Sustainment Center, *Digital Materiel Management Strategy*, 2023; Eisenhower School Field Notes, 2024.

fragmentation prevents enterprise-wide visibility, predictive analytics, and the development of a common operating picture across the sustainment ecosystem.

Workforce-related barriers also limit the impact of innovation. Initiatives that introduce automation, robotics, or advanced manufacturing frequently outpace the training capacity of the current labor force.¹⁷ Depots often lack the technical instructors, curriculum alignment, and funding mechanisms needed to upskill personnel at the required scale and speed. When new technologies are introduced, they are sometimes underutilized due to staffing gaps or a lack of operational training capacity.¹⁸

Physical infrastructure constraints compound the problem. Legacy facilities frequently lack the electrical capacity, environmental controls, and digital infrastructure needed to support AI-enabled diagnostics, automated guided vehicles, or additive manufacturing equipment.¹⁹ Even when recapitalization is authorized, MILCON lead times and compliance requirements delay delivery. Infrastructure pilots are often implemented at CONUS locations, without assessing scalability or survivability in contested theaters like INDOPACOM.²⁰

Additive manufacturing and reverse engineering have shown promise in addressing part obsolescence and lead time bottlenecks. However, implementation remains siloed and is often hindered by access restrictions to technical data packages and intellectual property.²¹ The

¹⁷ Julie Workmeister, *The OIB of the Future: Navigating the Adoption of Advanced Manufacturing in the Organic Industrial Base* (unpublished research paper, Eisenhower School for National Security and Resource Strategy, April 2025).

¹⁸ Anthony Vincent Sabatina, *Navigating the Future: Leveraging Artificial Intelligence to Revolutionize Predictive Workload Planning in the Organic Industrial Base for U.S. Naval Shipbuilding & Maintenance, Repair & Overhaul (MRO)* (research paper, National Defense University, April 19, 2025), 3–6

¹⁹ Ibid.

²⁰ Ibid.

²¹ U.S. Department of State, *International Traffic in Arms Regulations (ITAR)*, Title 22 CFR § 120–130. Incompatible software, unclassified-to-classified transition barriers, and restrictive export controls such as ITAR continue to hinder collaboration with foreign sustainment partners.

Department's acquisition processes routinely fail to secure these data rights, reinforcing vendor lock and limiting the OIB's ability to execute organic or allied sustainment.²²

Absent unified governance, sustained investment, and a clear strategy for scaling innovation across the joint force and trusted partners, current efforts will remain fragmented. Tactical progress in pockets of the enterprise will not deliver the strategic transformation needed to sustain operations in a future conflict.

C. OIB Supply Chain Issues

Sustainment readiness remains vulnerable to structural fragility in the defense supply chain. Long lead times, sole-source dependencies, and parts obsolescence continue to delay MRO timelines and reduce system availability. These challenges are particularly acute for legacy platforms, where original equipment manufacturers may lack surge capacity or have exited the market entirely. While global shocks and adversary-driven economic coercion exacerbate these risks, ongoing acquisition practices and intellectual property limitations remain the root structural constraints.

These data and access limitations also prevent broader digital integration, impeding transparency, common tooling, and interoperability across services and partner nations. Without reforms to acquisition policy, system interoperability, and lifecycle digital authority, innovation in the OIB supply chain will remain fragmented and localized.

D. OIB Factor Conditions

Future conflict will demand distributed, resilient sustainment far beyond the capacity of CONUS-based MRO. Concepts like Expeditionary Advanced Base Operations (EABO), Agile

²² U.S. Department of Defense, *Intellectual Property and Data Rights in Defense Sustainment*, 2024. Also see, Brad S. Parker, *Breaking the Lock: Strengthening Defense Sustainment Through Improved Access to Intellectual Property* (Research paper, The Dwight D. Eisenhower School for National Security and Resource Strategy, National Defense University, April 20, 2025).

Combat Employment (ACE), and Multi-Domain Operations (MDO) require modular, forward-integrated logistics. PSIs such as RSF, PIPIR, and GENUS aim to decentralize sustainment across trusted partners. RSF clusters capacity regionally, PIPIR upgrades critical island infrastructure, and GENUS enables shared visibility and coordination across the MRO enterprise.²³ The RSF organizes sustainment functions into geographically distributed clusters that leverage U.S., allied, and partner capabilities.²⁴ PIPIR focuses on hardening infrastructure and expanding repair and fueling capacity across key island nodes to enable persistent logistics under threat.²⁵ GENUS, an Air Force system, integrates sustainment data across U.S., commercial, and partner systems to enhance visibility, coordination, and responsiveness.²⁶

However, these efforts lack formal tasking authority, regional access agreements, and integrated data frameworks. Strategic Contingency Platforms and Persistent Logistics Operating Concept offer scalable logistics concepts but remain disconnected from joint planning.²⁷ Partnerships with the Republic of Korea and the Philippines offer theater-ready capacity, but remain episodic due to legal, technical, and policy gaps. Without clear governance, persistent funding, and operational integration, PSI efforts risk underdelivering in crisis.²⁸

²³ Department of Defense, *Joint Concept for Contested Logistics*, February 2023, https://www.jcs.mil/Portals/36/Documents/Doctrine/concepts/joint_concept_for_contested_logistics.pdf.

²⁴ U.S. Indo-Pacific Command, *Theater Posture Plan Briefings*, 2024.

²⁵ Office of the Secretary of Defense, *Global Posture Review Findings*, 2022.

²⁶ Vanessa Montalbano, “Meet GENUS: Air Force’s offering for Regional Sustainment Framework in the Indo-Pacific,” October 2024, <https://insidedefense.com/daily-news/meet-genus-air-forces-offering-regional-sustainment-framework-indo-pacific>.

²⁷ Headquarters, U.S. Marine Corps, *Force Design 2030 Annual Update*, 2023.

²⁸ Jungmi Ha, *The Case for Korea: Operationalizing the Regional Sustainment Framework in the Indo-Pacific* (research paper, National Defense University, April 20, 2025), 3–5. Also see DASD Sustainment, *RSF Implementation Briefing Series*, 2023–2024.

²⁸ Carl Moses II, *Funding the Organic Industrial Base of the Future* (research paper, National Defense University, April 20, 2025), 8–10.

E. Strategic Competition: United States, China, and Russia

Strategic competition with China and Russia is no longer an abstract planning construct, it is a lived reality that is already reshaping defense sustainment requirements. Both the PRC and Russia are already on a wartime footing.

1) China Strategic Competition

China's rapid buildup of dual-use infrastructure, expansive use of state-subsidized defense firms, and deliberate integration of its commercial and military logistics networks present an operational challenge that the current U.S. sustainment enterprise is not postured to counter. The People's Liberation Army is now capable of executing coordinated logistics campaigns with regional saturation, forward repair capabilities, and denial strategies designed to fracture U.S. sustainment lines.²⁹ China is currently viewed as the pacing challenge with many peer-like abilities.³⁰

2) Russia Strategic Competition

Russia's war in Ukraine has offers contemporary lessons on sustainment in modern conflict. Russia's 2022 invasion of Ukraine exemplified logistical failure when its offensive toward Kyiv collapsed due to inadequate supply planning, relying on vulnerable truck convoys and railheads without capturing Ukrainian rail lines, coupled with poor vehicle maintenance, insufficient spare parts, and limited recovery vehicles, leading to abandoned equipment and stalled advances by March–April 2022.³¹ Despite suffering from initial sustainment failures, Russia has since demonstrated its ability to adapt, regenerate combat power, and execute long-

²⁹ CSIS, *China's Defense-Industrial Strategies and Dual-Use Infrastructure*, 2023.

³⁰ U.S. Department of Defense, *2022 National Defense Strategy*.

³¹ U.S. Department of Defense. "Regional Sustainment Framework (RSF): Fact Sheet." May 15, 2024. <https://www.defense.gov/News/Releases/Release/Article/3774968/dod-announces-regional-sustainment-framework/>.

duration conflict supported by dispersed production and mobile repair. Leading up to the Ukraine invasion, Russia had inadequate MRO capabilities, which became apparent quickly. Since the Russia-Ukraine war is primarily land-based, Russia was able to adapt over time. These developments reinforce that strategic depth, depot resilience, and supply chain redundancy are essential for sustaining operations against a peer adversary.³² While the war in Ukraine offers important lessons in sustainment preparedness, the tyranny of distance and the demands of the air and sea domains in an Indo-Pacific conflict present even less forgiving challenges than those faced in the land-centric Russia-Ukraine war.

To remain competitive, the United States must shift from a static, CONUS-centric sustainment model to a globally distributed, digitally integrated enterprise that leverages the full capacity of the MRO industry. Sustainment must no longer be treated as a back-end function, but as a forward-facing warfighting advantage that directly contributes to deterrence, resilience, and campaign endurance.

III. Stakeholder Interests

A. OIB Business-Government Relations

The sustainment enterprise is shaped by overlapping interests and roles across government and industry. Coordination is limited by structural barriers, such as IP restrictions, data access limitations, and timing misalignments between acquisition and sustainment programs. OEMs often retain exclusive rights to repair-critical data, requiring lengthy negotiation before depots can produce or replicate essential components.³³ Unpredictable

³² RAND Corporation, *Adapting Industrial Mobilization Lessons from Ukraine*, 2024.

³³ Office of the Under Secretary of Defense for Acquisition and Sustainment, *IP Access Barriers and Sustainment Impacts*, 2023.

demand and limited visibility into long-term requirements reduce industry’s incentive to invest in sustainment capacity. Small vendors, in particular, struggle to navigate federal acquisition systems and are rarely included in operational planning.³⁴

Within DoD, sustainment responsibilities are distributed across multiple offices and commands. Each actor operates on different timelines, with no single authority managing MRO integration across the OIB, CIB, and FAP. This fragmented structure is compounded by poor data sharing, siloed information systems, and limited digital oversight.³⁵ The lack of clear authorities and data-sharing mechanisms continues to limit integration of FAP sustainment capacity. Partners like Australia, Japan, the Republic of Korea, and the UK possess relevant MRO capabilities, but classification barriers and legal ambiguity prevent alignment with U.S. planning.³⁶ Absent unified governance and deliberate alignment of roles and visibility, the sustainment enterprise remains siloed and unable to scale for a peer conflict.

B. OIB 21st Century Mobilization Preparedness

The current state of U.S. mobilization preparedness reflects decades of underinvestment in industrial surge capacity and a lack of institutional mechanisms to regenerate combat power at scale. While limited peacetime production may suffice in a steady-state environment, the demands of a high-tempo conflict in the Indo-Pacific would far exceed the output, labor, and throughput capacity of the existing OIB.

Exercises and wargames have repeatedly demonstrated gaps in depot throughput, insufficient forward repair capabilities, and critical shortages in skilled trades.³⁷ Sustainment

³⁴ NDIA, *Vital Signs 2024: Industry Readiness and Acquisition Flexibility*, 2024.

³⁵ Eisenhower School AY25 OIB IS Seminar Reports; DASD Sustainment Coordination Briefings, Academic Year 2024 - 2025.

³⁶ Ibid.

³⁷ GAO, *Industrial Mobilization Preparedness: Challenges and Gaps in Wartime Sustainment*, GAO-23-104118.

elements are often underrepresented in campaign planning and operational wargames, leaving critical questions about surge authorities, contract triggers, and industrial tasking unanswered.³⁸ Existing policies focus primarily on supply chain security and peacetime acquisition, with limited emphasis on large-scale industrial operations under combat conditions. Ultimately, industrial mobilization remains a latent capability that has not been operationalized to reflect modern threats. Absent structural reforms and sustained attention, the Department risks entering a high-end conflict with insufficient ability to replace, repair, or reconstitute combat systems at the required speed and scale.

IV. Maintenance, Repair, and Overhaul Market and Industry Analysis

To fully understand why the current sustainment enterprise struggles to meet future readiness demands, it is necessary to analyze the structure, behavior, and performance of the MRO market and the industry.

A. MRO Market and Industry Definition

1) Market

A market consists of the service or product being traded, the producers offering it, the buyers, and the applicable regulatory framework. For this analysis, the service is MRO for U.S. government assets. The producers in this market include the U.S. OIB, CIB, and FAP counterpart organizations. The U.S. government is the primary buyer, with foreign military sales (FMS) and direct commercial sales (DCS) partners serving as secondary buyers within the broader MRO market.

³⁸ RAND Corporation, *Wargaming Sustainment Under Contested Logistics Conditions*, 2023.

Rules governing the OIB, CIB, and FAP differ significantly. For example, 10 U.S.C. § 2464 defines core capability requirements for OIB facilities, 10 U.S.C. § 2466 enforces the 50 percent workload requirement for organic facilities, and 10 U.S.C. § 2208 establishes the WCF as a net-neutral funding mechanism.³⁹ Additionally, the International Traffic in Arms Regulations (ITAR) authorize the President to control the export and import of defense articles and services, impacting how MRO can be executed across the enterprise.⁴⁰

2) Industry

The industry comprises all of the producers within the MRO service market, namely the OIB, CIB, and FAP.

B. Structure, Conduct, and Performance Analysis

A Structure-Conduct-Performance (SCP) framework reveals how market structure, and stakeholder behavior, and influence firm performance and explains why the sustainment enterprise struggles to meet emerging readiness demands. In the following sections, SCP sub-frameworks, outlined in Figure 1 below, are applied to the MRO industry to develop detailed understanding of the drivers of its performance.

³⁹ U.S. Code, Title 10, § 2464 (2023), *Core Logistics Capabilities*, <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section2464>; U.S. Code, Title 10, § 2466 (2023), *Limitations on the Performance of Depot-Level Maintenance of Materiel*, <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section2466>; U.S. Code, Title 10, § 2208 (2023), *Working-Capital Funds*, <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section2208>.

⁴⁰ U.S. Department of State, *International Traffic in Arms Regulations*, 22 C.F.R. § 120.1 (2025), <https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-120>.

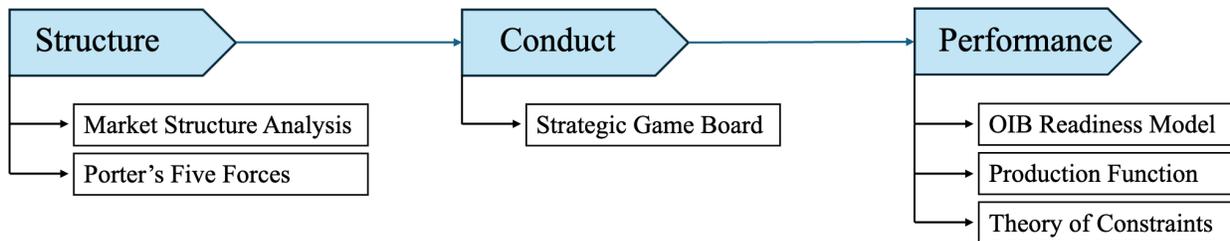


Figure 1 - Structure-Conduct-Performance Sub-Frameworks

The findings from this analysis are leveraged to develop market, resource, and politically informed policy recommendations in Section V, tailored to overcome U.S. OIB challenges.

C. Structure

1) Market Structure Analysis

Market structure analysis facilitates understanding of how much competition exists in an industry. The presence or absence of competition influences how producers and suppliers behave in an industry. The analysis considers how many firms produce for or supply the market, how unique the market product or service is, and “the ease with which new firms can enter the industry.”⁴¹

The structure of the MRO market varies by provider type. The OIB functions as a regulated monopoly for core sustainment tasks. Major OEMs operate in an oligopoly, where a few firms dominate due to specialized capabilities and control of IP. In contrast, smaller firms compete under monopolistic competition, offering differentiated services with fewer barriers to entry. Figure 2 depicts market structures across the competition continuum.

⁴¹ Glenn Hubbard and Anthony Patrick O’Brien, *Economics*, 8th ed. (United States: Pearson, 2021) p. 396.

Market Structures

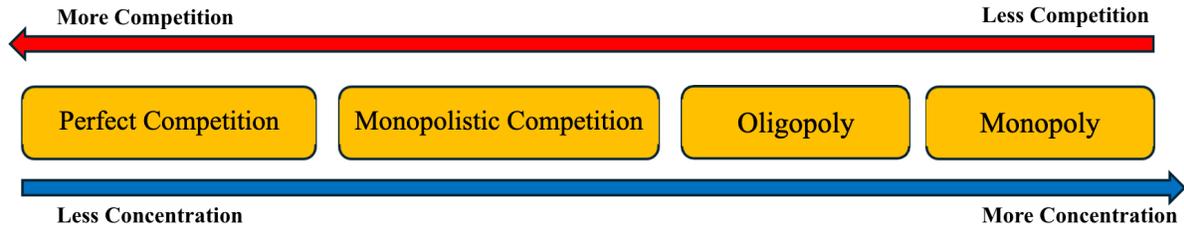


Figure 2 - Types of Market Structures across the Competition Continuum

Strategic Implication: The OIB’s monopolistic structure, focused on readiness generation, discourages innovation due to limited competition, restrictive rules, and funding constraints. In the CIB, competition varies among the “big five” primes. When IP is restricted, OEMs may face no competition for MRO contracts. Otherwise, primes compete aggressively, especially when services are not bespoke. Early-stage acquisition is highly competitive, with firms anticipating long-term MRO demand. This often results in a post-award bilateral monopoly, where one OEM supplies a single buyer for decades. (see Figure 3).

Pre-Award versus Post-Award Market Structure

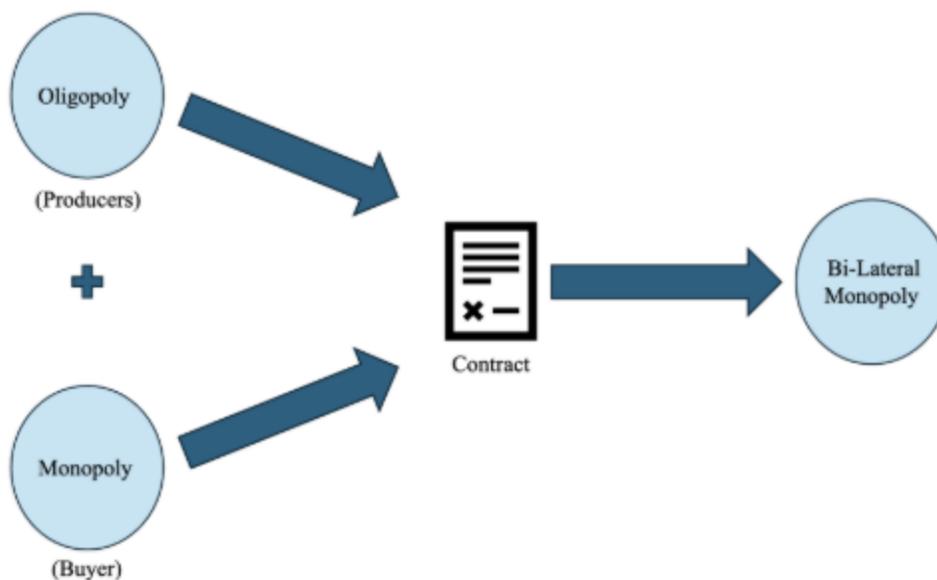


Figure 3 - Pre-Award versus Post-Award Market Structure

The MRO industry spans three market structures, each with different levels of competition. The OIB lacks competition entirely, while CIB competition ranges from intense to nonexistent. In monopolistic competition, common across much of the CIB, firms compete on price and service quality, driving efficiency and effectiveness. Where competition is weak, performance gains are limited.

2) Industry Analysis using Porter’s Five Forces (OIB-CIB-FAP)

Porter’s Five Forces offers a valuable framework to analyze structural pressures within the U.S. government MRO sector. It aligns with the “Structure” dimension of the SCP paradigm and explains how external forces, rivalry among existing competitors, threat of new entrants, bargaining power of suppliers and buyers, and threat of substitutes, shape industry behavior and performance.

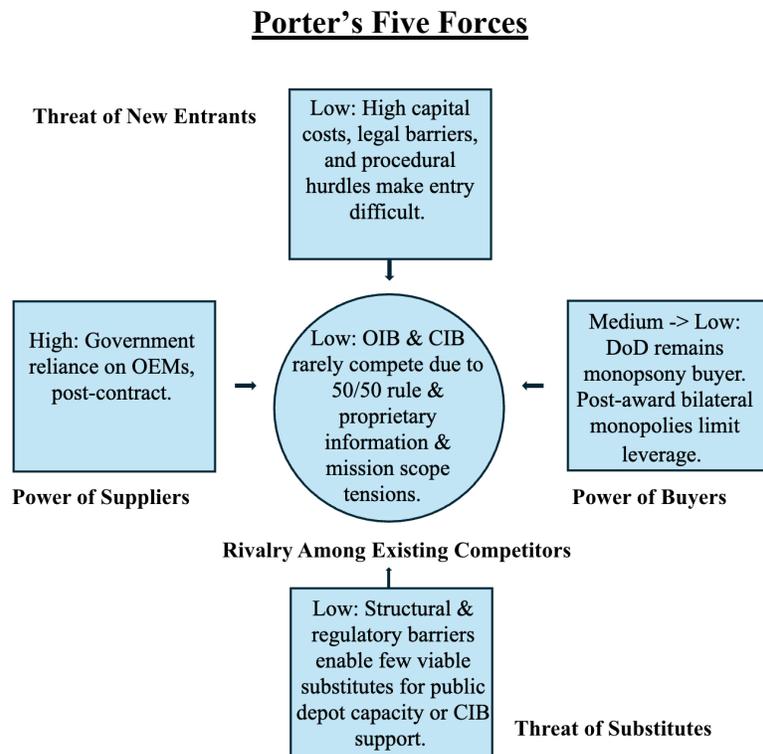


Figure 4 - Porter's Five Forces

Rivalry Among Existing Competitors – Low: The U.S. defense sustainment system operates under government control as both buyer and regulator. The OIB–CIB division reflects risk mitigation, not market efficiency, ensuring OIB survivability in crisis. OEMs dominate the CIB by controlling IP, diagnostics, and proprietary processes, while non-OEMs play limited roles. True competition is suppressed, creating a managed bilateral monopoly that prioritizes control over efficiency, discourages innovation, and limits operational agility.

Threat of New Entrants - Low: The MRO ecosystem is structurally closed, with high entry barriers. New private-sector entrants face steep capital costs and complex legal, security, and contracting requirements. OEMs often block access entirely by controlling critical IP. FAPs, even those with certified facilities and FMS experience, are similarly constrained by ITAR, the 50/50 rule, and National Technology and Industrial Base (NTIB) boundary. These barriers reduce allied participation and constrain scalable, distributed sustainment, increasing risk to U.S. forces in crisis.

Bargaining Power of Suppliers – High: The rise of Performance-Based Logistics (PBL) contracts has entrenched long-term OEM-managed sustainment, limiting the government’s ability to adjust cost, timing, or maintenance strategies. As platform complexity grows, so does dependency on OEMs, who retain control of IP, protocols, and predictive maintenance tools. This creates structural reliance that constrains operational flexibility and erodes government leverage.

Bargaining Power of Buyers - Medium → Low: Although DoD is the primary buyer, its leverage declines sharply after contract award. Under Performance-Based Logistics (PBL) models, the government retains influence during the contract negotiation phase; however, once the agreement is signed, execution is largely driven by the OEM. Due to limited market

competition and few viable alternatives, the government's bargaining power significantly diminishes post-award, leaving it with little flexibility to influence performance or adapt to evolving needs. Foreign partners in FMS and DCS are nominal market participants but lack bargaining power due to U.S. legal constraints. As a result, the government shifts from pre-award authority to a constrained consumer during sustainment, with limited flexibility to adapt to evolving operational demands.

Threat of Substitutes - Low: Substitute sustainment options exist. Several allies have certified MRO capacity for U.S. platforms, and some non-OEM CIB firms offer viable alternatives. However, regulatory and contractual barriers, such as restricted data access and security constraints, prevent these assets from being used. The issue is not capability, but system design. In the Indo-Pacific, the tyranny of distance is compounded by institutional separation that blocks access to proximate, capable resources.

Strategic Implication: The U.S. defense sustainment system prioritizes control and resilience over efficiency, with statutory workload sharing between the OIB and CIB designed to preserve internal capacity for risk mitigation. This managed bi-lateral monopoly, however, leads to fragmented accountability, siloed resources, and disjointed coalition-level sustainment. Regulatory barriers, such as restricted IP access, ITAR, and NTIB limitations, further constrain private-sector and allied participation, reinforcing a low-contestability market. Porter's Five Forces highlights that, despite available infrastructure, the current structure stifles innovation and responsiveness. Without integrated OIB, CIB, and FAP collaboration, strategic sustainment risks will grow across global theaters.

D. Conduct

1) Strategic Game Board

Firms use the Strategic Game Board to assess competitive dynamics and decide where, how, and when to compete based on market forces. These choices inform their business strategy and positioning.

Strategic Game Board

OIB	Game Board	CIB (MRO Services)
- Focuses on core systems designed by statute or directive	Where to Compete	- Competes for newer platforms and systems with modular architectures
- Differentiates on mission assurance, surge capability, and proximity to warfighter requirements	How to Compete	- Firms differentiate on cost, innovation, and delivery speed
- Investments are driven by long-term budget cycles and warfighting requirements	When to Compete	- Timelines are more responsive to immediate RFPs and financial forecasting

Figure 5 - Strategic Game Board

Where to Compete: OIB organizations do not choose where to compete; they are directed by statute to provide “core” workload under 10 U.S.C. § 2464, mission-critical, high-complexity maintenance tasks retained for readiness and surge assurance. In contrast, the CIB pursues low-risk, high-volume MRO opportunities aligned with IP access and profit. FAPs, though technically capable, are rarely used due to classification limits, lack of authorities, and limited planning integration.⁴²

How to Compete: OIB providers are assured 50 percent of DoD MRO workload under 10 U.S.C. § 2466 and operate under cost-minimizing constraints, limiting incentives for innovation.

⁴² U.S. Code, Title 10, § 2464, “Core Logistics Capabilities;” Also see Colleen Smith, “*The 50-50 Rule Is Not Ensuring Readiness*,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025. Also see Elbert Mose, “*Leveraging Foreign Allies and Partners (FAP) for Forward MRO*,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

CIB firms differentiate through cost, speed, and technology, using modular models, advanced manufacturing, and digital tools. While some FAP providers offer competitive pricing, U.S. statutory and political barriers often preclude their selection.

When to Compete: OIB entities are statutorily required to maintain specific capabilities and cannot choose when to enter or exit MRO markets. CIB firms operate on commercial logic, entering or exiting based on profitability. FAPs follow national legal frameworks, with CIB-like flexibility but are constrained by U.S. policy in DoD-related work.

Strategic Implication: The MRO ecosystem is fragmented. OIB is shielded from competition; CIB is market and profit-driven; FAPs are restricted by U.S. statutes and policy. This segmentation limits DoD's ability to leverage competition or optimize performance across the full sustainment enterprise.

E. Performance

1) OIB Readiness Model

The OIB Readiness Model highlights five internal drivers of sustainment performance: Infrastructure, Human Capital, Finance, Material, and Governance, and reveals systemic constraints limiting readiness. While Porter's Five Forces addressed external pressures, this framework exposes internal barriers and missed opportunities for integrating commercial and allied sustainment capacity.

OIB Readiness Model

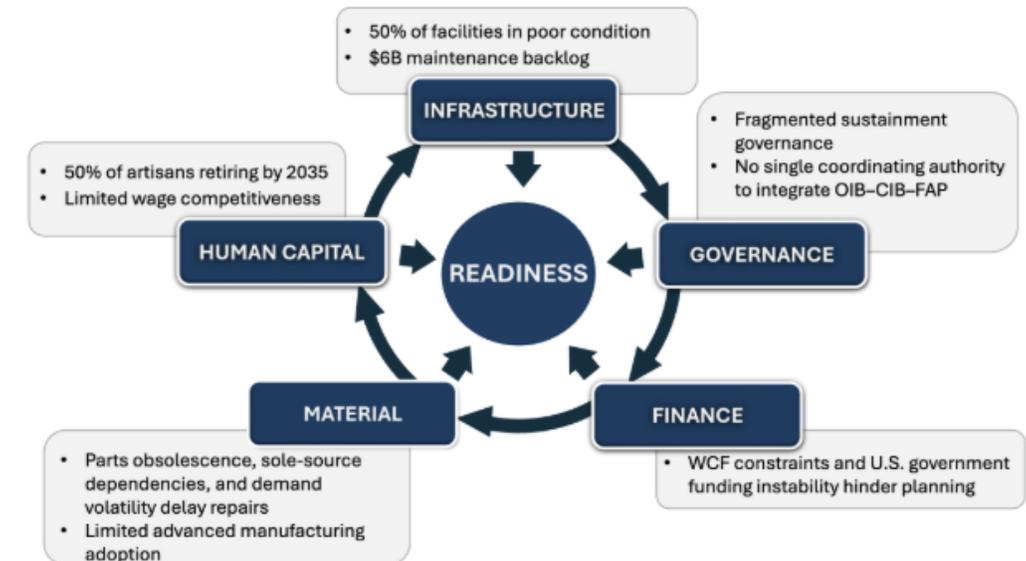


Figure 6 - OIB Readiness Model

Infrastructure: Most depots are decades old, with \$6B in deferred maintenance that restricts automation and surge adaptation. While CIB and FAP partners (e.g., ROK) often possess modern, compatible infrastructure, legal and contractual constraints, like NTIB boundaries and OEM lock-in, prevent integration, leaving global capacity fragmented and misaligned with theater needs.

Human Capital: Over half the artisan workforce will retire by 2035, and wage disparities drive talent to the private sector. Although CIB and FAP partners offer skilled labor, misaligned timelines, liability concerns, and lack of joint planning prevent mobilization during surges.

Finance: The WCF supports multiyear planning, but rigid budget rules and limited carryover restrict flexibility. CIB and FAP operate under separate financial frameworks, making it difficult to synchronize planning or co-invest in sustainment capacity.

Material: Repair delays persist due to obsolescence, single-source dependencies, and unpredictable demand. Advanced manufacturing helps, but access to technical data and IP remains restricted, limiting the inclusion of external innovation.

Governance: Sustainment governance is siloed. Services independently manage contracts, FAP contributions are excluded from planning, and no single authority coordinates OIB–CIB–FAP integration. The result is fragmented decision-making and reduced effectiveness.

Strategic Implication: OIB readiness shortfalls stem not only from internal limitations but from systemic exclusion of capable external partners. Without structural reform and integration with CIB and FAP, the U.S. cannot achieve resilient, scalable sustainment. Modernizing the OIB and enabling trusted external collaboration is essential for theater-wide readiness in future conflicts.

2) Production Function Model

Figure 7 depicts the production function model utilized to optimize efficiency in the OIB.

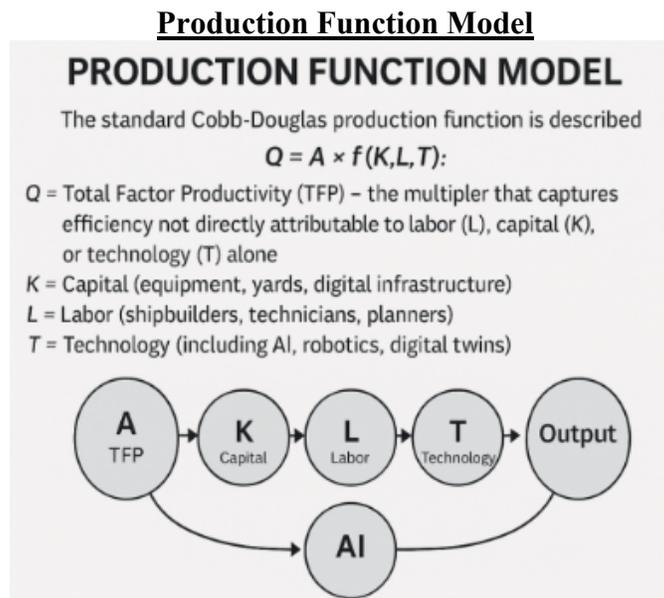


Figure 7 - Production Function Model

In this scenario, AI increases total factor productivity (A), optimizes capital utilization (K), enhances labor efficiency (L), and ultimately, AI is a dynamic feedback loop in the PFM model to predict insights and compound gains.

Production Function Analysis: The OIB operates under tight resource constraints. Even when funding or parts are available, bottlenecks in labor, outdated equipment, or misaligned schedules limit output. At McAlester Army Ammunition Plant, available capacity was underutilized due to inflexible systems and workforce challenges.⁴³

Strategic Implication: Depot performance suffers when any input is constrained. Technologies like advanced manufacturing, predictive analytics, and condition-based maintenance can shift the production curve outward by improving efficiency and repair speed. While pilot programs show promise, enterprise-wide implementation remains inconsistent.⁴⁴

3) Theory of Constraints

The Theory of Constraints (TOC) identifies the most critical bottleneck in a system and targets it for resolution to improve throughput.⁴⁵ The TOC identifies the most critical limiting factor that restricts system output and prioritizes that constraint for remediation, as demonstrated in Figure 8.

⁴³ Eisenhower School Field Study Notes, McAlester Army Ammunition Plant Visit, 2024

⁴⁴ U.S. Department of Defense, *Condition-Based Maintenance Plus (CBM+) Guidebook*, August 2024, <https://www.dau.edu/sites/default/files/2024-08/CBM%2B%20Guidebook%20August%202024%20-%20Stamped.pdf>. Also see, U.S. Marine Corps Logistics Command, “Depot Tackles Supply Chain Issues with Advanced Manufacturing,” November 3, 2023, <https://www.logcom.marines.mil/News/Article/3566744/depot-tackles-supply-chain-issues-with-advanced-manufacturing/>.

⁴⁵ Anthony Vincent Sabatina, *Navigating the Future: Leveraging Artificial Intelligence (AI) to Revolutionize Predictive Workload Planning in the Organic Industrial Base for U.S. Naval Shipbuilding & Maintenance, Repair & Overhaul (MRO)* (unpublished student research paper, Eisenhower School, National Defense University, April 19, 2025).

Theory of Constraints

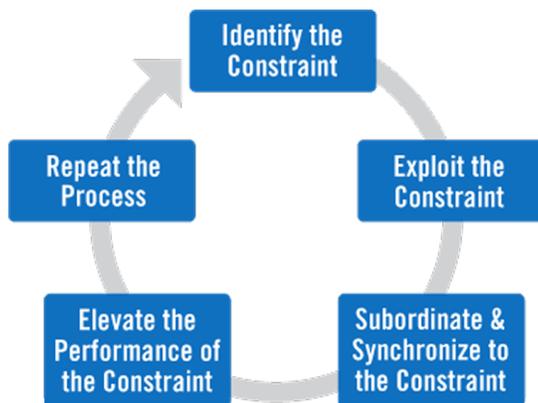


Figure 8 - Theory of Constraints

In the OIB, constraints appear across labor, infrastructure, supply chains, and governance, often compounding one another. Figure 9 depicts constraints directly tied to the U.S. OIB.

Applied Theory of Constraints

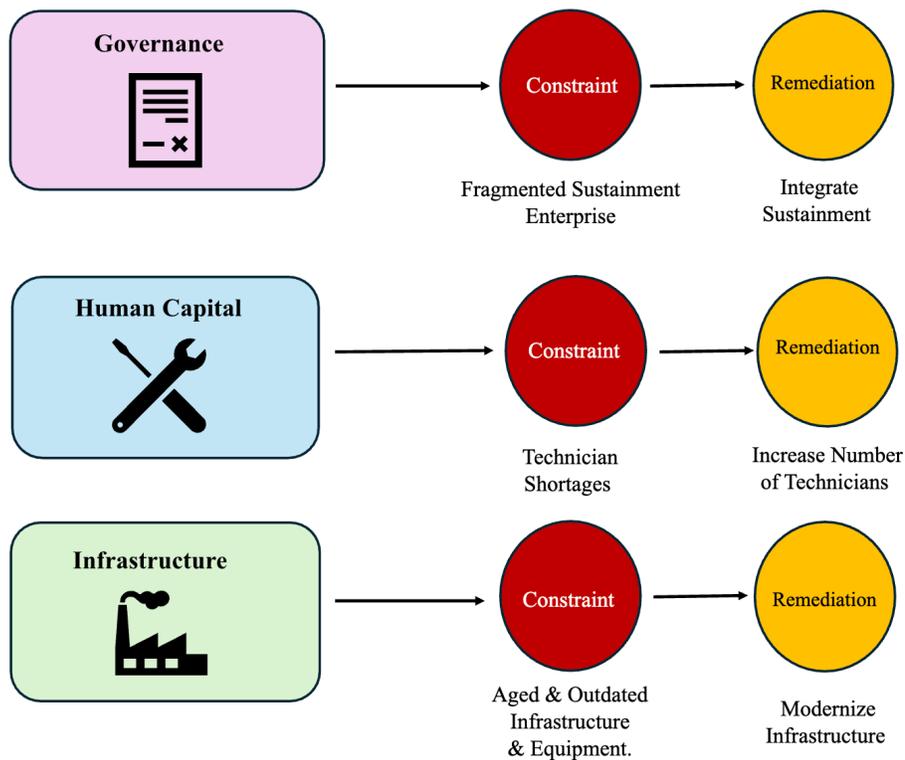


Figure 9 - Theory of Constraints Applied to the OIB

TOC Analysis: Labor is the most persistent constraint—over half of OIB artisans will retire by 2035, and hiring struggles persist. Even with parts and funding, lack of certified technicians stalls output. At McAlester Army Ammunition Plant, outdated tooling and low automation slowed repairs despite available space. Other bottlenecks include fragile supply chains (e.g., sole-source vendors, IP limits) and governance delays in contracting and execution.⁴⁶

Strategic Implication: TOC highlights the need for sequenced, targeted reforms. Addressing one constraint without fixing others yields limited impact. A TOC-driven investment strategy helps DoD focus on the reforms that most improve sustainment speed and readiness.

The preceding analysis demonstrates that the current sustainment enterprise is not merely under strain, it is structurally misaligned with the demands of future conflict. Fragmented governance, labor shortages, and outdated infrastructure have created interlocking constraints that diminish readiness and surge capacity. While isolated reforms have yielded tactical improvements, strategic transformation requires integrated, sequenced action. Applying the Theory of Constraints framework reveals that targeted investments, prioritized by impact on throughput and resilience, can deliver outsized gains. The following recommendations operationalize this insight. Organized into three interdependent focus areas, they offer a coordinated path to modernize the sustainment enterprise, enhance forward posture, and restore readiness at the speed of relevance.

⁴⁶ Nicole V. Bastian, “*Institutionalizing Marine Corps Organic Industrial Base Best Practices in Maintenance, Readiness, and Overhaul Across the U.S. Military Services*,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025; Also see Anthony Vincent Sabatina, *Navigating the Future: Leveraging Artificial Intelligence (AI) to Revolutionize Predictive Workload Planning in the Organic Industrial Base for U.S. Naval Shipbuilding & Maintenance, Repair & Overhaul (MRO)* (unpublished student research paper, Eisenhower School, National Defense University, April 19, 2025).

V. Recommendations

The following recommendations address critical shortfalls identified in the current sustainment enterprise and are organized into three focus areas: Integrated Sustainment, Human Capital, and Infrastructure Revitalization. Together, these initiatives aim to build a forward-capable, digitally enabled, and resilient maintenance and repair system that can meet the demands of a prolonged Indo-Pacific conflict. Each recommendation is designed to be actionable, resource-informed, and aligned with existing policy and strategic guidance.

A. Integrated Sustainment

1) Establish the Joint Program Executive Office for Integrated Sustainment

Despite ongoing modernization efforts, the Department of Defense still lacks a centralized authority to integrate the growing number of sustainment initiatives across the MRO enterprise. PSI such as RSF, GENUS, Joint Logistics Enterprise (JLEnt), Global Posture Synchronization Network (GPSN), and Joint Strategic Support Area (JSSA) each contribute valuable capabilities, but they are siloed, with limited interoperability, conflicting roadmaps, and inconsistent metrics.⁴⁷ Capstone research, Service feedback, and recent wargames, including Sustainment Wargame 2023 and Pacific Sentry, have all underscored this same vulnerability: without a unifying mechanism to govern joint sustainment architecture, the United States will struggle to compete, survive, and regenerate combat power under contested conditions.⁴⁸ The value of PSIs is most evident in the Indo-Pacific, where the tyranny of distance renders

⁴⁷ U.S. Department of Defense, *Joint Publication 4-0: Joint Logistics*, 18 October 2013, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp4_0.pdf; Modelling and Simulation Coordination Office, *Data Integration and Interoperability: Challenges and Opportunities* (Office of the Under Secretary of Defense for Research and Engineering, 2022); Defense Logistics Agency, *DLA Strategic Plan 2021–2026*, <https://www.dla.mil/Info/Strategic-Plan/>; U.S. Government Accountability Office, *Defense Logistics: Actions Needed to Improve Planning and Coordination of Contested Logistics*, GAO-23-106110, May 2023, <https://www.gao.gov/products/gao-23-106110>.

⁴⁸ Joint Staff J4 and OSD Sustainment, *Sustainment Wargame 2023 After Action Review*, Washington, D.C., 2023.

traditional CONUS-to-combatant sustainment impractical. Partner nations with modern MRO facilities like the Republic of Korea, Australia, Japan, and the United Kingdom offer scalable, trusted PSI nodes that reduce the logistical burden of trans-Pacific maintenance cycles.

Ultimately this institutional gap must be closed.

The Department should establish a Joint Program Executive Office for Integrated Sustainment (JPEO-IS) to serve as the central integrator, focusing on policy alignment, data interoperability, and partner integration (especially of NTIB partners, other FAP, PSI, and JLEnt efforts) but would not possess operational tasking authority or direct budget execution power.⁴⁹ JPEO-IS would be a coordinating entity focused on harmonizing policy, aligning data standards, and enabling partner integration across the MRO enterprise. This office would be responsible for coordinating contracting activities, aligning data standards, consolidating planning roadmaps, and synchronizing program timelines across the Services and Combatant Commands. This recommendation directly addresses the governance fragmentation and lack of enterprise-level visibility diagnosed in the OIB Readiness Model (Section IV.E.1) and further reinforced by the Strategic Game Board analysis (Section IV.D), which confirmed the MRO industry fragmentation due to different rules applying to different elements.

JPEO-IS could be initially staffed using existing billets from OSD (Sustainment), the Joint Staff J4, DLA, and Service program executive offices. A proposed Contested Logistics and Sustainment Integration Fund, managed through the appropriations process, could consolidate

⁴⁹ U.S. Department of Defense, *Joint Publication 4-0: Joint Logistics*, 18 October 2013, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp4_0.pdf; Modelling and Simulation Coordination Office, *Data Integration and Interoperability: Challenges and Opportunities* (Office of the Under Secretary of Defense for Research and Engineering, 2022); Defense Logistics Agency, *DLA Strategic Plan 2021–2026*, <https://www.dla.mil/Info/Strategic-Plan/>; U.S. Government Accountability Office, *Defense Logistics: Actions Needed to Improve Planning and Coordination of Contested Logistics*, GAO-23-106110, May 2023, <https://www.gao.gov/products/gao-23-106110>.

funding across PSI initiatives, additive manufacturing pilots, and forward sustainment programs.⁵⁰ Aligning this fund with Working Capital Funds, operations and maintenance accounts, and the Pacific Deterrence Initiative (PDI) would enable strategic tradeoffs, reduce redundancy, and support multiyear planning. Implementation should begin with an Initial Capabilities Document, informed by recent wargaming and logistics integration data, to justify a formal JCIDS pathway.⁵¹ In its first two years, JPEO-IS would harmonize governance and data standards across programs including RSF and GENUS. Over the following three years, it would integrate allied sustainment agreements, unify predictive analytics platforms, and scale interoperable data-sharing networks. These efforts would be anchored by an annual Sustainment Architecture Posture Review, published by OSD, tracking readiness metrics such as depot cycle time reductions, increased forward MRO throughput, and integration of partner sustainment.⁵²

JPEO-IS would enable a shift from fragmented, Service-centric sustainment models toward a globally integrated architecture tailored for large-scale competition. It would close governance gaps, unify data frameworks, and align strategic investment across the MRO enterprise. By overseeing the integration of advanced manufacturing, regional labor development, and forward MRO capabilities, JPEO-IS would establish a scalable foundation for sustainment innovation. It would also embed cybersecurity requirements from inception, including zero-trust architecture and Cybersecurity Maturity Model Certification (CMMC)⁵³ JPEO-IS can be implemented via directive from OSD (A&S), without new legislation. Its

⁵⁰ OSD Budget Justification Book, Sustainment Portfolio FY2025.

⁵¹ Sustainment Wargame 2023, Initial Capabilities Development Brief.

⁵² GENUS Concept Paper, OUSD(A&S), 2024. Also see Proposed Sustainment Architecture Metrics, OSD Integration Working Group, 2025.

⁵³ DoD Cybersecurity Maturity Model Certification Framework, v2.0.

structure and funding model are supported by precedent from existing entities such as JPEO-CBRND and the Joint Rapid Acquisition Cell.⁵⁴

2) Sustainment Tracking, Repair Integration, and Knowledge Exchange

In future high-intensity conflict scenarios, sustainment success will hinge on the ability to rapidly identify, source, and execute repairs across a globally distributed and often contested maintenance enterprise. To enable this, the DoD should establish the Sustainment Tracking, Repair Integration, and Knowledge Exchange (STRIKE) platform, a federated, AI-enabled data mesh that would provide authoritative, real-time visibility into repair capacity, parts availability, labor readiness, and tooling across OIB, CIB, and FAP nodes. STRIKE responds to the visibility and coordination gaps identified in Section II.A and Section IV.B.2, where siloed data architectures, lack of shared dashboards, and barriers to digital integration were shown to reduce repair velocity and underutilize available capacity.

STRIKE builds on the pilot concepts tested in the OSD Sustainment Maintenance and Repair (MR) Marketplace but scales them beyond transactional MRO sourcing into an enterprise-level sustainment intelligence network.⁵⁵ Unlike the MR Marketplace, STRIKE would integrate maintenance tools, Depot Source of Repair (DSOR) assignment metadata, additive manufacturing validation, and partner nation capacity under a unified, secure mesh architecture. It would connect existing systems such as Global Combat Support System Marine Corps (GCSS-MC) and the Air Force's Integrated Maintenance Data Systems (IMDS) protocols.⁵⁶

For example, in a forward theater like INDOPACOM, a maintenance request submitted by U.S. Army Pacific for an obsolescent engine component could instantly identify that a Navy

⁵⁴ U.S. Department of Defense, *Program Executive Office Structures in Joint Acquisition*, 2023.

⁵⁵ OSD Sustainment, *Maintenance and Repair (MR) Marketplace Pilot Summary*, 2023.

⁵⁶ DoD Chief Information Officer, *DoD Digital Engineering Strategy Implementation Plan*, 2023.

Fleet Readiness Center has the required tooling and part design file, while a DLA vendor in Singapore has the material stock for additive manufacturing.⁵⁷ By referencing Joint Additive Manufacturing Working Group (JAMWG)-approved validation libraries, STRIKE would flag the part as certified for field use, enabling expeditionary MRO at speed. This type of cross-Service, cross-sector repair is currently slowed by siloed platforms and the inflexible nature of DSOR assignments, which STRIKE could inform or augment through digital traceability.

The platform would use data mesh architecture, allowing each node, whether OIB depot, commercial vendor, or allied partner, to publish validated readiness data into the mesh without surrendering system control.⁵⁸ DLA has demonstrated this federated model with its supply chain visibility efforts, and STRIKE would extend the approach to MRO. Cybersecurity would be embedded from the outset, in compliance with CMMC 2.0 and NSA's Cybersecurity Collaboration Center (CCC) zero-trust protocols, ensuring resilience in contested networks.⁵⁹

The STRIKE platform is needed to provide real-time, decentralized visibility across the global MRO enterprise. By integrating data on repair routing, labor availability, and parts production, STRIKE would allow planners and sustainers to make dynamic, data-informed decisions that optimize forward maintenance operations. Without STRIKE, the DoD will remain reliant on fragmented, platform- or Service-specific systems that delay repair sourcing and inhibit predictive planning. Depot Source of Repair (DSOR) policies will continue to restrict rerouting of repairs, and additive manufacturing capacity will go underutilized due to lack of validation visibility.⁶⁰

⁵⁷ Eisenhower School, *INDOPACOM Sustainment Site Visit Notes*, Field Research, AY2024–2025.

⁵⁸ Defense Logistics Agency, *Data Mesh Integration Pilot Lessons Learned*, 2023.

⁵⁹ National Security Agency, *Cybersecurity Collaboration Center: Zero Trust and Mission Data Protection*, 2023.

⁶⁰ Sustainment Wargame 2023, Joint Staff J4 Findings on DSOR Constraints and Additive Manufacturing Bottlenecks.

STRIKE can be resourced through Defense Working Capital Funds and built on cloud-native platforms already used by DLA and commercial logistics vendors, aligning with the DoD Data Strategy and AI modernization priorities.⁶¹ Implementation should begin with a pilot across selected OIB depots, a high-throughput CIB vendor, and a trusted allied sustainment node, with JAMWG serving as the certifying body for additive manufacturing files and OSD (A&S) overseeing DSOR data mapping.⁶² The second phase would expand STRIKE to include mobile MRO units, partner networks, and theater sustainment nodes, all secured under zero-trust cybersecurity protocols in accordance with CMMC and CCC standards.

STRIKE is critical to contested logistics, giving commanders immediate insight into global sustainment capacity and enabling faster, more resilient operations across the NTIB.⁶³ It transforms sustainment from a back-office function into a warfighting advantage and builds directly on existing initiatives such as the MR Marketplace. Because it leverages current authorities and proven pilots, STRIKE is politically feasible and executable without new legislation. It aligns with broader Congressional and DoD mandates for improved supply chain transparency, digital integration, and sustainment agility.

⁶¹ Department of Defense, *Data Strategy Implementation Plan*, 2023; Defense Logistics Agency, *Cloud-Native Logistics Architecture Brief*, 2024.

⁶² Joint Additive Manufacturing Working Group (JAMWG), *Certification and Validation Framework for Expeditionary Sustainment*, 2024.

⁶³ STRIKE enhances coordination within the National Technology and Industrial Base (NTIB) by enabling real-time visibility of sustainment capacity across allied and industrial partners. Using secure, federated data access and APIs, it allows seamless information sharing without requiring full system integration. This empowers commanders to match needs with global repair capabilities swiftly and securely, strengthening logistics resilience in contested environments. NTIB integration may need to be implemented in a later phase of STRIKE based on security assurances.

3) Integrated Sustainment Governance and NTIB Activation

Despite the strategic importance of the NTIB as a forward sustainment asset, current DoD practices indicate it is not fully prioritized.⁶⁴ The Defense Innovation Board highlights a significant gap between the Department's rhetoric and action regarding co-development, co-production, and co-sustainment with allies and partners, particularly beyond traditional alliances like the Five Eyes and NATO.⁶⁵ This gap underscores the need for a unified governance structure to align policies, standards, and integration efforts across the OIB, CIB, and FAP. The DoD should prioritize the operationalization of the NTIB as a forward sustainment asset by establishing a unified coordinating governance structure, not to command or control, but to align policy, standards, and partner integration across the OIB, CIB, and FAP. Fragmented responsibilities across OSD components and Service logistics directorates continue to cause duplicative efforts, delayed decisions, and underutilization of trusted allied capacity. A coordinating entity is needed to synchronize sustainment initiatives like RSF and GENUS, harmonize data frameworks, and improve visibility and collaboration with allied partners. This construct would not assume tasking authority or control over budgets, but would serve to drive enterprise-wide coherence, enhance digital integration, and promote transparency and agility across global MRO operations.

The Porter's Five Forces analysis (Section IV.C.2) highlighted that trusted FAPs remain structurally excluded from sustainment operations due to NTIB boundaries, ITAR restrictions, and lack of pre-negotiated tasking authorities, gaps that this recommendation seeks to resolve.

⁶⁴ Defense Innovation Board, "Optimizing Innovation Cooperation with Allies and Partners," May 2025, <https://innovation.defense.gov/Portals/63/20240710%20DIB%20Allies%20and%20Partners%20Study%20FINAL.pdf>.

⁶⁵ Ibid. Also, Five Eyes is a nickname that evolved from the security label used on classified documents: AUS/CAN/NZ/UK/US EYES ONLY.

For instance, Japan and the Republic of Korea, two significant allies in the Indo-Pacific are not part of NTIB. Realizing the full potential of the NTIB also requires two changes: expanding the NTIB to include Japan and the Republic of Korea, and legal and policy reforms to enable timely access to commercial and partner sustainment capacity.

The DoD should seek to expand the NTIB to include Japan and the Republic of Korea due to their strategic geographic positioning, advanced defense industrial capabilities, and status as trusted U.S. allies. Their inclusion would enhance forward sustainment capacity in the Indo-Pacific, improve resilience against adversarial threats like China, and align with existing U.S. legislation encouraging NTIB expansion to close, capable partners.

The DoD should authorities to negotiate data rights buyouts and apply targeted march-in rights. The buy-out rights could be modeled after Bayh-Dole, to ensure critical MRO needs can be met when OEMs are unable or unwilling to deliver.⁶⁶ DoD could then share MRO-relevant technical data with NTIB allies and partners, unlocking their capacity and enabling them to maintain U.S. systems during crisis operations under pre-approved agreements. Pilot agreements already underway with key partners can serve as the basis for interoperable MRO nodes positioned closer to theater.⁶⁷ Targeted reforms to ITAR and DSOR policy would further accelerate integration and allow trusted partners to take on greater sustainment responsibilities without bureaucratic delay.

⁶⁶ U.S. Department of Defense, *Intellectual Property and Data Rights in Defense Sustainment*, 2024. Also see, Brad S. Parker, *Breaking the Lock: Strengthening Defense Sustainment Through Improved Access to Intellectual Property* (Research paper, The Dwight D. Eisenhower School for National Security and Resource Strategy, National Defense University, April 20, 2025). “March-in” rights would enable DOD to distribute an OEM’s technical data or IP to third parties for MRO when DOD can show that the OEM has unreasonably refused to license or sell IP for a legacy system, resulting in vendor-lock that raises sustainment costs and harms readiness. OEMs would receive reasonable compensation and retain rights to enforce IP protections against unauthorized use.

⁶⁷ OSD(A&S), *NTIB Partner Sustainment Pilot Agreements Brief*, 2024.

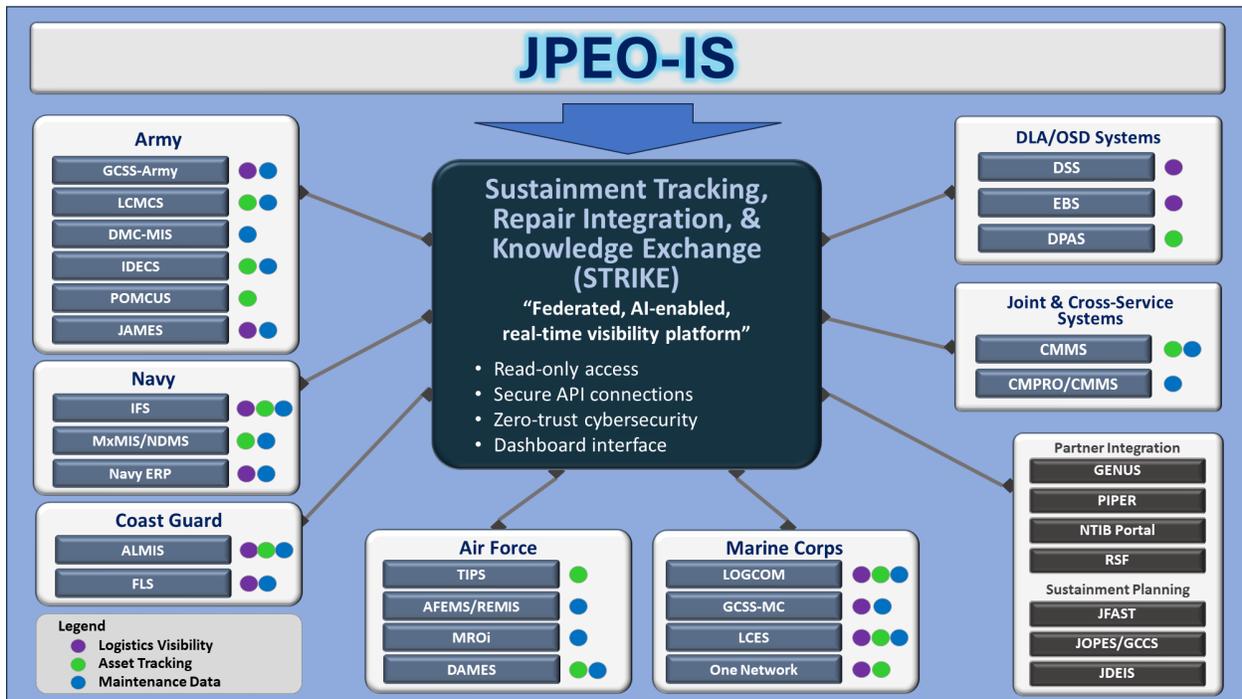


Figure 10 - Integrated Sustainment Model (JPEO-IS serves as a policy and integration coordinator—not a command or funding authority.)

A unified governance construct, built on existing authorities, can be implemented without new legislation. Staffing and resources can be consolidated from existing billets across OSD and Service sustainment portfolios, avoiding unnecessary growth in bureaucracy.⁶⁸ The effort aligns with Executive Orders that emphasize innovation in acquisition, development of skilled labor, foreign defense cooperation, revitalization of the maritime sector, and reduction of regulatory barriers and current Congressional priorities to enhance Indo-Pacific posture, improve NTIB utilization, and modernize the sustainment enterprise.⁶⁹ When integrated with digital platforms such as STRIKE, this coordinating governance structure, centered on synchronization and interoperability rather than command authority, would enable. More importantly, it would shift the Department from reactive logistics planning to a proactive, partner-enabled sustainment

⁶⁸ Defense Budget Overview, FY2025, Sustainment Portfolios.

⁶⁹ Executive Orders 14265 through 14278, White House, April 2025. Also see Appendix C.

model designed for the realities of future conflict. Ultimately, this concept is envisioned as depicted in Figure 10.

B. Workforce Modernization and Strategic Talent Initiatives

1) Launch the Civil Reserve Sustainment Readiness Program (CRSRP)

To address one of the most acute constraints on the sustainment enterprise, skilled labor, the DoD should establish the Civil Reserve Sustainment Readiness Program (CRSRP), modeled after the Civil Reserve Air Fleet (CRAF).⁷⁰ In a future conflict, the ability of U.S. depots and commercial partners to sustain global operations will hinge on access to a flexible, scalable labor force and MRO infrastructure that can be rapidly mobilized. CRSRP would provide pre-negotiated standby contracts with OEMs, third-party logistics providers, and commercial entities possessing relevant MRO capabilities. Participating firms would receive incentives during peacetime, such as facility modernization subsidies, workforce training grants, and inclusion in government sustainment planning, in exchange for pre-committing a portion of their labor, equipment, and infrastructure capacity for national emergencies. Capacity pledges would be tracked in a real-time digital registry, enabling tasking visibility and activation readiness.⁷¹

The Civil Reserve Sustainment Readiness Program (CRSRP) should be structured as a cost-contained, scalable model using existing authorities under the Defense Production Act, similar to the wartime surge mechanisms used for the Civil Reserve Air Fleet. Participating facilities would be eligible for federal matching funds to modernize infrastructure and enhance

⁷⁰ Yool Kim and George Nacouzi, “A Framework for Building a Civil Reserve Space Program: Applicability of U.S. Transportation Command’s Commercial Partnership Models” (RAND Corporation, November 29, 2023), <https://www.rand.org/pubs/perspectives/PEA980-1.html>.

The Civil Reserve Air Fleet (CRAF) is a voluntary program involving the Department of Defense (DOD), the Department of Transportation (DOT), and the U.S. civil air carrier industry. It provides the DOD with additional airlift capacity during national emergencies or crises, supplementing the military’s own airlift capabilities.

⁷¹ Alexis R. Johnson, “*Establishing a Civil Reserve Sustainment Readiness Program (CRSRP) – Strengthening Maintenance, Repair, and Overhaul (MRO) Capabilities for National Security*,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025

labor readiness, with incentives tied to labor availability thresholds and regular readiness exercises. Additional cost-sharing models could include state-level workforce development grants or federally backed loan guarantees to expand private-sector involvement.⁷²

Implementation should begin with a pilot program focused on key industries and locations near major depots, including the Air Logistics Center in Oklahoma City, Navy Supply Systems Command and DLA Distribution Command in Mechanicsburg, and Marine Corps Logistics Base Barstow. Initial participants could be onboarded through the Office of the Secretary of Defense for Industrial Base Policy, working alongside DLA and the Services. The legal and operational framework should mirror CRAF authorities, incorporating labor activation clauses, indemnity protections, and standard readiness benchmarks. A central CRSRP Coordination Office within OSD Acquisition and Sustainment would track labor availability, conduct enterprise planning, and provide visibility on surge labor capacity across the sustainment enterprise.⁷³

CRSRP directly addresses a foundational challenge in military readiness: the availability of skilled labor. Even with modernized systems and digital sustainment platforms, readiness cannot be achieved without qualified personnel to perform repairs, manufacturing, and logistics functions under pressure. CRSRP provides a solution that preserves surge-ready labor, ensures industrial accessibility during national emergencies, and institutionalizes private-sector sustainment partnerships.⁷⁴ Its political feasibility is high, requiring only an amendment to the Defense Production Act. It builds on proven surge models, aligns with market incentives, and

⁷² Department of Defense, *Title III of the Defense Production Act Handbook*, 2023. Also see Alexis R. Johnson, “Establishing a Civil Reserve Sustainment Readiness Program (CRSRP) – Strengthening Maintenance, Repair, and Overhaul (MRO) Capabilities for National Security,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

⁷³ Office of Industrial Base Policy, *CRAF and Civil-Military Surge Governance Models*, 2022.

⁷⁴ OIB IS Site Visits, Depot Labor Constraints and Mitigation Proposals, 2024–2025.

has been recognized in defense policy circles and Eisenhower School research as a practical mechanism to prepare the sustainment workforce for future conflict.

2) Launch the National Call to Build

On April 23, 2025, President Trump signed an Executive Order with a national call to build the trades.⁷⁵ Nesting with that order, the DoD should consider launching a National Call to Build. This would be a federally led, regionally executed initiative to regenerate the sustainment workforce through targeted technical education, tuition-free trade pipelines, and public-private workforce consortia. These Defense Regional Workforce Consortia would be anchored in key sustainment hubs and composed of representatives from DoD, CIB employers, technical schools, community colleges, state workforce agencies, and local economic development offices. CIB participants would shape curricula, advise on emerging sustainment technologies, and help define hiring needs by skill type, ensuring alignment between training pipelines and depot or contractor demand.⁷⁶ The consortia would jointly coordinate funding, facilitate job placement, and integrate workforce development into broader surge planning efforts.⁷⁷ This model builds on successful regional initiatives such as the Institute for Advanced Learning and Research in Virginia and the Kansas Excel in Career Technical Education program, demonstrating how local partnerships can generate mission-aligned, scalable labor pipelines.⁷⁸

The National Call to Build is a targeted initiative to reverse the long-term decline in skilled technical labor by establishing persistent, locally anchored, and inclusive education-to-

⁷⁵ "Preparing Americans for High-Paying Skilled Trade Jobs of the Future," April 23, 2025, <https://www.whitehouse.gov/presidential-actions/2025/04/preparing-americans-for-high-paying-skilled-trade-jobs-of-the-future/>.

⁷⁶ Justin C. Meihaus, *Forging the Future Force: Rebuilding the U.S. Organic Industrial Base Workforce for the 21st Century Readiness*, Eisenhower School, April 2025.

⁷⁷ Ibid.

⁷⁸ Ibid.

employment pipelines near key OIB and CIB facilities. This approach addresses a critical readiness gap. Without new sources of technical labor, maintenance and repair timelines will lengthen, depot capacity will stagnate, and both public and private sustainment providers will be forced to delay or defer essential repairs.⁷⁹ The DoD risks losing control of its sustainment tempo not due to a lack of materiel or funding, but due to a shrinking supply of trained artisans capable of executing high-tempo operations.

This initiative would be funded through a new interagency grant program co-managed by the DoD and Department of Labor. Funding could be drawn from recently rescinded or consolidated federal programs, appropriated through the defense budget process, and matched by state-level contributions.⁸⁰ Existing statutory authorities under the National Apprenticeship Act and Workforce Innovation and Opportunity Act already enable this kind of federal-state partnership structure. To mitigate execution risk, the Office of Local Defense Community Cooperation's Defense Manufacturing Community Support Program should be fully funded and expanded, with award criteria tied to platform-specific sustainment needs, regional depot clusters, and repair surge capacity.⁸¹ Priority would go to proposals that integrate high school-to-career pipelines, industry co-investment, and support for underrepresented populations.

If implemented, the National Call to Build would restore the nation's capacity to maintain and regenerate readiness at scale while also addressing social equity goals. By offering tuition-free, defense-aligned trade pathways to underserved communities, veterans, and military families, this initiative not only strengthens the sustainment enterprise but also revitalizes domestic opportunity. It requires no new legislation and is aligned with bipartisan support for

⁷⁹ Sustainment Wargame 2023, Joint Staff J4 Summary.

⁸⁰ U.S. Department of Labor, *Workforce Innovation and Opportunity Act Implementation Guidelines*, 2023.

⁸¹ U.S. Department of Defense, *Defense Manufacturing Community Support Program Overview*, 2024.

industrial revitalization and workforce development. With existing authorities and proven pilot models in place, the political and operational feasibility of this initiative is high.⁸²

3) Retention as a Readiness Imperative

Rebuilding the defense sustainment workforce is essential, but retaining skilled artisans and technicians is decisive. The Department of Defense cannot afford to continue losing experienced personnel to the private sector due to pay gaps, relocation burdens, and substandard work environments. Retention failures in the OIB directly translate to longer MRO cycle times, reduced forward repair capacity, increased dependence on the CIB, and diminished readiness.⁸³ Unless retention is treated as a core readiness enabler, the organic and commercial sustainment workforce will continue to erode, undermining even the best-laid modernization efforts.

Retention policy must be redefined through a dual lens: compensation and culture. On the compensation front, DoD should establish location-based housing stipends and targeted pay raises for hard-to-fill roles such as welders, avionics technicians, and machinists—especially in rural or high-cost depot locations.⁸⁴ Legislative authority already exists under locality pay structures and special pay bands; what is needed is sustained advocacy and inter-Service consistency.⁸⁵ A Defense Workforce Modernization Board, nested within OSD (Personnel and Readiness), should coordinate Service-wide compensation frameworks, streamline onboarding timelines, and publish annual retention metrics. Portability of certifications across Services must also be codified so that skilled artisans can transfer without bureaucratic reset.

⁸² Nicole Bastian, *Disinterest in Military Service and Trade Skills is a National Security Vulnerability*, Eisenhower School, December 2024. Also see Appendix J for further explanation about the National Call to Build.

⁸³ Eisenhower School, *Capstone Event: OIB Field Interview Summary on Labor Attrition Trends*, Academic Year 2025.

⁸⁴ Scotty F. Boler, “*Forging the Defense Organic Industrial Base (OIB) Workforce of the Future*,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025

⁸⁵ Office of Personnel Management, *Special Pay and Locality Authority Guidelines*, 2023.

On the culture side, facilities modernization and public service identity play vital roles. Research and field visits reveal that outdated, poorly maintained maintenance spaces contribute to morale loss and attrition.⁸⁶ Investing in clean, modern, well-lit workplaces that reflect the importance of the mission is not cosmetic, it is strategic. Likewise, emphasizing mission alignment, team cohesion, and national service ethos resonates with post-service veterans and mission-driven civilians alike. These are populations uniquely predisposed to sustainment careers, if properly engaged.

Retaining and empowering skilled sustainment personnel is essential to preserving continuity, minimizing retraining costs, and maintaining operational readiness across the defense sustainment enterprise. Losing experienced artisans due to inadequate compensation, poor work environments, or lack of career progression reduces throughput, increases reliance on contractors, and weakens the resilience of the Organic Industrial Base during crisis surges.⁸⁷ Many of the necessary tools to address these issues, such as special pay bands, housing allowances, and relocation assistance, already exist in personnel accounts but remain underutilized. A targeted retention incentive pilot could be tied to performance and location-specific cost-of-living adjustments to better support skilled workers in high-need or high-cost areas.⁸⁸

To institutionalize retention as a strategic readiness function, the Department of Defense should establish a Defense Workforce Modernization Board to standardize policy across Services, issue Service-neutral certifications, and embed retention metrics into readiness

⁸⁶Alexis R. Johnson, “*Establishing a Civil Reserve Sustainment Readiness Program (CRSRP) – Strengthening Maintenance, Repair, and Overhaul (MRO) Capabilities for National Security*,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025

⁸⁷ Sustainment Wargame 2023, Joint Staff J4 Summary.

⁸⁸ U.S. Department of Defense, *Military Compensation and Benefits Manual*, 2023.

assessments.⁸⁹ Facilities modernization should be linked to both OIB recapitalization and labor strategy, considering retains the skilled people needed to turn platforms and tools into real combat readiness.⁹⁰

C. Strengthening Infrastructure Recapitalization and Resilience for the Indo-Pacific

As discussed in Sections II.A and II.D, the sustainment enterprise is fundamentally constrained by aging infrastructure, geographic misalignment, and insufficient forward capacity in the Indo-Pacific. More than 70 percent of OIB facilities are over 50 years old, with a deferred maintenance backlog exceeding \$6 billion.⁹¹ This legacy infrastructure, much of it centralized in CONUS, is poorly suited to the demands of distributed logistics under threat and remains increasingly vulnerable to both kinetic and cyberattack.⁹² Addressing this challenge will require more than isolated facility upgrades; it demands a deliberate shift in how the Department of Defense conceptualizes, funds, and aligns infrastructure to operational requirements.⁹³

1) Establish a DoD Sustainment Infrastructure Realignment Authority

To better align sustainment infrastructure with operational requirements, the Department of Defense should establish a centralized authority empowered to reprogram infrastructure investments across the Services. Modeled on the Air Force’s internal ability to shift MILCON funding across Major Commands, a Sustainment Infrastructure Realignment Authority (SIRA), placed under OSD (Sustainment) or the Joint Staff, would have the capacity to reallocate up to 20 percent of programmed MILCON annually toward contested logistics priorities.⁹⁴ This would

⁸⁹ Nicole Bastian, *Disinterest in Military Service and Trade Skills is a National Security Vulnerability*, Eisenhower School, December 2024.

⁹⁰ *Ibid.*

⁹¹ U.S. Government Accountability Office, *Depot Infrastructure Report*, 2023.

⁹² Department of Defense, *Financial Management Regulation (FMR)*, Vol. 3, Chap. 17, 2025.

⁹³ Nicole V. Bastian, “Institutionalizing Marine Corps Organic Industrial Base Best Practices in Maintenance, Readiness, and Overhaul Across the U.S. Military Services,” unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

⁹⁴ Department of Defense, *FMR*, Vol. 2B, Chap. 8, 2025.

allow the Department to move funds away from lower-impact domestic projects and into readiness-critical infrastructure based on Indo-Pacific wargaming insights, platform surge dependencies, and chokepoint vulnerabilities.⁹⁵

The authority should also enable redirection of O&M and MILCON dollars toward high-impact recapitalization efforts without waiting for new starts or special congressional authorizations.⁹⁶ The OIB Readiness Model and Theory of Constraints (Section IV.E.1 and IV.E.3) both identify aging infrastructure and inflexible capital allocation as persistent bottlenecks that limit forward sustainment throughput and readiness during surge.

2) Expand Bilateral Sustainment Agreements with Indo-Pacific Allies

Given the forward posture of U.S. forces in the Indo-Pacific and the cost-sharing precedents already established under Host Nation Support agreements, the Department should expand existing bilateral frameworks to incorporate sustainment infrastructure. As detailed in Section II.D, countries like Japan, South Korea, and Australia offer both geographic proximity and proven technical capacity to support forward repair. Rather than rely solely on U.S. logistics nodes, new agreements should establish dual-use sustainment facilities, such as hardened depots, port repair yards, and warehouse complexes, that can be co-funded, co-operated, and rapidly mobilized. Joint sustainment detachments staffed by U.S. and allied technicians would increase responsiveness, reduce lift burdens, and embed interoperability at the tactical level.⁹⁷ This recommendation builds directly on Section II.D, which outlines how allied sustainment capabilities, particularly in the Republic of Korea, are technically viable but underutilized due to legal, classification, and governance barriers.

⁹⁵ Michael V. Gallucci, *The OIB of the Future at the Depot Level*, Industry Study Paper, The Dwight D. Eisenhower School for National Security and Resource Strategy, National Defense University, April 17, 2025.

⁹⁶ OIB IS Site Visit to Air Force Sustainment Center, Tinker Air Force Base, OK. Academic Year 2025.

⁹⁷ Ibid.

3) Transform the Pacific Deterrence Initiative into a Logistics Capital Account

To ensure stable and scalable funding for forward sustainment infrastructure, Congress should authorize a Contested Logistics Capital Fund as a dedicated subaccount within the PDI.⁹⁸ This fund should provide at least \$1 billion in annual multi-year appropriations for modular sustainment projects, depot recapitalization, and prepositioned logistics nodes.⁹⁹ Multi-year authority is critical to enable forward construction timelines and strategic positioning, unconstrained by the limitations of one-year budget cycles. Infrastructure investments should be guided by Indo-Pacific campaign design and focused on enduring nodes such as Guam, Japan, the Northern Marianas, and Australia, locations already identified as essential in Service and Combatant Command planning.¹⁰⁰ This initiative is grounded in the funding limitations noted in Section IV.E.1 (Finance), where WCF constraints and budget volatility were shown to undermine long-term infrastructure planning and execution.

4) Deploy Modular and Mobile Sustainment Detachments

Expeditionary logistics concepts such as Expeditionary Advanced Base Operations (EABO) and Agile Combat Employment (ACE) cannot be executed without flexible sustainment elements capable of operating under threat. Observations during the Eisenhower School's 2025 visit to Tinker Air Force Base affirmed the need for modular, self-contained repair units that can be rapidly deployed and digitally integrated.¹⁰¹ These detachments, modeled after the Marine Corps Advanced Manufacturing Detachment and Air Force FALCON teams, should be equipped with additive manufacturing capability, hardened communications, mobile power, and depot-grade tooling. Positioned at adaptive basing locations and digitally connected through STRIKE,

⁹⁸ U.S. Department of Defense, *FY2025 Pacific Deterrence Initiative Budget Justification*.

⁹⁹ *Ibid.*

¹⁰⁰ Department of Defense, *FMR*, Vol. 2B, Chap. 8, 2025.

¹⁰¹ OIB IS Site Visit to Air Force Sustainment Center, Tinker Air Force Base, OK.

these units would enable logistics under attack, reduce reconstitution timelines, and ensure sustainment continuity in a denied environment.¹⁰²

Infrastructure modernization is not a peripheral concern, it is the physical backbone of contested logistics. While earlier sections of this report detail the legacy shortfalls and operational gaps, this section outlines a path forward. By realigning funding, expanding allied integration, securing long-term appropriations, and deploying modular capabilities, the Department can build a forward-aligned, resilient infrastructure network capable of sustaining combat power throughout the Indo-Pacific theater. Section IV.E.1 (Infrastructure) and Section II.D collectively demonstrate that existing depot configurations are not designed for forward, survivable, or adaptive sustainment, validating the need for modular MRO detachments.

VI. Conclusion

The United States sustainment enterprise is not ready for the demands of a high-intensity, prolonged conflict in the Indo-Pacific. The current architecture, which is geographically centralized, digitally fragmented, labor-constrained, and governed by siloed authorities, cannot deliver maintenance and repair at the scale, speed, or resilience modern warfighting requires. This shortfall is not simply a logistics issue; it is a strategic vulnerability. Without immediate reform, the United States risks ceding operational tempo and combat power before the first shot is fired.

This report offers a blueprint for transformation. A Joint Program Executive Office for Integrated Sustainment (JPEO-IS) would provide the governance backbone needed to unify acquisition, planning, and allied integration. The STRIKE platform would enable real-time

¹⁰² Ibid.

sustainment visibility across the global repair network. A National Call to Build and the Civil Reserve Sustainment Readiness Program (CRSRP) would regenerate the defense industrial workforce, while retention reforms would secure critical experience before it is lost. Infrastructure recapitalization, anchored by forward-deployed modular MRO detachments and enabled through a realignment authority and long-term capital funding, would reorient sustainment toward contested Indo-Pacific operations. These recommendations are not isolated fixes, but mutually reinforcing elements of a strategic enterprise redesign.

Readiness is not declared; it is built. To prevail in future conflict, the Department of Defense must act with urgency to shift sustainment from a reactive, fragmented support function into a forward-postured, agile warfighting advantage. Delay will compound risk. Fragmentation will invite failure. But bold, coordinated reform, grounded in analysis and aligned with operational needs, can ensure the sustainment enterprise meets the moment. The window to act is narrow. The requirement is clear. The time is now.

Administrative Note

Additional detail, including AI in the OIB discussion, regulatory references, research abstracts, wargame data, resourcing analysis, and expanded discussion on RSF and recommendations, is provided in the appendices.

VII. Bibliography

Bastian, Nicole V. Disinterest in Military Service and Trade Skills is a National Security Vulnerability. Eisenhower School, December 2024.

Bastian, Nicole V. Institutionalizing Marine Corps Organic Industrial Base Best Practices in Maintenance, Readiness, and Overhaul Across the U.S. Military Services. Unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

CSIS. China's Defense-Industrial Strategies and Dual-Use Infrastructure. 2023.

Defense Acquisition University. Public-Private Partnering (PPP) for Product Support Guidebook. January 12, 2021.

<https://www.dau.edu/sites/default/files/Migrated/ToolAttachments/Public-Private-Partnering-%28PPP%29-for-Product-Support-Guidebook.pdf>.

Defense Innovation Board. Optimizing Innovation Cooperation with Allies and Partners. May 2025.

Department of Defense. 2022 National Defense Strategy.

Department of Defense. Condition-Based Maintenance Plus (CBM+) Guidebook. August 2024.

Department of Defense. Data Strategy Implementation Plan. 2023.

Department of Defense. Defense Manufacturing Community Support Program Overview. 2024.

Department of Defense. FMR, Vol. 2B, Chap. 8. 2025.

Department of Defense. FMR, Vol. 3, Chap. 17. 2025.

Department of Defense. FY2025 Pacific Deterrence Initiative Budget Justification.

Department of Defense. Intellectual Property and Data Rights in Defense Sustainment. 2024.

Department of Defense. Joint Concept for Contested Logistics. February 2023.

Department of Defense. Joint Publication 4-0: Joint Logistics. 18 October 2013.

Department of Defense. Message to the Force. January 2025.

Department of Defense. Program Executive Office Structures in Joint Acquisition. 2023.

Department of Defense. Regional Sustainment Framework (RSF): Fact Sheet. May 15, 2024.

Department of Defense. Title III of the Defense Production Act Handbook. 2023.

Department of State. International Traffic in Arms Regulations (ITAR), Title 22 CFR § 120–130. 2025.

Executive Orders 14265 through 14278. White House. April 2025.

Federal Acquisition Regulation. FAR Part 40. May 1, 2024.
<https://www.federalregister.gov/documents/2024/04/01/2024-06411/federal-acquisition-regulation-establishing-federal-acquisition-regulation-part-40>.

Gallucci, Michael V. The OIB of the Future at the Depot Level. Industry Study Paper, Eisenhower School for National Security and Resource Strategy, National Defense University, April 17, 2025.

GAO. Defense Logistics: Actions Needed to Improve Planning and Coordination of Contested Logistics. GAO-23-106110, May 2023.

GAO. Depot Infrastructure Report. 2023.

GAO. Industrial Mobilization Preparedness: Challenges and Gaps in Wartime Sustainment.

GAO-23-104118.

Ha, Jungmi. The Case for Korea: Operationalizing the Regional Sustainment Framework in the Indo-Pacific. Research paper, National Defense University, April 20, 2025.

Hubbard, Glenn, and Anthony Patrick O'Brien. Economics. 8th ed. United States: Pearson, 2021.

Johnson, Alexis R. Establishing a Civil Reserve Sustainment Readiness Program (CRSRP) – Strengthening Maintenance, Repair, and Overhaul (MRO) Capabilities for National Security. Unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

Joint Chiefs of Staff. Joint Publication 4-0: Joint Logistics. February 4, 2019.
https://irp.fas.org/doddir/dod/jp4_0.pdf.

Kalgo, Sani. Leveraging Nigeria as a Strategic Partner for OCONUS MRO Service AFRICOM: Enhancing Regional Sustainment Readiness. Unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

Kim, Yool, and George Nacouzi. A Framework for Building a Civil Reserve Space Program: Applicability of U.S. Transportation Command's Commercial Partnership Models. RAND Corporation, November 29, 2023.

Legal Information Institute. 10 U.S. Code § 2208 – Working-Capital Funds. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2208>.

Legal Information Institute. 10 U.S. Code § 2460 – Definition of Depot-Level Maintenance and Repair. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2460>.

Legal Information Institute. 10 U.S. Code § 2464 – Core Logistics Capabilities. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2464>.

Legal Information Institute. 10 U.S. Code § 2466 – Limitations on the Performance of Depot-Level Maintenance of Materiel. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2466>.

Legal Information Institute. 10 U.S. Code § 2469 – Requirement of Competition. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2469>.

Legal Information Institute. 10 U.S. Code § 2470 – Authority to Compete. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2470>.

Legal Information Institute. 10 U.S. Code § 2474 – Centers of Industrial and Technical Excellence: Public-Private Partnerships. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2474>.

Legal Information Institute. 10 U.S. Code § 2476 – Minimum Capital Investment for Certain Depots. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/2476>.

Legal Information Institute. 10 U.S. Code § 4251 – Milestone A Approval Requirements. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/4251>.

Legal Information Institute. 10 U.S. Code § 4252 – Milestone B Approval Requirements. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/4252>.

Legal Information Institute. 10 U.S. Code § 8679 – Construction of Vessels in Foreign Shipyards: Prohibition. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/8679>.

Legal Information Institute. 10 U.S. Code § 939 – Art. 139. Redress of Injuries to Property. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/10/939>.

Legal Information Institute. 14 U.S. Code § 939 – Accounting for Industrial Work. Accessed May 2, 2025. <https://www.law.cornell.edu/uscode/text/14/939>.

Legal Information Institute. 35 U.S. Code § 203 – March-in Rights. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/35/203>.

Legal Information Institute. 46 U.S. Code § 50101 – Objectives and Policy. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/46/50101>.

Legal Information Institute. 46 U.S. Code § 53107 – National Security Requirements. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/46/53107>.

Legal Information Institute. 50 U.S. Code Chapter 55 Subchapter II – Expansion of Productive Capacity and Supply. Accessed April 30, 2025. <https://www.law.cornell.edu/uscode/text/50/chapter-55/subchapter-II>.

Meihaus, Justin C. Forging the Future Force. Eisenhower School, April 2025.

Meihaus, Justin C. Forging the Future Force: Rebuilding the U.S. Organic Industrial Base Workforce for the 21st Century Readiness. Research paper, Eisenhower School for National Security and Resource Strategy, April 2025.

Montalbano, Vanessa. “Meet GENUS: Air Force's Offering for Regional Sustainment Framework in the Indo-Pacific.” Inside Defense, October 2024.

Moses, Carl II. Funding the Organic Industrial Base of the Future. Research paper, National Defense University, April 20, 2025.

Moses, Carl. Reforming the Working Capital Fund: Resourcing the OIB for Strategic Competition. Research paper, Eisenhower School for National Security and Resource Strategy, April 2025.

NDIA. Vital Signs 2024: Industry Readiness and Acquisition Flexibility. 2024.

Office of Industrial Base Policy. CRAF and Civil-Military Surge Governance Models. 2022.

Office of the Secretary of Defense. Global Posture Review Findings. 2022.

OSD(A&S). NTIB Partner Sustainment Pilot Agreements Brief. 2024.

Parker, Brad S. Breaking the Lock: Strengthening Defense Sustainment Through Improved Access to Intellectual Property. Research paper, Eisenhower School for National Security and Resource Strategy, National Defense University, April 20, 2025.

Parsons Corporation. The IndoPac Region: A Strategic Imperative for U.S. Security. Last modified April 2025.

RAND Corporation. Adapting Industrial Mobilization Lessons from Ukraine. 2024.

RAND Corporation. Sustaining the U.S. Defense Industrial Base Amid Strategic Competition.

RAND Corporation. Wargaming Sustainment Under Contested Logistics Conditions. 2023.

Sabatina, Anthony Vincent. Navigating the Future: Leveraging Artificial Intelligence to Revolutionize Predictive Workload Planning in the Organic Industrial Base for U.S. Naval

Shipbuilding & Maintenance, Repair & Overhaul (MRO). Research paper, National Defense University, April 19, 2025.

Santa Monica, CA: RAND, 2023.

Smith, Colleen. “The 50-50 Rule Is Not Ensuring Readiness.” Unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

The American Waterways Operators. Jones Act. Accessed April 30, 2025.
<https://www.americanwaterways.com/issues/jones-act>.

U.S. Army. “Sustaining Joint Operations: Expanding Posture and Competition by Leveraging the Sustainment Warfighting Function.” Army.mil. Last modified June 25, 2021.

U.S. Code, Title 10, § 2208. Working-Capital Funds.

U.S. Code, Title 10, § 2464. Core Logistics Capabilities.

U.S. Code, Title 10, § 2466. Limitations on the Performance of Depot-Level Maintenance of Materiel.

U.S. Code. 22 U.S.C. § 2761 – Sale from Stocks. Accessed April 30, 2025.
<https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title22-section2761>.

U.S. Department of Defense. Defense Manufacturing Community Support Program Overview. 2024.

U.S. Department of Defense. DoD 2024 Regional Sustainment Framework. Accessed April 29, 2025. <https://www.acq.osd.mil/asds/docs/RSF-9MAY24.pdf>.

U.S. Department of Defense. DoD 7000.14-R, Volume 6A, Chapter 14, Depot Maintenance Reporting. April 2020.
https://comptroller.defense.gov/Portals/45/documents/fmr/current/06a/06a_14.pdf.

U.S. Department of Defense. DoD 7000.14-R, Volume 6B, Chapter 10, Notes to the Financial Statements. March 2020.
https://comptroller.defense.gov/Portals/45/documents/fmr/current/06b/06b_10.pdf.

U.S. Department of Defense. DoD Directive 4151.18, DoD Maintenance of Military Materiel. August 30, 2024.
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415118p.pdf>.

U.S. Department of Defense. DoD Manual 4151.22-M, Reliability-Centered Maintenance. June 30, 2011, Change 1 (August 31, 2018).
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415122m.pdf>.

U.S. Department of Defense. DoD Manual 4151.23, Organic Depot Maintenance Cost Comparability. June 24, 2016, Change 1 (August 31, 2018).
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415123m.pdf>.

U.S. Department of Defense. DoDI 1348.30, Secretary of Defense Maintenance Awards. April 8, 2019. <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/134830p.pdf>.

U.S. Department of Defense. DoDI 4151.18-H, Depot Maintenance Capacity and Utilization Measurement Handbook. March 10, 2007, Change 1 (August 31, 2018).
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415118h.pdf>.

U.S. Department of Defense. DoDI 4151.19, Serialized Item Management (SIM). January 9, 2014, Change 2 (August 31, 2018).
<https://www.esd.whs.mil/portals/54/documents/dd/issuances/dodi/415119p.pdf>.

U.S. Department of Defense. DoDI 4151.20, Depot Maintenance Core Capabilities Determination Process. May 4, 2018, Change 1 (August 31, 2018).
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/DODi/415120.p.pdf>.

U.S. Department of Defense. DoDI 4151.21, Public-Private Partnerships for Product Support. November 21, 2016, Change 4 (July 31, 2019).
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415121p.pdf>.

U.S. Department of Defense. DoDI 4151.22, Condition-Based Maintenance Plus (CBM+). August 14, 2020.
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415122p.pdf>.

U.S. Department of Defense. DoDI 4151.24, Depot Source of Repair (DSOR) Assignment Determination Process. November 7, 2023.
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415124p.pdf>.

U.S. Department of Defense. DoDI 5000.93, Use of Additive Manufacturing in the DoD. June 10, 2021, Change 1 (July 6, 2021).
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500093p.PDF>.

U.S. Department of Defense. DoDI 5000.97, Digital Engineering. December 21, 2023.
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500097p.PDF>.

U.S. Department of Labor. Workforce Innovation and Opportunity Act Implementation Guidelines. 2023.

U.S. Department of State. International Traffic in Arms Regulations (ITAR). Accessed April 29, 2025.
https://www.pmdtc.state.gov/ddtc_public/ddtc_public?id=ddtc_kb_article_page&sys_id=24d528fdbfc930044f9ff621f961987.

U.S. Marine Corps Logistics Command. “Depot Tackles Supply Chain Issues with Advanced Manufacturing.” November 3, 2023.

White House. Executive Order 13806 – Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States. July 21, 2017. <https://www.presidency.ucsb.edu/documents/executive-order-13806-assessing-and-strengthening-the-manufacturing-and-defense-industrial>.

White House. Executive Order 14017 – America’s Supply Chains. February 24, 2021. <https://www.presidency.ucsb.edu/documents/executive-order-14017-americas-supply-chains>.

White House. Executive Order 14265 – Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base. April 9, 2025. <https://www.whitehouse.gov/presidential-actions/2025/04/modernizing-defense-acquisitions-and-spurring-innovation-in-the-defense-industrial-base/>.

White House. Executive Order 14267 – Reducing Anti-Competitive Regulatory Barriers. April 9, 2025. <https://www.whitehouse.gov/presidential-actions/2025/04/reducing-anti-competitive-regulatory-barriers/>.

White House. Executive Order 14268 – Reforming Foreign Defense Sales to Improve Speed and Accountability. April 30, 2025. <https://www.whitehouse.gov/presidential-actions/2025/04/reforming-foreign-defense-sales-to-improve-speed-and-accountability/>.

White House. Executive Order 14269 – Restoring America’s Maritime Dominance. April 9, 2025. <https://www.whitehouse.gov/presidential-actions/2025/04/restoring-americas-maritime-dominance/>.

White House. Executive Order 14278 – Preparing Americans for High-Paying Skilled Trade Jobs of the Future. April 23, 2025. <https://www.whitehouse.gov/presidential-actions/2025/04/preparing-americans-for-high-paying-skilled-trade-jobs-of-the-future/>.

White House. “Preparing Americans for High-Paying Skilled Trade Jobs of the Future.” April 23, 2025.

Workmeister, Julie A. The OIB of the Future: Navigating the Adoption of Advanced Manufacturing in the Organic Industrial Base. Unpublished research paper, Eisenhower School for National Security and Resource Strategy, Academic Year 2025.

VIII. APPENDICES

Appendix A: Strategic Implications of Artificial Intelligence for the OIB

Artificial Intelligence (AI) is reshaping the strategic calculus of national defense and industrial sustainment enterprise and profoundly impacting the United States' OIB. As the DoD modernizes its MRO capabilities, AI-driven predictive maintenance and advanced analytics are unlocking new levels of efficiency, cost savings, and operational resilience. These technologies directly enhance national security by improving fleet readiness, shortening maintenance cycles, and insulating the defense supply chain from emerging threats.

Many case studies of private sector innovation, particularly HD Hyundai's use of Palantir's Foundry platform and Huntington Ingalls Industries' (HII) partnership with Gecko Robotics, both demonstrate that integrating AI with digital twin simulations and autonomous inspections can reduce downtime by up to 30 percent, while improving production efficiency and workforce planning. These outcomes are directly applicable to the U.S. Navy's OIB and contribute to efforts like the Shipyard Infrastructure Optimization Program (SIOP) and the Regional Sustainment Framework (RSF), which aim to decentralize and digitalize sustainment operations in anticipation of a peer conflict in INDOPACOM.

AI also plays a vital role in strategic deterrence. An example is by enabling predictive risk modeling, intelligent maintenance forecasting, and agile asset management, AI ensures U.S. forces can sustain a high operational tempo under contested logistics conditions. Moreover, it allows acquisition leaders to make data-informed investment decisions, better align resources to mission-critical systems, and harden sustainment networks against supply chain volatility and cyber disruptions.

Lastly, AI's application across the OIB is not merely an efficiency booster as it is a cornerstone of 21st-century deterrence, readiness, and force projection. Institutionalizing its use within OIB planning frameworks will be essential for long-term strategic advantage and winning the next conflict.

Appendix B: Abbreviated Recommendation List

To address these challenges, the report outlines a three-part framework focused on:

- **Integrated Sustainment**

- Establish Joint Program Executive Office for Integrated Sustainment (JPEO-IS) to coordinate governance office to align policy, improve enterprise visibility
- Develop Sustainment Tracking, Repair Integration, & Knowledge Exchange (STRIKE), a real-time sustainment visibility platform to optimize global MRO routing, labor allocation, and parts production.
- Expand National Technology and Industrial Base (NTIB) as a forward sustainment asset through pre-negotiated MRO agreements, Depot Resource of Repair (DSOR) reform, and allied integration.

- **Human Capital Initiatives**

Regenerate the sustainment labor force through workforce development and retention:

- Launch of a National Call to Build, a federally led, regionally executed initiative creating tuition-free trades pipelines, high school dual enrollment, and DoD-aligned apprenticeships near major depot hubs.
- Stand-up of the Civil Reserve Sustainment Readiness Program (CRSRP) to establish a surge-ready, credentialed labor pool during wartime or national emergency.
- Creation of a Defense Workforce Modernization Board to coordinate retention policy, authorize locality-based incentives, and integrate labor metrics into readiness reporting.

- **Infrastructure Recapitalization**

Modernize and harden sustainment infrastructure aligned to forward operations:

- Establishment of a Contested Logistics and Sustainment Integration Fund to consolidate and flexibly allocate PDI, DWCF, and O&M resources across recapitalization priorities.
- Acceleration of depot upgrades based on Indo-Pacific chokepoints and surge-critical platforms, including modular MRO nodes in Guam, Japan, and Australia.
- Integration of climate and cyber resilience features such as energy independence, hardened networks, and redundant utilities in forward repair facilities.

Appendix C: OIB Statutes and Policies

DEPOT MAINTENANCE STATUTES

10 U.S.C. § 939, Art. 139. Redress of injuries to property: This statute allows a commanding officer to investigate complaints that armed forces members have willfully damaged or wrongfully taken someone's property. A board of one to three commissioned officers may be convened to conduct the investigation, with the authority to summon witnesses, take evidence, and assess damages. If approved by the commanding officer, the assessed damages can be deducted from the responsible service members' pay. If the specific offenders cannot be identified, but their unit is known, the damages may be proportionally charged to those present at the scene. The commanding officer's approved order for payment is final and binding for disbursing officers.¹⁰³

10 U.S.C. § 2208, Working capital funds: This statute provides for the establishment of working-capital funds in the DoD to “(1) finance inventories of such supplies as [the Secretary of Defense] may designate; and (2) provide working capital for such industrial-type activities.”¹⁰⁴

10 U.S.C. § 2460, Definition of Depot Maintenance: This statute defines “depot-level maintenance and repair” as major maintenance activities involving the overhaul, rebuilding, upgrading, testing, and reclamation of military equipment, regardless of funding source or location. It includes software maintenance and certain contractor support services if they involve such work. However, it excludes procurement of major performance-enhancing modifications or upgrades, nuclear refueling or defueling of aircraft carriers, and procurement of safety modification parts. The installation of safety parts, though, is included in the definition. This distinction helps clarify which activities fall under depot-level maintenance for Department of Defense operations.¹⁰⁵

10 U.S.C. § 2464, Core Logistics Capabilities: This statute mandates that the Department of Defense (DoD) maintain core logistics capabilities—Government-owned and operated—to ensure readiness and technical competence for emergencies and national defense needs. The Secretary of Defense must identify these capabilities and the workloads necessary to sustain them, including support for mission-essential systems (with some exceptions). These workloads must be performed at DoD-operated facilities to maintain efficiency and readiness. Contracting out these core logistics functions is generally prohibited, unless the Secretary determines it's no longer necessary for national defense and follows specific regulatory and congressional notification procedures. Commercial products or services used must be those widely available to the public and purchased with little or no modification.¹⁰⁶

¹⁰³ 10 U.S. Code § 939 – Art. 139. Redress of Injuries to Property,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/939>

¹⁰⁴ 10 U.S. Code § 2208 – Working-Capital Funds,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/2208>.

¹⁰⁵ 10 U.S. Code § 2460 – Definition of Depot-Level Maintenance and Repair,” LII/Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/2460>.

¹⁰⁶ 10 U.S. Code § 2464 – Core Logistics Capabilities,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/2464>.

10 U.S.C. § 2466, Limitations on the performance of depot-level maintenance of materiel: This statute limits the use of funds for depot-level maintenance and repair: no more than 50% of such funds in a fiscal year may be used to contract with non-Federal personnel, with the remainder reserved for Department of Defense employees. The Secretary of Defense may waive this limitation if it is deemed necessary for national security and Congress is notified with the justification. However, the authority to issue such a waiver cannot be delegated to others.¹⁰⁷

10 U.S.C. § 2469, Contracts to perform workloads previously performed by depot-level activities of the Department of Defense: requirement of competition: This statute requires that any transfer of depot-level maintenance and repair work valued at \$3 million or more from one Department of Defense (DoD) depot to another, or to a private contractor, must be done through competitive procedures. Transfers within DoD depots must use merit-based selection, while transfers involving private entities must allow competition between public and private sectors. The rule ensures fairness and efficiency in allocating significant maintenance work. However, this requirement does not apply if the work is part of a public-private partnership at a designated Center of Industrial and Technical Excellence. These partnerships are exempt from the competition rules under specific statutory provisions.¹⁰⁸

10 U.S.C. § 2470, Depot-level activities of the Department of Defense: authority to compete for maintenance and repair workloads of other Federal agencies: This statute states that a depot-level activity of the Department of Defense shall be eligible to compete for the performance of any depot-level maintenance and repair workload of a Federal agency for which competitive procedures are used to select the entity to perform the workload.¹⁰⁹

10 U.S.C. § 2474, Centers of Industrial and Technical Excellence: designation; public-private partnerships: This section authorizes the designation of certain Department of Defense (DoD) depot-level facilities as Centers of Industrial and Technical Excellence (CITEs) based on their core competencies. It encourages these facilities to adopt best-business practices and allows for pilot programs to improve efficiency and readiness. CITEs are empowered to form public-private partnerships, allowing private entities to use underutilized DoD facilities and perform work related to the Centers' core capabilities. These partnerships aim to enhance resource utilization, reduce costs, and foster private sector investment and cooperation. Any revenue or resources generated from such partnerships must support facility maintenance, and private use must not impact military readiness or violate existing workforce laws.¹¹⁰

¹⁰⁷ 10 U.S. Code § 2466 – Limitations on the Performance of Depot-Level Maintenance of Materiel,” Legal Information Institute, accessed April 30, 2025, <https://www.cornell.edu/uscode/text/10/2466>.

¹⁰⁸ 10 U.S. Code § 2469 – Contracts to Perform Workloads Previously Performed by Depot-Level Activities of the Department of Defense: Requirement of Competition,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/2469>.

¹⁰⁹ 10 U.S. Code § 2470 – Depot-Level Activities of the Department of Defense: Authority to Compete for Maintenance and Repair Workloads of Other Federal Agencies,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/2470>.

¹¹⁰ 10 U.S. Code § 2474 – Centers of Industrial and Technical Excellence: Designation; Public-Private Partnerships,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/2474>.

10 U.S.C. § 2476, Minimum capital investment for certain depots: Each fiscal year, military departments must invest at least 8% of the average depot maintenance workload from the past three years into the capital budgets of their depots. Of this investment, 75% must go toward modernizing or improving efficiency, and 25% must support sustainment, restoration, or modernization of existing infrastructure. The capital budget includes funding for upgrades directly supporting depot operations. Departments must comply with workforce management requirements when allocating these funds. The Secretary of Defense may waive the investment requirement for national security reasons, with notice to Congress.¹¹¹

10 U.S.C. § 4251, Major defense acquisition programs: factors to be considered before Milestone A approval: This statute outlines the requirements that must be met before a major defense acquisition program (MDAP) can receive Milestone A approval, marking the transition into the technology maturation and risk reduction phase. The milestone decision authority (MDA) must determine that the program has sufficient information to proceed, that the Secretary of the relevant military department and the Chief of the armed force concur on cost, schedule, technical feasibility, and performance trade-offs, and that there are sound plans for progression to the development phase. Additionally, the MDA must confirm that the program fulfills an approved initial capabilities document, has conducted appropriate market research, and has a life cycle cost estimate with sufficient resources for successful execution. A written record of the milestone decision must be issued and provided to congressional defense committees within 15 days of approval. These measures ensure that MDAPs are thoroughly vetted and planned before significant resources are committed.¹¹²

10 U.S.C. § 4252, Major defense acquisition programs: factors to be considered before Milestone B approval: This statute outlines the requirements for granting Milestone B approval in major defense acquisition programs, marking entry into the engineering and manufacturing development phase. The milestone decision authority must ensure that adequate information, cost-performance trade-offs, and plans for production are in place, with concurrence from military leadership. Before approval, 15 specific factors must be confirmed, including design reviews, demonstrated technology, affordability, funding availability, lifecycle cost estimates, sustainment planning, and regulatory compliance. A written record of the decision must be created, documenting that these factors were considered. If significant changes occur that affect the basis of the approval, the program manager must notify the authority, who may then rescind the approval if warranted.¹¹³

10 U.S. Code § 8679, Construction of Vessels in Foreign Shipyards: U.S. law prohibits the construction of military vessels and their major components in foreign shipyards. However, the President may authorize exceptions if deemed necessary for national security, with a required 30-

¹¹¹ 10 U.S. Code § 2476 – Minimum Capital Investment for Certain Depots,” LII / Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/2476>.

¹¹² 10 U.S. Code § 4251 – Major Defense Acquisition Programs: Factors to be Considered Before Milestone A Approval,” LII / Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/4251>.

¹¹³ 10 U.S. Code § 4252 – Major Defense Acquisition Programs: Factors to be Considered Before Milestone B Approval,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/4252>.

day notice to Congress before contracts can proceed. Inflatable and rigid inflatable boats, as defined by the Secretary of the Navy, are excluded from this restriction.¹¹⁴

10 U.S.C. § 9511 to 9517, Civil Reserve Air Fleet (CRAF): These seven statutes establish the legal framework for the Civil Reserve Air Fleet (CRAF), a program that enables the U.S. military to access civilian aircraft during national emergencies. The statutes define key terms, authorize contracts with civilian air carriers to include defense features on their aircraft, and set fair compensation rates for participation. They also provide for indemnification of the Department of Transportation for defense-related aviation insurance claims. The law mandates a minimum annual purchase of charter air services from CRAF participants to maintain their readiness. Overall, the sections ensure civilian air carriers are prepared and incentivized to support military airlift needs when required.¹¹⁵

14 U.S. Code § 939 Accounting for industrial work: The Secretary may issue regulations for accounting industrial work at the Coast Guard Yard or similar facilities, including handling overhead and maintenance costs. Orders for such work require advance or transferred funds based on estimated costs, which are adjusted upon completion to match actual costs. These funds support necessary materials, supplies, labor, and overhead. Parties may enter into incentive-based or cost-plus-incentive-fee orders to reward wage-grade employees if performance improves. If performance targets are met, a portion of the cost adjustment is paid as incentives to employees, with the rest credited back to the applicable appropriation.¹¹⁶

35 U.S. Code § 203, March-in rights: This statute allows a federal agency to require a small business or nonprofit that owns a federally funded invention to license it to others if certain conditions are met. The agency can take this action if the owner fails to commercialize the invention, if public health or safety needs are unmet, if public use requirements are not fulfilled, or if there is a breach of U.S. manufacturing obligations. If the owner refuses to grant a license, the agency may grant one itself under reasonable terms. The statute also provides an appeals process, including an option to petition the U.S. Court of Federal Claims within 60 days of the agency's decision. In certain cases, such as lack of commercialization or unmet public needs, the agency's decision is paused while appeals are pending.¹¹⁷

46 U.S. Code § 50101 Objectives and policies: The United States requires a strong merchant marine to support both national defense and commercial needs. This fleet should carry a significant portion of domestic and international waterborne commerce and be available as a naval auxiliary during emergencies. It must be U.S.-owned, operated by U.S. citizens, built in the U.S., and staffed by trained citizen crews. The merchant marine should also include modern, safe

¹¹⁴ 10 U.S. Code § 8679 – Construction of Vessels in Foreign Shipyards: Prohibition,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/8679>.

¹¹⁵ 10 U.S. Code Subtitle D Chapter 961 Part IV – Civil Reserve Air Fleet,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/10/subtitle-D/part-IV/chapter-961>.

¹¹⁶ 14 U.S. Code § 939 – Accounting for Industrial Work,” Legal Information Institute, accessed May 2, 2025, <https://www.law.cornell.edu/uscode/text/14/939>.

¹¹⁷ 35 U.S. Code § 203 – March-in Rights,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/35/203>.

vessels and be supported by robust shipbuilding and repair infrastructure. U.S. policy actively promotes and supports the development and maintenance of such a fleet.¹¹⁸

46 U.S. Code § 53107, National security requirements: This statute requires the Secretary of Transportation, with approval from the Secretary of Defense, to establish an Emergency Preparedness Program that mandates contractors in the Maritime Security Program (MSP) to sign Emergency Preparedness Agreements. These agreements obligate contractors to make their commercial transportation resources available to the Department of Defense during war, national emergencies, or other national security needs. The agreements must also require vessels operating in high-risk piracy areas to have appropriate non-lethal defense measures, as jointly prescribed by the Defense and Homeland Security departments. Contractors are not required to continue participation after their MSP operating agreement expires, though they may volunteer to do so. The resources provided may include ships, intermodal systems, terminals, and related services, with efforts to reduce commercial disruption.¹¹⁹

Jones Act (Section 27 of the Merchant Marine Act of 1920): This statute ensures that this essential industry remains under American control by requiring that vessels moving cargo between U.S. locations be owned by American citizens, crewed by American mariners, and built in American shipyards.¹²⁰

22 U.S. Code § 2761: Sales from Stocks: This statute guides Foreign Military Sales (FMS) stating, “The President may sell defense articles and defense services from the stocks of the Department of Defense and the Coast Guard to any eligible country or international organization if such country or international organization agrees to pay in United States dollars.”¹²¹

50 U.S.C. § 4531 to 4533, Expansion of Productive Capacity and Supply: The President has broad authority to support national defense production by authorizing federal loans and loan guarantees to private entities when critical resources or technologies are at risk and private financing is unavailable. These actions must be cost-effective, essential, and offer reasonable repayment assurance, and are subject to budgetary limits and congressional notification if amounts exceed \$50 million—unless waived during national emergencies. The President can also directly purchase resources, encourage development of strategic materials, and promote emerging technologies to strengthen the domestic industrial base. Equipment may be installed in public or private facilities to enhance production, and subsidies or purchases may ensure continued supply from high-cost sources. Surplus materials can be transferred to the National Defense Stockpile, and the development of substitutes for critical resources may be supported when needed.¹²²

¹¹⁸ 46 U.S. § 50101 – Objectives and Policy,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/46/50101>.

¹¹⁹ 46 U.S. § 53107 – National Security Requirements,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/46/53107>.

¹²⁰ “Jones Act,” Text, The American Waterways Operators, accessed April 30, 2025, <https://www.americanwaterways.com/issues/jones-act>.

¹²¹ “22 USC 2761: Sale from Stocks,” accessed April 30, 2025, <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title22-section2761&num=0&edition=prelim>.

¹²² “50 U.S. Code Chapter 55 Subchapter II – Expansion of Productive Capacity and Supply,” Legal Information Institute, accessed April 30, 2025, <https://www.law.cornell.edu/uscode/text/50/chapter-55/subchapter-II>.

OSD POLICY & ISSUANCES

DoD Directive 4151.18, DoD Maintenance of Military Materiel, dated August 30, 2024: This directive establishes policies and assigns responsibilities for the performance of DoD materiel maintenance across a system's entire life cycle.¹²³

DoD 4151.18-H, Depot Maintenance Capacity and Utilization Measurement Handbook, dated March 10, 2007 incorporating Change 1, August 31, 2018: This handbook provides guidance for a "common methodology to measure and provide visibility of the capacity and utilization of DoD organic activities."¹²⁴

DoDI 1348.30, Secretary of Defense Maintenance Awards, dated April 8, 2019: This issuance establishes policy, assigns responsibilities, and prescribes procedures for the Secretary of Defense Maintenance Awards Program to "enhance maintenance awareness, encourage maintenance excellence, and foster pride and professionalism."¹²⁵

DoDI 4151.19, Serialized Item Management (SIM) for Life-Cycle Management of Materiel, dated January 9, 2014 incorporating Change 2, August 31, 2018: This issuance establishes policy and assigned responsibilities for SIM implementation for life-cycle management of materiel.¹²⁶

DoDI 4151.24, Depot Source of Repair (DSOR) Assignment Determination Process, dated November 7, 2023: This policy establishes policy for "determining DSOR assignments for weapon systems and items of military equipment that require depot-level maintenance" and "directs inter-DoD component reviews of depot-level maintenance requirements against all DoD capabilities."¹²⁷

DoDI 4151.20, Depot Maintenance Core Capabilities Determination Process, dated May 4, 2018 incorporating Change 1, August 31, 2018: This issuance established policy to identify required core capabilities for depot maintenance and associated workloads.¹²⁸

¹²³“ DoD Directive 4151.18, DoD Maintenance of Military Materiel,” dated August 30, 2024, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415118p.pdf?ver=f-6LxAbGUy7MQRGzPQrWIw%3D%3D>.

¹²⁴ “DoDI 4151.18-H, Depot Maintenance Capacity and Utilization Measurement Handbook,” dated March 10, 2007, incorporating Change 1, August 31, 2018, accessed April 30, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415118h.pdf>.

¹²⁵“DoDI 1348.30, Secretary of Defense Maintenance Awards,” dated April 8, 2019, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/134830p.pdf>.

¹²⁶ “DoDI 4151.19, Serialized Item Management (SIM) for Life-Cycle Management of Materiel,” dated January 9, 2014, incorporating Change 2, August 31, 2018, accessed April 29, 2025, <https://www.esd.whs.mil/portals/54/documents/dd/issuances/dodi/415119p.pdf>.

¹²⁷ “DoDI 4151.24, Depot Source of Repair (DSOR) Assignment Determination Process,” dated November 7, 2023, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415124p.pdf>.

¹²⁸ “DoDI 4151.20, Depot Maintenance Core Capabilities Determination Process,” dated May 4, 2018, incorporating Change 1, August 31, 2018, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/DODi/415120.p.pdf>.

DoDI 4151.21, Public-Private Partnerships for Product Support, dated November 21, 2016 incorporating Change 4, July 31, 2019: This issuance establishes policy for the execution of public-private partnerships.¹²⁹

DoDI 4151.22, Condition-Based Maintenance Plus for Materiel Maintenance, dated August 14, 2020: This issuance establishes policy for condition-based maintenance (CBM) as a “proactive maintenance strategy for achieving cost-effective weapon system life cycle sustainment.”¹³⁰

DoDI 5000.93, Use of Additive Manufacturing in the DoD, dated June 10, 2021 incorporating Change 1, July 6, 2021: This issuance establishes policy, assigns responsibilities, and details procedures regarding the implementation and use of additive manufacturing (AM) within the DoD.¹³¹

DoDI 5000.97, Digital Engineering, dated December 21, 2023: “This issuance establishes policy, assigns responsibilities, and provides procedures for implementing and using digital engineering in the development and sustainment of defense systems.”¹³²

DoD 7000.14-R, Volume 6A, Chapter 14, Depot Maintenance Reporting, dated April 2020: This chapter prescribes “Depot Maintenance Cost System (DCMS) requirements necessary to provide a comprehensive accounting of DoD depot maintenance workloads.”¹³³

DoD 7000.14-R, Volume 6B, Chapter 10, Notes to the Financial Statements, dated March 2020: This chapter “prescribes the format, content, and instructions for the preparation and presentation of notes to the principal financial statements.”¹³⁴

DoD Manual 4151.22-M, Reliability-Centered Maintenance, dated June 30, 2011, incorporating Change 1, August 31, 2018: This manual implements policy for the reliability-entered maintenance (RCM) process.¹³⁵

¹²⁹ “DoDI 4151.21, Public-Private Partnerships for Product Support,” dated November 21, 2016, incorporating Change 4, July 31, 2019, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415121p.pdf>.

¹³⁰ “DoDI 4151.22, Condition-Based Maintenance Plus for Materiel Maintenance,” dated August 14, 2020, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415122p.pdf>

¹³¹ “DoDI 5000.93, Use of Additive Manufacturing in the DoD,” dated June 10, 2021, incorporating Change 1, July 6, 2021, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500093p.PDF>.

¹³² “DoDI 5000.97, Digital Engineering,” dated December 21, 2023, accessed April 30, 2025, https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500097p.PDF?cer=bePlqKXaLUTK_lu5iTNREw%3D%3D.

¹³³ “DoD 7000.14R, Volume 6A, Chapter 14, Depot Maintenance Reporting,” dated April 2020, accessed April 30, 2025, https://comptroller.defense.gov/Portals/45/documents/fmr/current/06a/06a_14.pdf.

¹³⁴ “DoD 7000.14-R, Volume 6B, Chapter 10, Notes to the Financial Statements, dated March 2020, accessed April 30, 2025, https://comptroller.defense.gov/Portals/45/documents/fmr/current/06b/06b_10.pdf.

¹³⁵ “DoD Manual 4151.22-M, Reliability-Centered Maintenance, dated June 30, 2011, incorporating Change 1, August 31, 2018, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415122m.pdf>.

DoD Manual 4151.23, DoD Organic Depot Maintenance Cost Comparability, dated June 24, 2016 incorporating Change 1, August 31, 2018: This manual implements policy for conducting a cost comparability analysis of organic depot maintenance workloads.¹³⁶

Public-Private Partnering (PPP) for Product Support Guidebook, dated January 12, 2021: This guidebook identifies the knowledge base on partnering processes and procedures and provides case studies on PPP.¹³⁷

DoD 2024 Regional Sustainment Framework, dated 2024: This document provides an overview of the RSF concept, framework details, and goals of the RSF.¹³⁸

Federal Acquisition Regulation (FAR) Part 40, dated May 1, 2024: “DoD, GSA, and NASA are issuing a final rule amending the Federal Acquisition Regulation (FAR) to add the framework for a new FAR part on information security and supply chain security. The creation of this new FAR part does not implement any of the information security and supply chain security policies or procedures.”¹³⁹

International Traffic in Arms Regulations (ITAR): ITAR is a set of regulations that “authorizes the President to control the export and import of defense articles and defense services.” Note: “The Department of State is responsible for the export and temporary import of defense articles and services governed by 22 U.S.C. 2778 of the Arms Export Control Act (AECA) and Executive Order 13637. That section of the AECA is implemented by the International Traffic in Arms Regulations (ITAR,” 22 CFR parts 120-130).”¹⁴⁰

Joint Publication 4-0, Joint Logistics, dated February 4, 2019, incorporating Change 1, May 8, 2019: This publication, issued under the direction of the Chairman of the Joint Chiefs of Staff, establishes joint doctrine to guide U.S. Armed Forces in joint operations and interagency coordination. It offers military guidance for combatant and joint force commanders in planning, training, and executing operations, while preserving their flexibility to organize and employ forces, as needed, to achieve mission objectives.¹⁴¹

¹³⁶ “DoD Manual 4151.23, DoD Organic Depot Maintenance Cost Comparability, dated June 24, 2016, incorporating Change 1, August 31, 2018, accessed April 29, 2025, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415123m.pdf>.

¹³⁷ “Public-Private Partnering (PPP) for Product Support Guidebook,” dated January 12, 2021, accessed April 29, 2025, <https://www.dau.edu/sites/default/files/Migrated/ToolAttachments/Public-Private-Partnering-%28PPP%29-for-Product-Support-Guidebook.pdf>.

¹³⁸ “DoD 2024 Regional Sustainment Framework,” accessed April 29, 2025, <https://www.acq.osd.mil/asds/docs/RSF-9MAY24.pdf>

¹³⁹ “Federal Acquisition Regulation (FAR) Part 40,” dated May 1, 2024, accessed April 29, 2025, <https://www.federalregister.gov/documents/2024/04/01/2024-06411/federal-acquisition-regulation-establishing-federal-acquisition-regulation-part-40>.

¹⁴⁰ “International Traffic in Arms Regulations (ITAR),” accessed April 29, 2025, https://www.pmdtc.state.gov/ddtc_public/ddtc_public?id=ddtc_kb_article_page&sys_id=24d528fddbfc930044f9ff621f961987.

¹⁴¹ “Joint Publication 4-0, Joint Logistics,” dated February 4, 2019, accessed April 29, 2025, https://irp.fas.org/doddir/dod/jp4_0.pdf.

PRESIDENTIAL EXECUTIVE ORDERS

Executive Order (EO) 14269, Restoring America’s Maritime Dominance, dated April 9, 2025: This EO initiates policy to revitalize and rebuild the U.S. commercial shipbuilding industry and maritime workforce as a matter of national security and economic prosperity. The order calls for a comprehensive strategy to restore the Maritime Industrial Base in response to decades of decline and rising global competition. This includes securing stable federal investment, enhancing the international competitiveness of U.S.-built vessels, rebuilding domestic shipbuilding capacity, and strengthening workforce recruitment, training, and retention. Additionally, the Maritime Action Plan (MAP) mandates the development of a comprehensive strategy involving multiple federal agencies to revitalize U.S. maritime industries, and the Shipbuilding Review requires a review to increase the number of participants and competitors in U.S. shipbuilding and reduce cost overruns and production delays.¹⁴²

Executive Order 14278, Preparing Americans for High-Paying Skilled Trade Jobs of the Future, dated April 23, 2025. This EO supports ongoing efforts in national reindustrialization and economic revitalization, as the United States aims to enhance the capacity of the American workforce to develop advanced products and implement leading technologies. A key component of this strategy involves improving the efficiency and coherence of existing Federal workforce development programs to better align with labor market demands, particularly in high-need and well-compensated sectors. Policy efforts will focus on optimizing Federal investments in workforce training, expanding access to skilled trades, and reinforcing the role of Registered Apprenticeships as a proven pathway for workforce development and national competitiveness.¹⁴³

Executive Order 14265, Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base, dated April 9, 2025: This EO initiates policy to accelerate defense procurement and revitalize the defense industrial base to ensure the United States maintains its military edge and warfighting superiority. The order calls for comprehensive reform of acquisition processes to improve speed, flexibility, and delivery of advanced capabilities at scale, recognizing the strategic importance of the industrial base and the defense acquisition workforce. It also emphasizes modernizing acquisition roles and structures while fostering a culture of innovation and calculated risk-taking to meet future security challenges.¹⁴⁴

Executive Order 13806, Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States, dated July 21, 2017: This EO establishes the strengthening of the U.S. manufacturing and defense industrial base, along with resilient supply chains, as a national priority vital to economic strength and national security. It

¹⁴² “Executive Order (EO) 14269, Restoring America’s Maritime Dominance,” The White House, dated April 9, 2025, accessed April 30, 2025, <https://www.whitehouse.gov/presidential-actions/2025/04/restoring-americas-maritime-dominance/>.

¹⁴³ “Executive Order 14278, Preparing Americans for High-Paying Skilled Trade Jobs of the Future,” The White House, dated April 23, 2025, accessed April 30, 2025, <https://www.whitehouse.gov/presidential-actions/2025/04/preparing-americans-for-high-paying-skilled-trade-jobs-of-the-future/>.

¹⁴⁴ “Executive Order 14265, Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base,” The White House, dated April 9, 2025, accessed April 30, 2025, <https://www.whitehouse.gov/presidential-actions/2025/04/modernizing-defense-acquisitions-and-spurring-innovation-in-the-defense-industrial-base/>.

recognizes that diminished domestic manufacturing capacity, supplier loss, and erosion of critical workforce skills since 2000 have weakened national readiness and emergency surge capability. The policy directs a comprehensive, multi-agency assessment to address these challenges to identify industrial base and supply chain vulnerabilities and guide strategic action in workforce development, manufacturing revitalization, and supply chain resilience.¹⁴⁵

Executive Order 14017, America's Supply Chains, dated February 24, 2021: This EO affirms the intent to strengthen the resilience, diversity, and security of America's supply chains to safeguard economic prosperity and national security. It outlines a policy framework focused on revitalizing domestic manufacturing, supporting innovation and workforce development, and enhancing coordination with allies and partners to mitigate risks from global disruptions and ensure continued access to critical goods and services.¹⁴⁶

Executive Order 14267, Reducing Anti-Competitive Regulation Barriers, dated April 9, 2025: This EO initiates a review process to identify and address regulatory barriers that may hinder economic competition. Federal regulations play a significant role in shaping economic outcomes. However, certain regulations may unintentionally limit market entry, reducing competition, entrepreneurship, and innovation.¹⁴⁷

Executive Order 14268, Reforming Foreign Defense Sales to Improve Speed and Accountability, dated April 9, 2025: This EO initiates policy to modernize and streamline the U.S. foreign defense sales system to strengthen alliances, enhance partner capabilities, and reinforce the domestic defense industrial base. Recognizing the strategic importance of timely, transparent defense cooperation, the order directs reforms to improve accountability, consolidate decision-making, reduce regulatory burdens, and foster government-industry collaboration. These measures aim to increase U.S. competitiveness, lower costs, and ensure the delivery of advanced military capabilities that align with national security and foreign policy objectives.¹⁴⁸

¹⁴⁵ “Executive Order 13806, Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States,” The White House, dated July 21, 2017, accessed April 30, 2025, <https://www.presidency.ucsb.edu/documents/executive-order-13806-assessing-and-strengthening-the-manufacturing-and-defense-industrial>.

¹⁴⁶ “Executive Order 14017, America's Supply Chains,” The White House, dated February 24, 2021, accessed April 30, 2025, <https://www.presidency.ucsb.edu/documents/executive-order-14017-americas-supply-chains>.

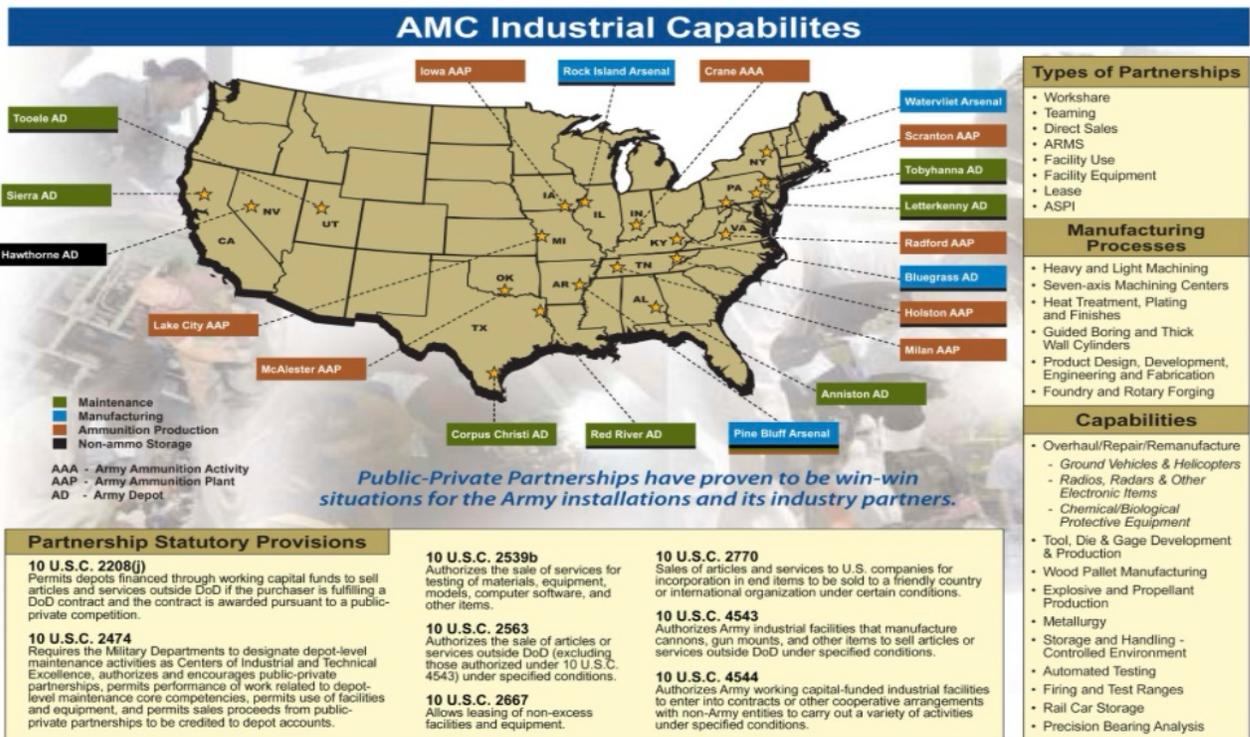
¹⁴⁷ “Executive Order 14267, Reducing Anti-Competitive Regulation Barriers,” The White House, dated April 9, 2025, accessed April 30, 2025, <https://www.whitehouse.gov/presidential-actions/2025/04/reducing-anti-competitive-regulatory-barriers/>.

¹⁴⁸ “Executive Order 14268, Reforming Foreign Defense Sales to Improve Speed and Accountability,” The White House, dated April 30, 2025, accessed April 30, 2025, <https://www.whitehouse.gov/presidential-actions/2025/04/reforming-foreign-defense-sales-to-improve-speed-and-accountability/>.

Appendix D: OIB Locations and Capabilities



Source: GAO analysis of Department of Defense documents. | GAO-16-450



Appendix E: RSF Locations and Capabilities

U.S. Regional Support Framework Facilities (RSFs): Locations and Capabilities

This document provides an overview of U.S. Regional Support Facilities (RSFs) globally, highlighting their geographic locations, operating military branches, key capabilities, strategic importance, and allied partnerships. These facilities serve as critical nodes for sustaining U.S. military presence and enabling regional operations across Africa, the Middle East, Europe, the Indo-Pacific, and the Americas.

Africa

RSF Location (Base & Country)	U.S. Branches	Key Capabilities / Functions	Strategic Importance	Joint Use / Allied Involvement
Camp Lemonnier (Djibouti)	Navy, Army (CJTF-HOA), Air Force, Marines, SOF	Counterterrorism ops support, training African partners, ISR, crisis response staging	Only permanent U.S. base in Africa; critical for Red Sea security and regional missions	Host: Djibouti; Allies: France, Italy, Japan (nearby bases); used for joint evacuations
Air Base 201 (Agadez, Niger)	Air Force, Army Security, SOF	ISR with MQ-9 Reapers, counterterrorism support, regional airfield	Covered vast areas of Sahel; crucial ISR on militants until 2024 handover	Host: Niger; Allies: France (prior presence), Nigerien co-location
Camp Simba (Manda Bay, Kenya)	Air Force, Army, SOF	Training, airfield support for ops against al-Shabaab, crisis response	Key East Africa location; rapid ops into Somalia and coastal regions	Host: Kenya; joint use with Kenyan forces under CSL arrangement

Middle East

RSF Location (Base & Country)	U.S. Branches	Key Capabilities / Functions	Strategic Importance	Joint Use / Allied Involvement
Al Udeid Air Base (Qatar)	Air Force, Army, Navy, USSF	Combat sorties, CAOC HQ, refueling, ISR, airlift, coalition command center	Regional air power hub; largest and most diverse AEW in SW Asia	Host: Qatar; Allies: UK, Australia, coalition nations in CAOC
Camp Arifjan (Kuwait)	Army, Marine Corps, Navy, Air Force, Coast Guard	Forward logistics hub, APS-5 depot, personnel transit point	CENTCOM's logistics anchor; supports Iraq/Syria and contingency forces	Host: Kuwait; Allies: UK, Canada, Poland, Romania (joint deployments)

NSA Bahrain (Bahrain)	Navy, Marine Corps, Army, Air Force	5th Fleet HQ, port for naval operations, maritime security hub	Ensures naval dominance in Persian Gulf, Red Sea, Arabian Sea	Host: Bahrain; Allies: UK (adjacent base), GCC liaison officers
-----------------------	-------------------------------------	--	---	---

Europe

RSF Location (Base & Country)	U.S. Branches	Key Capabilities / Functions	Strategic Importance	Joint Use / Allied Involvement
Ramstein Air Base (Germany)	Air Force, Army	Airlift hub, medevac, USAFE-AFRICA HQ, staging for crises	Gateway to Europe, Africa, Middle East; key NATO air command center	Host: Germany; Allies: NATO Allied Air Command, embedded partners
Naval Station Rota (Spain)	Navy, Marine Corps, Air Force	Port for BMD destroyers, staging for Africa/Middle East, logistics	Mediterranean gateway, ballistic missile defense node	Host: Spain; Allies: NATO BMD mission, joint exercises
NAS Sigonella (Italy)	Navy, Air Force, NATO	UAV base, logistics for Med ops, NATO AGS site	ISR over North Africa, NATO surveillance hub	Host: Italy; Allies: NATO AGS, joint EU/US use

Indo-Pacific

RSF Location (Base & Country)	U.S. Branches	Key Capabilities / Functions	Strategic Importance	Joint Use / Allied Involvement
Andersen AFB & Naval Base Guam (Guam, U.S. Territory)	Air Force, Navy, Marine Corps, Army	Bomber base, submarine port, Marine HQ, logistics hub	Strategic Indo-Pacific hub for air/naval operations	Host: U.S. Territory; Allies: Australia, Japan, UK (joint exercises)
Diego Garcia (BIOT, UK)	Navy, Air Force	Prepositioned stockpiles, strategic bomber base, logistics	Indian Ocean pivot, flanks Asia & Gulf; secure isolated location	Host: UK; Allies: UK-US use, past coalition use
Yokosuka Naval Base (Japan)	Navy, Marines, Coast Guard	Home to 7th Fleet, carrier strike group, ship repair	Western Pacific naval presence, deterrence in East Asia	Host: Japan; Allies: Japan MSDF, regular multinational visits

America

RSF Location (Base & Country)	U.S. Branches	Key Capabilities / Functions	Strategic Importance	Joint Use / Allied Involvement
Soto Cano Air Base (Honduras)	Army, Air Force	JTF-Bravo HQ, helicopters, disaster response, training	Counter-drug ops, regional HA/DR response in Central America	Host: Honduras; Allies: regional security cooperation (SICA nations)
Comalapa (El Salvador) & Aruba/Curaçao (Netherlands Caribbean)	Air Force, Coast Guard	Drug interdiction, aerial surveillance (P-3, RC-26)	Key CSLs for regional narcotics detection missions	Host: El Salvador, Netherlands; Allies: interagency partners
Guantánamo Bay Naval Base (Cuba)	Navy, Army, Marines, Coast Guard	Detention ops, logistics, port & airfield, contingency support	Legacy U.S. foothold in Caribbean; crisis response capability	Host: (Leased); No cooperation with Cuba, U.S.-run

Appendix F: OIB Individual Research Paper Abstracts

LtCol Nicole Bastian
Human Resources
U.S. Marine Corps

Title: *Institutionalizing Marine Corps Organic Industrial Base Best Practices in Maintenance, Readiness, and Overhaul Across the U.S. Military Services*

Abstract: This paper evaluates how Marine Corps Organic Industrial Base (MCOIB) best practices particularly those implemented by Marine Depot Maintenance Command (MDMC)—can improve joint force maintenance, readiness, and overhaul (MRO) capabilities. Using the Five Readiness Enablers and Structure-Conduct-Performance frameworks, it identifies scalable solutions in workforce development, predictive analytics, additive manufacturing, and forward sustainment. Comparative analysis reveals that institutionalizing these practices across the Army, Navy, and Air Force could reduce repair timelines, enhance operational agility, and strengthen readiness in contested Indo-Pacific environments. Policy recommendations include expanding the Regional Sustainment Framework, modernizing funding mechanisms, and embedding deployable MRO teams across services.

Problem Statement: Despite its criticality, the DoD OIB enterprise struggles with workforce shortages, delayed modernization, and a lack of forward sustainment capacity. While each service explores improvements, the Marine Corps leads in predictive analytics, mobile sustainment, and AM implementation.

Thesis Statement: Institutionalizing Marine Corps ground combat and combat support weapons, systems, and equipment MRO best practices across the services performing similar MRO services will improve the joint force's readiness for deterring or prevailing in a future (2027-2030) Indo-Pacific conflict. The Marine Corps' best practices for ground combat and combat support weapons, systems, and equipment are: sustaining a skilled workforce, implementing advanced manufacturing, operationalizing predictive analytics, and forging regional sustainability partnerships. Analyzing the MCOIB's best practices with the Five Readiness Enablers framework and the Structure-Conduct-Performance (SCP) model demonstrates how Marine Corps MRO for ground combat and combat support weapons, systems, and equipment best practices in human capital, material, and conduct with RSF and prepositioning could improve DoD MRO readiness.

LTC Scotty Boler
Human Resources
U.S. Army

Title: *Forging the Defense Organic Industrial Base (OIB) Workforce of the Future: Modernizing Recruitment, Retention, and Training Across the Joint Force to Maximize U.S. Military Readiness in a Global Talent Competition*

Abstract: The Defense Organic Industrial Base (OIB) faces collapse as over half its skilled artisans will retire by 2035. Fragmented service-specific workforce efforts and aggressive private sector competition have created a critical readiness gap. This paper applies the OIB Readiness Model to assess vulnerabilities and argues for a unified national strategy: a National Defense Apprenticeship Program (NDAP), National Pathways to Skilled Trades, a Civilian Reserve Force (DIRC), and joint workforce governance reforms. The U.S. risks hollowing out its sustainment capacity and compromising military dominance against near-peer threats without decisive action.

Problem Statement: The Defense Organic Industrial Base faces an imminent artisan workforce collapse that threatens U.S. military readiness and surge capacity.

Thesis Statement: The Department of Defense must rapidly implement a unified, joint-force workforce strategy to rebuild, retain, and surge the Defense Organic Industrial Base workforce through apprenticeships, skilled trade pathways, a Civilian Reserve Force, and enterprise-wide reforms.

CDR Alexandra Cherry
Naval Engineer Officer
U.S. Coast Guard

Title: *Financing the Organic Industrial Base of the Future: Working Capital Funds Drive Efficiency and Effectiveness*

Abstract: The United States Organic Industrial Base (OIB) must optimize its funding models to achieve efficiency, effectiveness, and readiness for a potential 2027 peer conflict in the Indo-Pacific Command (INDOPACOM). This paper evaluates the two OIB funding mechanisms – Working Capital Funds (WCF) and Direct Mission Funding (DMF) – through the lens of the OIB Readiness Model, Theory of Constraints, and comparative advantage. Analysis and U.S. Navy and Coast Guard operational examples demonstrate that WCF is the superior model, enabling operational continuity during funding instability, enhancing sustainment readiness, and providing financial flexibility critical for future conflict preparation. To fully leverage WCF benefits, the author recommends: (1) expanding WCF use across OIB facilities, (2) periodically infusing WCFs with appropriated funding to enable capital investments and advanced technology adoption, (3) amending 14 USC 939 to authorize OIB facilities to accept and execute annually appropriated fallout funds for industrial recapitalization, (4) cost-sharing non-OIB facilities with service operations and sustainment (O&S) funds, and (5) creating WCF umbrella accounts to pre-fund deferred maintenance and repair capabilities aligned with Regional Sustainment Framework (RSF) initiatives. Additionally, WCFs empower global sustainment by funding fly-away teams and forward-positioned maintenance personnel. By embracing these reforms, the OIB can shrink depot maintenance backlogs, increase asset or fleet operational availability, and ensure surge capacity to prevail in a potential 2027 near-peer conflict.

Problem Statement: The OIB is a collection of United States government-owned facilities that conduct maintenance, repair, and overhaul (MRO) services for government assets. Funding models directly affect the operational efficiency and effectiveness of the OIB. Two standard OIB funding methods are Working Capital Funds (WCF) and Direct Mission Funding (DMF). There are advantages and disadvantages to either type of funding. To make the U.S. OIB efficient and effective while reimagining the Future OIB, supporting the Regional Sustainment Framework (RSF), and improving MRO and sustainment readiness for a potential peer conflict in the INDOPACOM in 2027, it is vital to determine which funding method best enables these objectives.

Thesis: The WCF is the optimal OIB funding method to ensure efficiency and effectiveness while reimagining the Future OIB, supporting the RSF, and improving MRO and sustainment readiness for a potential peer conflict in INDOPACOM in 2027.

LTC Michael Gallucci
Logistics
U.S. Army

Title: *The Organic Industrial Base (OIB) of the Future at the Depot Level*

Abstract: This paper argues that the OIB at the depot level must be completely overhauled (pun intended) to prepare the United States for readiness in the Pacific theater. The author draws from industry leaders and senior defense leaders' insights and his own experiences after commanding an OIB depot in Japan. Significant ways ahead include infusing advanced technologies, expanding allied partnerships, and creating twin depots forward to replicate those found in the continental United States. The author also communicates the critical need to overcome domestic regional political constraints and embrace resilient, agile sustainment ecosystems. Envisioning a Pacific with forward-positioned cutting-edge OIB depots, this paper outlines how to increase sustainment effectiveness against pacing threats like China.

Problem Statement: How can we ensure that tomorrow's OIB at the depot level optimizes its efficiency and effectiveness to meet global requirements and U.S. Department of Defense (DOD) readiness objectives while considering that local political interests may not always align with the strategic intent of U.S. Government (USG) leaders?

Thesis Statement: The OIB at the depot level must enhance forward-positioned integration in theater, narrow the scope of strategic versus local politics, and improve expeditionary capabilities. Otherwise, it will likely be unable to compete with potential adversaries in INDOPACOM between 2027 and 2030.

Colonel Jungmi Ha
F-16 Pilot
Republic of Korea Air Force

Title: *The Case for Korea: Operationalizing the Regional Sustainment Framework in the Indo-Pacific*

Abstract: The U.S. Organic Industrial Base (OIB) faces mounting structural challenges—including aging infrastructure, workforce attrition, and statutory bottlenecks—that hinder its ability to sustain forward operations in the Indo-Pacific. To close these gaps, the Department of Defense introduced the Regional Sustainment Framework (RSF), a distributed sustainment model incorporating allied capabilities. This paper argues that South Korea, with its advanced MRO ecosystem, strategic location, and deep integration with U.S. platforms, is uniquely positioned to serve as a core RSF partner. Using Porter’s Five Forces, the OIB Readiness Model, and supply curve analysis, the study evaluates Korea’s strengths in competitiveness, readiness enablement, and cost-efficiency. It compares Korea’s advantages against other candidates like Japan and Australia while addressing counterarguments regarding trust and strategic alignment. Key recommendations include operationalizing strategic concurrency through RSF, advancing the U.S.-Korea alliance into a strategic-industrial partnership, and leveraging Korea’s MRO capabilities to expand U.S. global sustainment influence. Ultimately, integrating Korea into RSF is critical to overcoming OIB limitations, sustaining deterrence, and enhancing allied resilience in a contested Indo-Pacific environment.

Problem Statement: The U.S. OIB is no longer sufficient to meet the sustainment demands of future Indo-Pacific contingencies due to aging infrastructure, workforce shortages, rigid funding mechanisms, and statutory constraints like the 50/50 Rule.

Thesis Statement: This paper argues that South Korea’s mature defense industrial base, geographic proximity, and operational track record make it the most compelling partner for operationalizing the Regional Sustainment Framework (RSF), thereby strengthening U.S. forward sustainment, enhancing allied resilience, and closing critical OIB gaps in the Indo-Pacific.

Lt Col Alexis Johnson
Civil Engineer
U.S. Air Force

Title: *Establishing a Civil Reserve Sustainment Readiness Program (CRSRP)--Strengthening MRO Capabilities for National Security*

Abstract: This paper identifies a critical vulnerability in U.S. defense sustainment strategy and proposes a solution: the Civil Reserve Sustainment Readiness Program (CRSRP). The CRSRP focuses on bolstering Maintenance, Repair, and Overhaul (MRO) capabilities. Given the intensifying great power competition and the increasing likelihood of a contested conflict in the Indo-Pacific, the current Organic Industrial Base (OIB) lacks the surge capacity and agility necessary for rapid, distributed sustainment. Drawing on historical lessons from World War II and contemporary analysis of OIB limitations, this study details how the CRSRP would leverage public-private partnerships, incentivize commercial sector participation, and utilize digital tools like the VIGOR (Visualized Integration of Government and Organic Readiness) platform to enhance readiness visibility and accelerate mobilization. Key recommendations include enacting a new Title VIII to the Defense Production Act, implementing governance reforms, and establishing legal frameworks to address intellectual property and data-sharing concerns. The CRSRP offers a strategic force multiplier, enabling the Department of Defense to seamlessly integrate commercial infrastructure and expertise with military sustainment, thereby bridging the gap between industrial production and operational endurance. Ultimately, this paper argues that 21st-century national security hinges not only on the ability to generate combat power but also on the capacity to sustain and regenerate it, making the CRSRP a vital component of future U.S. warfighting readiness.

Problem Statement: The United States faces a growing strategic vulnerability in its ability to sustain joint military operations during a large-scale mobilization or peer conflict, particularly within the Indo-Pacific theater. The current defense logistics system is overly centralized, lacks sufficient surge capacity, and depends heavily on commercial and foreign infrastructure without a formalized framework for rapid integration during a crisis.

Thesis Statement: To enhance national resilience and improve joint force readiness for conflict scenarios in 2027–2030, the U.S. should establish a Civil Reserve Sustainment Readiness Program (CRSRP), a public-private logistics framework modeled after successful initiatives like the Civil Reserve Air Fleet (CRAF), to formalize and mobilize commercial sustainment infrastructure in support of contested logistics environments. By offering federal incentives and subsidies, this program would leverage commercial MRO workforce capacity, facilities, and expertise to augment military sustainment operations.

Colonel Sani Kalgo
Pilot
Nigerian Air Force

Title: *Leveraging Nigeria as a Strategic Partner for OCONUS MRO Service AFRICOM: Enhancing Regional Sustainment Readiness*

Abstract: This paper analyzes the strategic potential of a Maintenance, Repair, and Overhaul (MRO) partnership between Nigeria and United States Africa Command (AFRICOM) within the U.S. Regional Sustainment Framework (RSF). As Nigeria modernizes its military and expands its aviation sector, it faces significant challenges in sustaining new assets due to limited indigenous MRO infrastructure. Simultaneously, AFRICOM's integration into the RSF by 2028 prioritizes distributed, agile sustainment networks through regional partnerships. A Nigeria-AFRICOM MRO collaboration could address critical logistical bottlenecks, enhance operational readiness, and foster economic growth while advancing U.S. strategic interests in West Africa. Using SWOT and Porter's Five Forces analyses, the paper assesses Nigeria's strengths, such as its large military, expanding infrastructure, and regional leadership, alongside weaknesses like technical skill gaps and supply chain limitations. The study recommends a phased implementation roadmap, establishment of a joint task force, hybrid funding models, intellectual property safeguards, and a Center of Excellence for MRO innovation. The partnership would localize MRO capabilities, reduce foreign dependency, and stimulate Nigeria's aerospace sector, while providing AFRICOM with a sustainment hub closer to operational areas. The model offers a blueprint for future defense-industrial cooperation across Africa, supporting resilient, globally connected sustainment networks.

Problem Statement: Nigeria's rapid military modernization and growing aviation sector are constrained by limited indigenous MRO infrastructure, undermining operational readiness and creating dependency on costly foreign maintenance services. AFRICOM, aiming to enhance distributed sustainment under the Regional Sustainment Framework, lacks a robust regional partner in West Africa to localize MRO capabilities and improve operational efficiency.

Thesis Statement: By partnering with Nigeria's aviation and defense sectors, the U.S. can improve MRO sustainment readiness for AFRICOM, advance distributed operations under the Regional Sustainment Framework, and foster regional stability. This partnership must address key challenges like infrastructure limitations, Nigerian security risks, and weapons interoperability through robust collaboration and risk mitigation strategies.

Lt Col Justin Meihaus
Civil Engineer
U.S. Air Force

Title: *Forging the Future Force: Rebuilding the U.S. Organic Industrial Base workforce for the 21st Century Readiness*

Abstract: The OIB, a critical component of the U.S. Defense Industrial Base (DIB), faces an accelerating skilled labor shortfall that poses significant risks to national security and operational readiness. This paper examines the systemic factors underlying the workforce challenges, including demographic trends, cultural stigmas against vocational education, and insufficient policy responses. It argues that revitalizing the OIB workforce is imperative to sustaining military maintenance, repair, and overhaul capabilities, particularly in preparation for potential high-end conflicts in the Indo-Pacific region. The analysis recommends a comprehensive, nationally coordinated approach centered on workforce development as a strategic priority, supported by regional training consortia, public-private partnerships, and targeted investment to ensure the long-term resilience of the defense industrial base.

Problem Statement: The DIB faces a workforce predicament threatening national security. This crisis arises from an aging workforce, cultural stigmas against vocational careers, and inconsistent support for technical education. Insufficient training pipelines across DIB, OIB, and CIB worsen the talent gap, jeopardizing the U.S. military's critical production and repair capabilities in future conflicts. Without a coordinated human capital strategy, the U.S. risks a readiness gap amid near-peer competition, especially in the Indo-Pacific region.

Thesis Statement: The long-term viability and effectiveness of the DIB/OIB/CIB depend on a modernized, strategic, and integrated approach to workforce development that aligns training and education pathways with emerging defense priorities. Current deficiencies in workforce pipeline development, technical skill retention, and adaptive training models hinder the defense sector's ability to respond to evolving security threats.

This paper argues that bridging the gap between industry, government, and educational institutions through targeted policy reforms, enhanced public-private partnerships, and investments in competency-based training programs will be essential for strengthening the defense workforce for the modernization of the OIB, reinforcing the Regional Sustainment Framework, and enhancing MRO readiness for a potential peer conflict in INDOPACOM between 2027 and 2030.

Colonel Elbert Mose
Acquisitions
U.S. Air Force

Title: *OCONUS Organic Industrial Base: Extending MRO Services for 5th Generation Aircraft*

Abstract: As the U.S. anticipates potential peer conflict in the Indo-Pacific between 2027 and 2030, the current Organic Industrial Base (OIB) lacks the capacity to meet the maintenance, repair, and overhaul (MRO) demands of 5th generation aircraft at the point of need. These technologically advanced platforms require specialized support that cannot be sustained solely from continental U.S. (CONUS) locations due to logistical constraints. This paper explores the strategic imperative of extending MRO capabilities outside CONUS (OCONUS) by leveraging allied and partner nations. It examines the operational, technical, and policy challenges of integrating foreign MRO capabilities, including governance, intellectual property rights, cybersecurity, and interoperability. Frameworks such as the Regional Sustainment Framework (RSF) and the Partnership for Indo-Pacific Industrial Resilience (PIPIR) are analyzed for their potential to build resilient, forward-deployed MRO networks. Ultimately, this paper argues that a coordinated, multilateral approach—rooted in shared standards, strategic investments, and agile policy reform—is essential to sustaining 5th generation aircraft readiness in contested environments.

Problem Statement: With the potential for a peer conflict in the Indo-Pacific in the 2027-2030 timeframe, our current OIB is not capable of providing MRO services at scale or capacity for U.S. military 5th generation aircraft at the point of need.

Thesis Statement: To augment OIB capabilities throughout the conflict, strategically using allies and partner nations for OCONUS 5th generation aircraft MRO services will enhance operational readiness by reducing logistical burdens, increasing aircraft uptime, and improving strategic flexibility.

LTC Carl Moses II
Finance
U.S. Army

Title: Funding the Organic Industrial Base of the Future

Abstract: The paper argues that while the WCF (Working Capital Fund) has been used for years, its suitability for the OIB of the future is debatable. The paper suggests that the WCF, with minor adjustments, is the most effective way to fund the future OIB. It details the advantages of the WCF, including cost visibility, the creation of a business-like operation with customer-provider relationships, flexibility and adaptability as it is a no-year fund, stabilized pricing for customers, and the goal to break even rather than make a profit, which benefits the government and customers. Conversely, the paper identifies disadvantages of the WCF, such as the risk of underutilization if pricing is too high, challenges with workload forecasting due to customers not sending planned equipment, and dependency on customer appropriations for timely payment. Looking towards the future, especially with initiatives like the Regional Sustainment Framework (RSF) which involves international partners, the paper suggests adjustments to the WCF and additional funding methods are needed. Proposed improvements include allowing depots to reinvest profits and adding two direct appropriations – one for modernization of facilities/equipment and another for funding the RSF with allied nations. The conclusion is that adapting current funding processes is necessary to ensure the U.S. military's continued readiness and global reach.

Problem Statement: With the ever-changing global landscape, it is fair to doubt that the working capital fund of the past 50-plus years is the right model to fund the organic industrial base of the future.

Thesis Statement: With minor adjustments to the current working capital fund structure, it is the most effective way to fund the OIB in the future considering its strengths, weaknesses, and potential alternatives.

Mr. Brad Parker
Foreign Service Officer
Department of State

Title: *Breaking the Lock: Strengthening Defense Sustainment through Improved Access to Intellectual Property*

Abstract: This paper examines the critical challenge faced by the Department of Defense (DoD) regarding restricted access to intellectual property (IP) and technical data rights needed by the OIB to independently perform Maintenance, Repair, and Overhaul (MRO) services for sustaining legacy weapon systems. It highlights how Original Equipment Manufacturers (OEMs) often retain exclusive control over IP, resulting in “vendor-lock,” which limits competition, inflates sustainment costs, and threatens operational readiness. The paper proposes legislative and policy reforms, including requiring OEMs to submit business-case options for transitioning to competitive sustainment and adapting “march-in” rights patterned after the Bayh-Dole Act to compel OEM cooperation. These reforms aim to foster competition, reduce costs, and enhance OIB capacity, thereby strengthening defense industrial base readiness and resilience in support of the Regional Sustainment Framework.

Problem Statement: Over the past several decades, DoD has frequently failed to secure from defense OEMs the necessary intellectual property and technical data rights required by the OIB to independently perform MRO services for major legacy weapon systems. This failure results in OEMs maintaining exclusive control over critical IP/data, creating a monopoly over sustainment services known as “vendor-lock.” Such vendor-lock constrains the capacity, cost-effectiveness, and resilience of the OIB, leaving the DoD dependent on sole-source providers. As legacy systems age and sustainment demands increase—particularly given the strategic threat posed by China—this lack of access to essential IP and data increasingly jeopardizes operational readiness and surge capacity. Most IP and data-related reforms focus on future acquisitions and do not adequately address the IP/data deficiencies tied to legacy systems, where contracts did not secure sufficient rights. Consequently, DoD faces inflated sustainment costs, limited competition, and reduced ability to maintain and modernize critical weapon systems effectively.

Thesis Statement: To mitigate the growing threat posed by vendor-lock and restricted IP/data access, DOD should pursue targeted legislative and policy reforms aimed at expanding its access to intellectual property and technical data for legacy weapon systems. These reforms should include requiring OEMs, when vendor-lock is demonstrated, to submit business-case options enabling DoD to negotiate the fair and reasonable buyout or licensing of IP/data rights to facilitate competitive sustainment by the OIB and third-party contractors. Additionally, DoD should seek authority to exercise “march-in” rights, modeled after the Bayh-Dole Act, to acquire necessary IP/data when OEMs refuse to cooperate, ensuring sustainment capability and operational readiness.

Mr. Anthony Sabatina
Acquisition Program Manager
Defense Logistics Agency

Title: *Navigating the Future: Leveraging AI to Revolutionize Predictive Workload Planning in the Organic Industrial Base for U.S. Naval Shipbuilding & MRO*

Abstract: The operational readiness of the United States Navy faces strategic risk due to systemic inefficiencies in ship sustainment, aging infrastructure, and reactive maintenance paradigms. Against the backdrop of intensifying geopolitical competition, particularly in the Indo-Pacific region, the Organic Industrial Base (OIB), which is a long a pillar of wartime resilience, must be reimagined for a data-driven future. This research examines how artificial intelligence (AI), predictive analytics, and digital twin technologies can revolutionize predictive workload planning and maintenance, repair, and overhaul (MRO) operations within U.S. naval shipbuilding. Applying Porter's Five Forces, supply-demand modeling, and the production function framework, this paper analyzes how AI integration can lower sustainment costs, optimize resource allocation, and significantly improve fleet availability. Comparative insights are drawn from allied commercial practices, including South Korea's AI-driven shipyard modernization at HD Hyundai Heavy Industries, and emergent U.S. partnerships with Huntington Ingalls Industries and Palantir Technologies. Findings indicate that early AI adoption can enhance Total Factor Productivity (TFP) across labor, capital, and technology inputs, offering a transformative pathway toward achieving maritime dominance. Strategic recommendations include standardizing AI-enabled predictive maintenance across naval MRO cycles, expanding digital engineering infrastructure, fostering AI-centered public-private R&D consortia, and implementing design maturity checkpoints. This paper argues that embedding AI within sustainment strategies is essential not only for reimagining the OIB of the future but also for operationalizing the Regional Sustainment Framework (RSF) and ensuring MRO resiliency against a potential peer conflict in INDOPACOM between 2027–2030.

Problem statement: The U.S. Navy's Organic Industrial Base (OIB) is hindered by aging infrastructure, reactive maintenance practices, and inefficient workload planning that threaten fleet readiness amid growing geopolitical competition. In an effort to maintain maritime dominance, the OIB must integrate artificial intelligence (AI) and predictive analytics to optimize sustainment operations, reduce costs, and enhance operational resilience.

Thesis: The OIB, is a legacy enterprise dating back to World War II and our nation's insurance policy during wartime operations, must evolve to meet the demands of a rapidly changing, technology-driven world. Artificial intelligence (AI) and advanced technologies offer a transformative solution by enabling data-driven decision-making, optimizing resource allocation, and enhancing maintenance efficiency. The OIB can utilize AI to identify trends, reduce costs, and maximize operational readiness through predictive modeling and AI-driven digital twinning. Ultimately, this study aims to inform national security planners and acquisition leaders on enhancing maritime readiness, reducing sustainment costs, and ensuring force posture resilience.

CAPT Colleen Smith
Weapons Engineer Officer
Royal New Zealand Navy

Title: *The 50-50 Rule is Not Ensuring Readiness*

Abstract: This paper examines the shortcomings of the 50-50 rule, codified in Title 10 U.S.C. Section 2466, which was designed to maintain military equipment readiness by limiting no more than 50 percent of depot-level maintenance funding to private contractors. Despite its intent, the 50-50 rule fails to ensure readiness because it does not identify or protect critical capacities and capabilities essential for national defense. Instead, it shields the organic industrial base (OIB) from beneficial market competition, leading to inefficiencies. Through a review of statutory history, government reports, and industry analysis, the paper highlights structural differences between the OIB and the commercial industrial base (CIB) and the impact of competition, or lack thereof, on performance. The paper recommends replacing the 50-50 rule with two targeted policies: one that leverages competition for maintenance services common to both military and commercial sectors, and another that secures critical, military-exclusive maintenance capabilities within the OIB. These reforms aim to enhance readiness, support the Regional Sustainment Framework, and prepare the force for potential conflict in the INDOPACOM region between 2027 and 2030, aligning with the goals of the Eisenhower School Organic Industrial Base Industry Study.

Problem Statement: The 50 percent limit, which was settled on nearly 30 years ago, is not founded on logic. It assumes that retaining 50 percent of depot-level maintenance by cost within public control will ensure critical levels of capacity and capability are maintained, but it does not identify what the critical capacity levels and capabilities are.

Thesis Statement: The 50-50 rule is failing to achieve its aim of ensuring readiness, because it does not identify the critical capacities and capabilities that are required. Furthermore, the 50-50 rule undermines military equipment readiness by protecting the organic industrial base from the beneficial forces of market competition.

Ms. Julie Workmeister
Human Capital Manager
U.S. Army Civilian

Title: *The OIB of the Future: Navigating the Adoption of Advanced Manufacturing in the Organic Industrial Base*

Abstract: The OIB is vital to U.S. military readiness, delivering maintenance, repair, and overhaul (MRO) for critical defense systems. As global threats and technologies evolve, the Department of Defense (DoD) is pushing to modernize the OIB through advanced manufacturing—such as additive manufacturing, automation, and modular robotics—to boost sustainment, agility, and resilience. Yet this transformation faces interrelated barriers: aging infrastructure, rigid regulations, budget and acquisition hurdles, cybersecurity risks, and, most critically, a shortage of skilled labor and institutional resistance to change.

This paper uses the Readiness Enablers Model to examine how weaknesses in infrastructure, governance, finance, supply chains, and human capital stall modernization. Drawing on policy analysis, industry case studies, and current literature, it highlights workforce challenges—recruitment, retention, and upskilling—as the most acute and far-reaching. The study advocates for a comprehensive strategy prioritizing workforce development, infrastructure upgrades, cybersecurity, and flexible policy reform to ensure a resilient, “fight tonight” OIB capable of supporting future defense needs.

Problem Statement: Modernizing the Organic Industrial Base through advanced manufacturing technologies is a complex endeavor hindered by multiple, interrelated barriers. Among these are longstanding regulatory constraints that slow acquisition and innovation, increasing cybersecurity risks tied to digital integration, and aging infrastructure unsuited to advanced manufacturing environments. Additionally, the OIB faces significant workforce challenges in technical skills and attracting, retaining, and adapting a labor force capable of supporting modernization. While not the sole barrier, these workforce issues complicate and compound the broader systemic limitations facing the defense industrial enterprise. Without targeted intervention, these barriers threaten the OIB’s capacity to fully support defense readiness and modernization.

Thesis Statement: This paper argues that successfully adopting advanced manufacturing within the OIB requires addressing a constellation of barriers, including regulatory rigidity, cybersecurity vulnerabilities, and infrastructure obsolescence. Crucially, workforce challenges—spanning skills gaps, recruitment difficulties, and institutional resistance to workforce transformation—must be recognized as a key component of this modernization puzzle. Tackling these human capital issues alongside structural reforms is essential for building a resilient and “fight tonight” ready OIB.

Appendix G: Generative AI Use

Generative Artificial Intelligence was used to facilitate paper organization and language improvement. The ideas in this report are original to the writers. Grammarly was used for spelling, grammar, and sentence structure proofing. ChatGPT4.0 was used to clarify writing, check work, and with citations. None of this reaches the threshold of screenshots, per the academic guidance. More information about how these tools were incorporated is available on request.

Appendix H: Wargaming

JP 5-0 Feasibility Assessment – OIB Sustainment Recommendations

Recommendation	Feasibility	Risk	Summary
JPEO for Integrated Sustainment	✓ High	Low	Unifies fragmented governance to enable joint sustainment operations.
Civil Reserve Industrial Base (CRSRP)	✓ High	Medium	Addresses wartime labor surge gap through pre-contracted trades.
National Call to Build	⚠ Moderate	Medium	Builds long-term workforce pipeline; not crisis responsive.
STRIKE Platform	✓ High	Low	Enables federated MRO visibility and repair tasking under contested logistics.
Infrastructure Modernization	⚠ Moderate	Medium	Phased upgrades improve forward sustainment posture and redundancy.
NTIB Operationalization	✓ High	Low	Operationalizes trusted partners beyond policy into theater sustainment nodes.

To evaluate each recommendation’s suitability within a contested Indo-Pacific conflict scenario, the team applied the Joint Wargaming “-ilities” test, feasibility, acceptability, and suitability, as outlined in Joint Publication 5-0. This assessment ensured that proposed solutions were not only operationally relevant but also realistically executable under current authorities, resources, and strategic timelines. Each recommendation was examined for feasibility, considering implementation complexity, existing statutory authorities, and resource requirements. Risk was used as a proxy for acceptability, weighing the operational consequences, stakeholder alignment, and potential disruptions. Suitability was reflected in each recommendation’s ability to directly support the required operational outcomes of distributed, resilient sustainment in a contested theater.

The Joint Program Executive Office for Integrated Sustainment (JPEO-IS) and the STRIKE platform were assessed as highly feasible and low-risk due to their reliance on existing pilot efforts and authorities. Workforce initiatives such as the Civil Reserve Sustainment Readiness Program (CRSRP) and the National Call to Build were rated medium-risk due to dependency on interagency coordination and timeline sensitivity. Meanwhile, infrastructure modernization and NTIB operationalization were rated moderate-to-high feasibility but required careful sequencing to align with fiscal constraints and regional basing considerations. Together, these assessments ensured a balanced, operationally grounded recommendation set that can inform planning and investment decisions across the Joint Force.

Appendix I: Glossary of Terms

8% Investment: statutory law requiring depots to gather no less than eight percent of the average total dollar value of the combined MRO workload performed over the preceding three fiscal years. This money is intended to fund capital investments for the organic industrial base to include facilities, equipment, and infrastructure.

Acquisition: the conceptualization, initiation, design, development, testing, contracting, production, deployment, Logistics Support (LS), modification, and disposal of weapons and other systems, supplies, or services (including construction) to satisfy DoD needs, intended for use in, or in support of, military missions.

Additive Manufacturing (AM): advanced manufacturing techniques, such as 3D printing, used to produce parts on-demand, particularly valuable in forward or expeditionary sustainment environments.

Agile: the ability to anticipate demand and when necessary, quickly respond to sustain operational tempo. This includes the flexibility to support rapid deployment, maneuver, aggregation, disaggregation, and redeployment of forces; the ability to attain and process accurate critical information in the near-real-time to inform decision-making; and the ability to build integrated plans that simplify command relationships, responsibilities, and common-user support.

Agile Combat Employment (ACE): a U.S. Air Force operational concept that emphasizes rapid, dispersed deployment of forces to increase survivability and maintain operational tempo. It requires modular, forward-positioned sustainment support, including from the OIB.

Application Programming Interface (API): a set of programming code and protocols that enables different software applications or computer systems to communicate and interact with each other. APIs define the methods and data formats that programs can use to request and exchange information, acting as an intermediary layer between different software components.

Capacity, Depot: the amount of workload, expressed in actual direct labor hours, that a facility can accommodate with all work positions manned on a single-shift, 5-day, 40-hour week basis while producing the product mix that the facility is designed to accommodate.

Capacity, Industry: maximum output that can be generated from unlimited resources, but based on fixed property, plant, and equipment footprint.

Capacity Utilization: expressed as a percentage and is calculated by taking the actual level of output, divided by potential output.

Capability: the ability to complete a task or execute a course of action under specified conditions and level of performance. Capability is how well customer expectations are met.

Carryover: funded depot level work not completed by the end of a given fiscal year.

Civil Reserve Air Fleet (CRAF): a U.S. Air Force program in which commercial airlines commit aircraft and crews to support military airlift needs during national emergencies, augmenting Air Force transport capacity when required.

Civil Reserve Sustainment Readiness Program (CRSRP): a proposed program to mobilize commercial and civil sector sustainment capacity in support of military operations during contingency or conflict.

Commercial Industrial Base (CIB): the part of the larger DIB, consisting of the commercially-owned organizations, facilities or installations with capabilities to perform research, development, production, and depot-level maintenance/repair and upgrades/modifications on necessary military weapon systems, equipment, materials, munitions, hardware, and software to meet the requirements of national security.

Contested Logistics and Sustainment Integration Fund: a proposed DoD funding mechanism to modernize and strengthen logistics and sustainment operations in contested environments. It supports initiatives like digital integration, infrastructure upgrades, workforce development, and public-private partnerships to ensure agile, resilient, and decentralized sustainment—especially in forward and Indo-Pacific theaters.

Core: the depot maintenance capability (including personnel, equipment, and facilities) maintained by the Department of Defense at Government-owned, Government-operated facilities as the ready and controlled source of technical competence and resources necessary to ensure effective and timely response to a mobilization, national defense contingency situations, and other emergency requirements. Depot maintenance for the designated weapon systems and other military equipment is the primary workload assigned to DoD depots to support core depot maintenance capabilities.

Core logistics capabilities: the depot maintenance capability (including personnel, equipment, and facilities) maintained by the DoD at government-owned, government-operated facilities as the ready and controlled source of technical competence and resources necessary to ensure effective and timely response to a mobilization, national defense contingency situations, and other emergency requirements. Depot maintenance for the designated weapon systems and other military equipment is the primary workload assigned to DoD depots to support core depot maintenance capabilities.

Core sustaining workload: depot-level maintenance and repair work necessary to ensure technical competence in peacetime while preserving the surge capacity and reconstitution capabilities necessary to support fully the strategic and contingency also includes all aspects of software maintenance; the installation of parts or components for modifications; and technical assistance to intermediate maintenance organizations, operational units, and other activities.

Cybersecurity: the collection of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and

technologies that can be used to protect the cyber environment and organization and user's assets. [these are used] to ensure the attainment and maintenance of the security properties of the organization and user's assets against relevant security risks in the cyber environment.

Cybersecurity Collaboration Center (CCC): a National Security Agency (NSA) led initiative that strengthens the cybersecurity of the DIB through partnerships with industry, government, and international allies. It shares threat intelligence, develops mitigation strategies, and applies NSA insights to defend against nation-state cyber threats and secure emerging technologies.

Cybersecurity Maturity Model Certification (CMMC): a DoD framework that assesses and certifies the cybersecurity practices of defense contractors, ensuring they meet required standards to protect sensitive unclassified information across multiple levels of security maturity.

Defense Industrial Base (DIB): the worldwide industrial complex comprised of the OIB and CIB that enables research and development as well as design, production, delivery, and maintenance of military weapon systems/software systems, subsystems, and components or parts, as well as purchased services to meet U.S. military requirements.

Defense Industrial Capability: the skills and knowledge, processes, facilities and equipment needed to design, develop, manufacture, repair and support DoD products. Defense industrial capabilities include private and public industrial activities.

Defense Sustainment Industrial Base: the package of support functions required to maintain the readiness and operational capability of weapon systems, subsystems, software and support systems.

Defense Workforce Modernization Board: a proposed DoD advisory body that guides efforts to modernize the civilian and military workforce by aligning talent management, training, and personnel policies with emerging mission requirements and advanced technologies.

Defense Working Capital Fund (DWCF): used by OIB to charge for goods and services provided to a variety of customers, including the Army, the Navy, the Air Force, other DoD and non-DoD agencies, and foreign countries. Under the working capital fund concept, the DWCF charges these customers for the anticipated full cost of these goods and services.

Demilitarization: the act of destroying the military offensive or defensive capability inherent in certain types of equipment or materiel. The term includes mutilation, scrapping, melting, burning, or alteration designed to prevent the further use of this equipment and materiel for its originally intended military or lethal purpose. It applies equally to materiel in unserviceable or serviceable condition that has been screened through an Inventory Control Point (ICP) and declared excess or foreign excess.

Depot Maintenance: that maintenance performed on materiel requiring major overhaul or a complete rebuild of parts, assemblies, subassemblies, and end-items, including the manufacture of parts, modifications, testing and reclamation as required. Depot maintenance serves to support lower categories of maintenance by providing technical assistance and performing that

maintenance beyond their responsibility. Depot maintenance provides stocks of serviceable equipment by using more extensive facilities for repair than are available in lower-level maintenance activities.

Digital Modernization: the process of upgrading and integrating advanced digital technologies—such as data analytics, digital twins, cloud computing, and interoperable platforms—into existing systems and operations to improve efficiency, transparency, agility, and decision-making capabilities. In the context of defense sustainment, it enables real-time data sharing, predictive maintenance, and streamlined coordination across government, commercial, and allied partners to enhance readiness and responsiveness.

Digital Transparency: the use of digital platforms and data-sharing agreements to enable real-time visibility, coordination, and decision-making across the sustainment enterprise.

Digital Twin: a real-time, data-driven virtual model of a physical military system or component used within the OIB to simulate performance, diagnose issues, and predict maintenance needs. It enhances sustainment by enabling predictive maintenance and reducing downtime.

Disposal: the act of getting rid of excess, surplus, scrap, or salvage property under proper authority. Disposal may be accomplished by, but not limited to, transfer, donation, sale, declaration, abandonment, or destruction.

Distribution: the movement of goods from supplier or manufacturer to point of sale. Distribution management is an overarching term that refers to numerous activities and processes such as packaging, inventory, warehousing, supply chain and logistics.

Expeditionary Advanced Base Operations (EABO): a U.S. Marine Corps concept that involves establishing small, mobile bases in contested environments. These bases rely heavily on agile, decentralized sustainment capabilities provided by the OIB and its partners.

Foreign Allies and Partners (FAP): international defense partners who contribute to sustainment, MRO, and logistics operations, often through bilateral or multilateral agreements.

Fixed Capital: long-term physical assets used in the production and sustainment of military equipment and services within the OIB. This includes infrastructure such as buildings, machinery, tooling, and equipment that support maintenance, repair, overhaul, and manufacturing activities.

Forward Sustainment: the practice of positioning sustainment resources and capabilities closer to the point of need to reduce response times and enhance operational agility.

Full Operational Capability: attained when all units and/or organizations in the force structure scheduled to receive a system have received it and have the ability to employ and maintain it.

Global Enterprise Network for Universal Sustainment (GENUS): a proposed digital coordination platform designed to integrate sustainment data across the OIB, CIB, and allied

partners. It enables global visibility of repair capacity, parts availability, and logistics assets to support decentralized, theater-level maintenance operations.

GOCO: government-owned, contractor operated.

GOGO: government-owned, government operated.

Governance: the structures, policies, processes, and authorities that guide, oversee, and coordinate decision-making and accountability within an organization or enterprise. In the context of defense sustainment, governance encompasses the mechanisms that ensure alignment, integration, and effective management across the Organic Industrial Base, Commercial Industrial Base, and Foreign Allies and Partners to achieve strategic objectives.

Intellectual Property (IP): information, products, or services that are protected by law as intangible property, including data (e.g., technical data and computer software), technical know-how, inventions, creative works of expression, trade names.

International Traffic in Arms Regulations (ITAR): a U.S. regulatory framework that controls the export and sharing of defense-related technology. It can constrain sustainment collaboration with foreign partners by limiting access to technical data and parts necessary for forward MRO.

Joint Program Executive Office for Integrated Sustainment (JPEO-IS): a proposed governance structure to align and oversee sustainment initiatives, ensuring interoperability and unity of effort across the Department of Defense.

Life-Cycle Sustainment Plan (LCSP): is the primary program management reference governing operations and support planning and execution from Milestone A to final disposal.

Limited Rights: rights to use, duplicate, or disclose Technical Data (TD) in whole or in part, by or for the government, with the express written permission of the party furnishing the data to be released or disclosed outside the government.

Maintenance: all action taken to retain materiel in a serviceable condition or to restore it to serviceability. It includes inspection, testing, servicing, classification as to serviceability, repair, rebuilding and reclamation.

Maintenance, Repair, and Overhaul (MRO): refers to all activities aimed at ensuring the continued operational readiness, safety, and performance of equipment or systems. This includes routine maintenance to prevent failure, repairs to fix faults, and comprehensive overhauls to restore systems to like-new condition.

Materiel: equipment, apparatus, and supplies used by an organization or institution.

Materiel Availability (A_m) Metric: used to measure both effectiveness and efficiency of sustainment efforts to affect the availability of a given weapon system being utilized within the system's planned lifecycle.

Military Readiness: a condition of the Armed Forces and their personnel, weapon systems, technology and equipment to perform during military operations.

Mobilization: to marshal something, such as resources, for action. During a federal emergency, mobilization is more explicitly “a process of assembling and organizing national resources to support national objectives.”

Modernization Barriers: challenges that hinder the adoption of advanced manufacturing within the OIB, including legacy systems, workforce skill gaps, cybersecurity vulnerabilities, and outdated infrastructure.

Modification: are any change to the engineering baseline of a product that materially increases the efficiency or productive capacity of the equipment.

Multi-Domain Operations (MDO): the U.S. Army’s operational concept that integrates capabilities across land, air, sea, space, and cyberspace to achieve overmatch in contested environments. It requires a flexible, resilient sustainment network—anchored by the OIB—that can support distributed forces across all domains.

National Technology and Industrial Base (NTIB): a framework that integrates the industrial capabilities of the United States, Canada, the United Kingdom, and Australia to support defense acquisition, sustainment, and innovation.

Net Present Value (NPV) Analysis: a financial method that evaluates the long-term value of investments by comparing expected future benefits to present costs.

Operations and Maintenance (O&M): appropriations which fund expenses such as maintenance services, civilian salaries, travel, minor construction projects, operating military forces, training and education, depot maintenance, working capital funds, and base operations support. O&M follows the Department’s Annual Funding budget policy. O&M appropriations are available for obligation purposes for one year.

Operational Availability (A_o) Metric: used to measure the effectiveness of sustainment efforts to affect the availability of a weapon system’s active inventory.

Organic Industrial Base (OIB): the government-owned industrial capability comprised of the organizations and facilities that perform research, development, production, or depot-level maintenance, repair, demilitarization, and disposal of weapon systems, equipment, materials, munitions, hardware, and software. These include laboratories, research centers, arsenals, depots, shipyards, aircraft plants, and ammunition plants, whether operated by government personnel or contractors.

Other Transaction Authority (OTA): a flexible contracting mechanism that allows the Department of Defense to streamline acquisition and foster innovation, particularly in sustainment and modernization programs.

Pacific Deterrence Initiative (PDI): a DoD program that funds efforts to strengthen deterrence against aggression in the Indo-Pacific region through investments in forward posture, logistics, infrastructure, joint force readiness, and partner capabilities.

Partnerships for Indo-Pacific Resilience (PIPER): a sustainment initiative aimed at strengthening industrial collaboration and MRO capacity with trusted allies in the Indo-Pacific region. It enhances regional readiness by integrating allied capabilities into the broader U.S. sustainment architecture.

Porter's Five Forces: a strategic framework used to analyze the competitive environment of an industry and assess its attractiveness and profitability. In the OIB context, it helps evaluate factors such as supplier power, barriers to entry, and rivalries that affect sustainment capabilities and strategic sourcing.

Predictive Maintenance: a data-driven maintenance approach that uses real-time monitoring and analytics to predict when equipment will require servicing, reducing unexpected failures and downtime.

Production Function Analysis: an economic method used to examine the relationship between inputs (like labor, capital, and technology) and output in a production process, often applied to assess efficiency, productivity, and the impact of modernization investments in defense manufacturing.

Proprietary: proprietary hardware and software are owned and controlled by a single organization or individual.

Public-Private Partnerships (PPPs): collaborative arrangements between DoD entities and private-sector firms designed to accelerate innovation, share expertise, and mitigate risks associated with modernization.

Readiness: the capability of a unit/formation, ship, weapon system, or equipment to perform the missions of functions for which it is organized or designed. This is synonymous with operational readiness, and it includes the OIB's ability to meet the needs of the Combatant Commanders as they execute their assigned missions.

Readiness Enablers Model: an analytical framework designed to assess the key factors supporting military sustainment and operational readiness. It identifies critical enablers—such as infrastructure, governance, finance, supply chains, and human capital—and evaluates how weaknesses in these areas can hinder modernization and readiness. By highlighting challenges like workforce recruitment, retention, and upskilling, the model informs targeted policy and investment decisions to strengthen sustainment capabilities and ensure preparedness for future conflict.

Regional Sustainment Framework (RSF): a strategic initiative to establish forward-deployed, theater-proximate sustainment nodes leveraging allied and partner capacity for MRO.

Resilient: the ability to withstand and quickly recover from kinetic or non-kinetic attacks against forces and asset; includes force protection measures, hardening critical infrastructure from attack, and deception efforts to complicate adversary decisions and targeting; and provide necessary support to maintain sufficient combat power to achieve campaign objectives, even in the face of continued and adaptive near-peer adversary actions.

Service: one of the military Services: Army, Navy, Marine Corps, Coast Guard, Air Force, and Space Force.

Stovepipes of Excellence: isolated areas of high performance within organizations or systems that limit shared learning and enterprise-wide surge capacity due to lack of integration.

Strategic Gameboard Framework: a tool used to visualize and analyze strategic decisions within an organization's environment. It maps out key players, their potential actions, and the dynamics at play, helping decision-makers assess scenarios, anticipate outcomes, and prioritize actions for long-term planning.

Strategic Planning: high-level priorities and goals the organization desires to accomplish, strategic measures to assess progress toward goals, and specific tasks the organization will perform in order to accomplish its goals.

Strategic Readiness: the ability of the sustainment enterprise to support joint force requirements under contested, distributed, and high-intensity operational conditions.

Strategy: a prudent idea or set of ideas for employing the instruments of national power in a synchronized and integrated fashion to achieve theater, national, and/or multinational objectives.

Structure-Conduct-Performance (SCP) Framework: a model in industrial organization economics that offers a causal theoretical explanation for firm performance through economic conduct on incomplete markets.

Supply: refers to the process of procuring, managing, and distributing materials, components, and resources necessary to support the production, maintenance, repair, and overhaul operations within the OIB. It encompasses the end-to-end logistics required to ensure that organic facilities have timely access to the inputs needed to sustain military readiness and operational capability.

Supply Chain: the linked activities associated with providing materiel to an end user starting from a raw material stage to a finished product.

Surge: the act of expanding an existing depot maintenance repair capability to meet increased requirements by adjusting shifts or by adding skilled personnel, equipment, spares, and repair parts. The expanded capability will increase the flow of repaired or manufactured materiel to the using activity or to serviceable inventory storage.

Sustainment: the supportability of fielded systems and their subsequent lifecycle product support – from initial procurement to supply chain management (including maintenance) to reutilization and disposal.

Sustainment Tracking, Repair Integration, and Knowledge Exchange (STRIKE): a proposed secure digital platform that aggregates real-time data on MRO capacity, parts inventories, tooling, and workforce availability across the OIB, CIB, and FAP, enabling real-time decentralized sustainment decision-making.

Technical Data: recorded information of scientific or technical nature, regardless of form or character (such as equipment technical manuals and engineering drawings), engineering data, specifications, standards, and Data Item Descriptions (DID).

Technical Data Package: a technical description of an item adequate for supporting an acquisition strategy, production, engineering, and logistics support.

Technical Data Rights: the right for the government to acquire technical data.

Theory of Constraints: a systematic approach to optimize resource utilization by identifying, exploiting, subordinating, elevating, and reassessing constraints in the process. Scientific principles are applied as a set of logical thinking processes to develop transformational breakthrough business solutions. A constraint is any resource whose capacity is less than the demand placed upon it. Theory of constraints attacks constraints and barriers (a restriction or other block to increases in output).

Unlimited Rights: rights to use, modify, reproduce, display, release, or disclose technical data (TD) in whole or in part, in any manner, and for any purpose whatsoever, and to have or authorize others to do so.

Value: represents an increased return on investment for shareholders that is high enough to compensate for the cost of capital.

Weapon System: a combination of one or more weapons including all services, materials, equipment, and means of delivery and deployment required for self-sufficiency.

Workforce Modernization: strategic initiatives to rebuild, upskill, and surge the sustainment workforce across public and private sectors, including digital training, apprenticeships, and crisis mobilization programs.

Workforce Readiness: the preparedness of the labor force—particularly in OIB facilities—to adopt and operate advanced technologies, encompassing both technical skills and change-management capabilities.

Working Capital Fund (WCF): revolving funds within DoD that finance organizations that are intended to operate like commercial businesses. WCF business units finance their operations

with cash from the revolving fund; the revolving fund is then replenished by payments from the business units' customers.

Zero Trust Architecture: a cybersecurity approach that assumes no implicit trust and requires continuous verification of user and device identities, especially relevant for protecting manufacturing networks.

Appendix J: National Call to Build

The National Call to Build would be a federally led, regionally executed initiative to rebuild the sustainment workforce through public-private consortia, tuition-free trade pipelines, and demographically inclusive technical education. Modeled on successful initiatives such as Virginia's Institute for Advanced Learning and Research and the Kansas Excel in Career Technical Education Program, this effort would establish Defense Regional Workforce Consortia in key OIB and CIB hubs.¹⁴⁹ These consortia would link local high schools, community colleges, and industry partners to create career-ready education-to-employment pipelines, including dual-enrollment programs, DoD-aligned apprenticeships, and fast-track certification initiatives. As Lt Col Meihaus notes, these regional tripartite models are essential to building tailored, place-based pipelines that reflect local sustainment needs and industry standards.¹⁵⁰

The program would be resourced through a new interagency grant fund, jointly managed by the Department of Labor and OSD Industrial Base Policy, and supported by existing authorities under the Workforce Innovation and Opportunity Act and National Apprenticeship Act.¹⁵¹ Proposals would be evaluated based on their ability to deliver workforce outcomes aligned with sustainment surge capacity, industry co-investment, and inclusion of underrepresented communities. The Defense Manufacturing Community Support Program should be fully funded and expanded to serve as a backbone for grant execution.¹⁵² In addition to pipeline development, retention of skilled personnel must also be prioritized. As Bastian's research highlights, retention is not a personnel issue, it is a readiness imperative.¹⁵³ Policies such as special pay for hard-to-fill roles, modernization of depot facilities, and a Defense Workforce Modernization Board to standardize certifications and track metrics should be embedded within the broader workforce strategy.¹⁵⁴

The National Call to Build is not a new federal program; it is a national security necessity. Without a skilled, mission-aligned sustainment workforce, even the most advanced logistics enterprise cannot function in crisis. By rebranding trade careers, investing in technical education, and institutionalizing workforce readiness across regions, the Department can restore the nation's industrial depth and maintain combat credibility in the years ahead.

¹⁴⁹ Nicole V. Bastian, *Disinterest in Military Service and Trade Skills is a National Security Vulnerability*, Eisenhower School, December 2024.

¹⁵⁰ *Ibid.*; see also Meihaus, *Forging the Future Force*, Eisenhower School, April 2025.

¹⁵¹ *Ibid.*

¹⁵² *Ibid.*

¹⁵³ U.S. Department of Labor, *Workforce Innovation and Opportunity Act Implementation Guidelines*, 2023.

¹⁵⁴ U.S. Department of Defense, *Defense Manufacturing Community Support Program Overview*, 2024.

Appendix K: Resourcing the Recommendations

Integrated Sustainment Resourcing

Establishing a Joint Program Executive Office for Integrated Sustainment (JPEO-IS) is a foundational recommendation that can be achieved through reallocation of existing billets and OSD sustainment resources, requiring no new legislation. This initiative is effectively budget-neutral, with an implementation cost estimated at \$0 (\pm \$5–10 million), and would enable governance across disparate sustainment efforts like RSF, PIPIR, and GENUS.

The development of STRIKE, a real-time sustainment visibility platform, represents a medium-cost investment with an estimated implementation range of \$100–\$150 million, reflecting a large confidence interval to account for phased development and scaling. It could be resourced through the Defense Working Capital Fund (DWCF) and cost-sharing with industry, particularly where open-source APIs and zero-trust architecture models reduce duplication and accelerate pilot adoption.

Operationalizing the National Technology and Industrial Base (NTIB) for forward sustainment, including piloted MRO activities and ITAR waivers, is a low-cost, high-yield recommendation, with potential implementation costs ranging from \$0–\$25 million. This is considered resource-saving in the long run by leveraging trusted foreign MRO capacity and avoiding costly reinvestment in CONUS facilities.

Human Capital Resourcing

The sustainment enterprise's readiness hinges on workforce regeneration. The proposed Civil Reserve Sustainment Readiness Program (CRSRP) would create a credentialed surge labor pool. Its estimated implementation cost falls within a medium range of \$200–\$500 million, with broad confidence intervals dependent on contractor participation and program scale. Funding could draw from Title III/VIII of the Defense Production Act (DPA) or emergency O&M authorities, with analogs to the Civil Reserve Air Fleet (CRAF) providing legislative precedent. The National Call to Build, a high-investment workforce pipeline initiative focused on tuition-free technical education and DoD-aligned apprenticeships, could cost between \$1 billion and \$3 billion, depending on interagency scale and execution. This cost could be offset through interagency collaboration, especially via the Department of Labor (DoL) and Workforce Innovation and Opportunity Act (WIOA) funding, and politically justified as part of a broader revitalization of domestic manufacturing and skilled trades.

Lastly, implementing targeted retention and readiness-linked incentives—to prevent skilled workforce attrition—would also fall within the medium-cost category (\$250–\$400 million). This could be resourced through an 8 percent reallocation from existing O&M topline, consistent with the Secretary of Defense's directive to reduce service-level outlays and reinvest savings into strategic readiness priorities.

Infrastructure Recapitalization Resourcing

The most capital-intensive reforms are in infrastructure. The creation of a Contested Logistics and Sustainment Integration Fund, designed to consolidate Pacific Deterrence Initiative (PDI), DWCF, and O&M sustainment modernization efforts, is projected at \$500 million to \$2 billion, though the fund acts as a resource aggregator rather than a new program. This mechanism can be enabled through existing Title 10 USC §2476 reinvestment authorities and DoD's internal 8 percent budget reshaping guidance.

Accelerating Indo-Pacific depot recapitalization will be vital to improving theater MRO velocity. This includes MILCON-grade upgrades and could cost between \$3 billion and \$5 billion. These projects can be funded through standard MILCON accounts, contingency construction authorities, and O&M reallocation, with prioritization based on wargaming outcomes and climate vulnerability assessments.

Finally, deploying modular/mobile MRO detachments to key regional nodes like Guam, Japan, and Australia represents a medium-range investment (\$200–\$600 million). These systems can be funded via PACFLT O&M, RSF and PIPIR pilot programs, or as part of targeted NDAA-authorized initiatives for contested logistics experiments.

Conclusion

Collectively, these resourcing strategies emphasize flexible, multi-source funding mechanisms built on existing statutory authorities, strategic reallocations, and interagency partnerships. By embracing the fiscal reality of large confidence intervals and planning within a range of likely costs, the Department of Defense can move forward with implementation that is both feasible and responsive to the emerging operational urgency in the Indo-Pacific.

Sources

Recommendation	Budget Change	Estimated Implementation Cost	Possible Funding Solutions
JPEO-IS	Neutral	\$0	OSD billets, reallocated positions; No new legislation
STRIKE	Medium	+\$100 - \$150M	
NTIB Operationalization	Low	\$0 - \$25M	
CRSRP	Medium	+\$200 - \$500M	\$12 billion cut from the Dept of Education
National Call to Build	High	+\$1,000 - \$3,000M	\$12 billion cut from the Dept of Education
Retention & Readiness-linked incentives	Medium	+\$250 - \$400M	
Contested Logistics & Sustainment Integration Fund	High	+\$500 - \$2,000M	DoD 8% budget reinvestment (~\$50,000M annually)
Accelerate Indo-Pacific depot recapitalization	High	+\$3,000 - \$5,000M	DoD 8% budget reinvestment (~\$50,000M annually)
Deploy modular/mobile MRO detachments	Medium	+\$200 - \$600M	