KNUDSEN INSTITUTE
for Applied Research on Surge Theory

The Invisible Base:

How Operation Epic Fury Reveals U.S. Defense Industrial Base's True Fragility

White Paper on Defense Industrial Base Visibility and Surge Readiness

A White Paper
By The Knudsen Institute
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Executive Summary

The United States is ten days into Operation Epic Fury, and it has become clear that this war will persist. What began as a strike campaign has become a regional war with no visible exit strategy. Iran has named a successor supreme leader and declared it will continue fighting. The conflict has expanded to Kuwait, Qatar, Saudi Arabia, and the UAE. The Strait of Hormuz is effectively closed. Oil is above $100 per barrel. A U.S. National Intelligence Council assessment concluded that the operation is unlikely to achieve regime change. The defense industrial base debate, in this context, has collapsed into two conversations: munitions stockpile burn rates and critical mineral supply chains. Both are real. Both are well-known vulnerabilities. Neither are the root cause of the true risk the US faces.

The true risk, the country's deepest problem, is the utter lack of visibility into its supply chains. There is no systematic, technology-enabled picture of the feedstock metals, specialty alloys, forgings, castings, or intermediate manufactured components that underpin every weapons system in the inventory. We do not know what we have. We do not know where it is. We are navigating an open-ended regional war using supplier relationships formed years ago, institutional memory, and legacy databases that do not reflect the manufacturing economy that actually exists today.

The technology to solve this problem exists. The policy framework to deploy it at national scale does not. This brief argues that Operation Epic Fury has pulled forward the serious threats to the US's ability to engage in large-scale, sustained combat operations. Prior to this war, DoD leadership discussed this issue as theoretical with China's ambitions for reunification with Taiwan as the framing event. Operation Epic Fury has changed this. It is no longer theoretical and there is no longer time to prepare.

Leadership in Congress, in the Administration, and in the military must act now to establish industrial manufacturing visibility as national security infrastructure. Failing to act now will mean repeating this conversation at far higher cost as this conflict extends and the next one approaches.

I. The Conversation Washington Is Having

The conflict has widened beyond Iran's borders. Iranian strikes are hitting infrastructure in Kuwait, Qatar, Saudi Arabia, and the UAE. Israel has re-entered Lebanon with ground forces. Spain has denied the United States permission to use the jointly operated Rota and Morón military bases. European allied response is fragmented. A U.S. National Intelligence Council assessment concluded that a large-scale assault is unlikely to achieve regime change and that Iran's fragmented opposition taking control is equally unlikely.[1] Iran named a new supreme

[1] Warren P. Strobel, "Intel report warns large-scale war 'unlikely' to oust Iran's regime," The Washington Post, March 7, 2026. https://www.washingtonpost.com/national-security/2026/03/07/iran-intelligence-report-unlikely-oust-regime/

leader on Day 10, and its foreign minister has explicitly rejected ceasefire negotiations.[2] There is no exit strategy visible from any public source.[3]

The first 36 hours of the U.S.-Israeli campaign consumed more than 3,000 precision-guided munitions and interceptors[4]. Iran has since fired more than 500 ballistic and naval missiles and [5]. Eight U.S. service members have been killed[6]. The Chairman of the Joint Chiefs publicly warned of munitions shortfalls before the operation began. The EU defense commissioner has stated publicly that U.S. military costs have overstretched, with missile stock shortages already affecting the ability to provide military aid to Gulf allies and Ukraine[7]. Interceptor stocks across Gulf partner nations are declining.[8] The current burn rate is not sustainable at this pace indefinitely.

Defense Secretary Hegseth has publicly asserted that stockpiles are adequate. President Trump subsequently belied this narrative as real world realities came into conflict with public relations messaging. Over the weekend, President Trump personally convened the chief executives of the six top defense contractors associated with precision munitions. The good news is they agreed to quadruple production of this class of weaponry. The bad news is this expansion was already in the works. The worse news is this development does not change anything.[9]

This is the predictable shape of the institutional response during military combat: convene the six largest prime contractors, announce a production multiple, and let that announcement stand as evidence of urgency. What the meeting did not include was a single manufacturer from the sub-tier supply chain that must actually feed the production increase. Quadrupling PAC-3 output requires quadrupling the supply of titanium forgings, specialty nickel superalloys, precision castings, solid rocket motor components, and the dozens of other intermediate manufactured inputs that Lockheed assembles but does not make. Those manufacturers were not at the table. Most of them are not in any DoD database. The Department does not know who they are, where they are, or whether they have capacity. The primes will discover the bottlenecks after production ramp begins, exactly as they have in every prior surge attempt.

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[2] Fox News Digital, live updates: "Iran names Mojtaba Khamenei as new supreme leader as oil prices soar," March 9, 2026. https://www.foxnews.com/live-news/us-iran-israel-war-latest-march-9-live-updates

[3] NBC News, live updates: "Iran president must respond; attacks, strikes hit region," March 9, 2026. https://www.nbcnews.com/world/iran/live-blog/live-updates-iran-president-must-respond-attacks-strikes-hit-rcna262269

[4] Wikipedia, "2026 Iran war," last updated March 9, 2026. https://en.wikipedia.org/wiki/2026_Iran_war

[5] Fars News Agency military source, March 5, 2026, as reported in Wikipedia, "2026 Iran war." https://en.wikipedia.org/wiki/2026_Iran_war

[6] CBS News, live updates: "7th U.S. service member dies in war with Iran; Mojtaba Khamenei named new supreme leader," March 9, 2026. https://www.cbsnews.com/live-updates/us-iran-war-israel-strikes-regime-targets/

[7] Wikipedia, "Economic impact of the 2026 Iran war." https://en.wikipedia.org/wiki/Economic_impact_of_the_2026_Iran_war

[8] Center for Strategic and International Studies (CSIS), "What Does the Iran War Mean for Global Energy Markets?" March 2026. https://www.csis.org/analysis/what-does-iran-war-mean-global-energy-markets

[9] Valerie Insinna, "Defense companies to quadruple production of 'exquisite' weapons: Trump," Breaking Defense, March 6, 2026. https://breakingdefense.com/2026/03/defense-companies-to-quadruple-production-of-exquisite-weapons-trump/. Prior framework agreements to triple PAC-3 production and quadruple THAAD interceptors had been announced in January 2026; Breaking Defense noted it was not immediately clear whether the March 6 meeting produced commitments beyond those previously announced.

These munitions vulnerabilities deserve the attention they are receiving. They are, however, the layer that gets press. The layers beneath them are invisible, and invisibility is the actual structural emergency.

II. The Conversation Washington Is Not Having

The White House meeting named the symptom. It did not name the disease. Beneath the finished weapons systems that dominate the policy conversation sits a vast, poorly mapped terrain of feedstock metals, specialty alloys, precision castings, forgings, and intermediate manufactured components. These materials do not generate headlines. They are not named in export restriction orders. They are not the subject of congressional testimony. They are, however, the physical substrate of every weapons system, platform, and munition in the U.S. inventory.

Consider what quadrupling PAC-3 production actually requires at the sub-tier level: beryllium copper alloys used in high-performance electrical connectors; titanium forgings for airframe structural components; specialty nickel superalloys for turbine hot sections; high-strength tool steels for manufacturing dies and fixtures; precision castings in aluminum and magnesium alloys for electronics housings; tungsten-carbide cutting inserts used in the machine tools that manufacture everything else. All are subject to their own supply chain fragility, driven by decades of supplier consolidation, skilled trades workforce attrition, and the financialization of domestic manufacturing.

For some of these materials, the number of qualified domestic suppliers has contracted to single digits. For others, geographic concentration of processing capacity creates a vulnerability that a single natural disaster or infrastructure disruption could expose. The United States does not have a comprehensive, current, machine-readable map of where these capabilities exist. The manufacturing economy that could support defense surge production is larger than the current Defense Industrial Base by orders of magnitude. We simply cannot see it.

The Strait of Hormuz closure compounds this problem in a dimension that has received no policy attention. The conversation treats the strait's closure as an energy shock, which it is. Brent crude surged past $100 per barrel within ten days, with the Qatari energy minister warning of $150 if vessel traffic does not resume.[10] But the strait is also a materials corridor. Specialty alloys, industrial gases, chemical feedstocks, and processed metals that serve U.S. and allied manufacturing move through that chokepoint. The energy price shock raises production costs across every tier of the industrial base simultaneously, compressing margins at the small and medium manufacturers already operating on the thinnest financial footing. A prolonged Hormuz closure does not just raise fuel prices. It degrades the cost structure of the entire manufacturing supply chain that surge production depends upon.

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[10] CNBC, "Iranian projectiles continue to strike Gulf countries' infrastructure as Iran names new supreme leader," March 8, 2026 (updated March 9, 2026). https://www.cnbc.com/2026/03/08/iranian-projectiles-continue-to-strike-gulf-countries-infrastructure.html. Oil price figures also reported by Fox News Digital, March 9, 2026.

There is no shortage of manufacturing capacity in the United States. There is a shortage of the ability to find it. **That distinction is the difference between an industrial base that can surge and one that cannot.**

The Feedstock Visibility Gap in Operational Terms

The visibility problem is not abstract. When a munitions production line needs to increase output, the surge requirement cascades down the supply chain. The prime contractor calls its tier-one suppliers. Those suppliers call their tier-two sources. At each tier, the relationships become thinner, the databases become less current, and the probability of encountering a single-source bottleneck increases. By the time the surge signal reaches the feedstock and intermediate component level, it is often met with one of two responses: the supplier cannot be found, or the supplier has exited defense work entirely.

A precision forge shop in the American interior may have exactly the equipment and expertise needed to produce a critical structural component. That shop almost certainly does not appear in any DoD supplier database. The contracting officers who need that capability have no mechanism to find it. The shop owner has every incentive to avoid the compliance maze required to become findable. This gap, multiplied across tens of thousands of manufacturers across the country, is the structural problem that reactive emergency requests cannot solve.

III. What Current Reform Efforts Get Right, and Where They Stop

The diagnosis in this brief is not that Washington has ignored the defense industrial base problem. The FY2025 and FY2026 National Defense Authorization Acts contain provisions that reflect genuine legislative progress. The direction of travel is correct. The depth of the solution does not yet reach the core structural issue.

The FY2025 NDAA directed the Secretary of Defense to develop incentives for contractors to assess and monitor supply chain vulnerabilities, required sourcing disclosure for advanced battery components, and began the process of China decoupling in specific material categories[11]. These are meaningful measures within the known supplier ecosystem. However, this only addresses risk management for relationships that already exist.

The FY2026 NDAA went further on several fronts directly relevant to industrial base accessibility. Section 805 requires the Department to build a digital inventory of weapon-system technical data, a meaningful step toward the modern TDP infrastructure this brief identifies as essential[12]. Sections 1804 and 1826 raise the thresholds that trigger Cost Accounting Standards and certified cost and pricing data requirements, materially reducing the compliance burden that has driven nontraditional manufacturers away from defense work[13]. Section 812 shifts acquisition evaluation from lowest cost to best value and requires assessment of alternative

[11] National Defense Authorization Act for Fiscal Year 2025, Pub. L. No. 118-159, §§ 847, 852 (2024).
[12] National Defense Authorization Act for Fiscal Year 2026, Pub. L. No. 119-[TBD], § 805 (2026).
[13] National Defense Authorization Act for Fiscal Year 2026, Pub. L. No. 119-[TBD], §§ 1804, 1826 (2026).

sources when sole-source awards are made[14]. Each of these provisions removes a brick from the wall that keeps capable manufacturers out of the defense ecosystem.

The Department of War's Office of Small Business Programs took a further step in January 2026 with the launch of LYNX[15], a digital platform designed to help small businesses, new entrants, and nontraditional suppliers navigate defense contracting requirements and connect with mission-aligned opportunities. The intent is sound. The platform reflects genuine institutional commitment to broadening participation in the defense industrial base.

The structural limitation of LYNX, and of the broader reform effort it represents, is that it is opt-in and self-reported. A manufacturer must know the platform exists, find it, and voluntarily register a company profile. That approach addresses one real problem: companies that want to enter defense contracting but do not know how. It does not address the deeper problem: the Department of War does not know that a particular manufacturer exists and has no mechanism to find it without that manufacturer's cooperation. A precision forge shop running five-axis equipment for the oilfield in west Texas has no reason to know LYNX exists. It will not appear in the platform. It will not appear in any DoD supplier database. And it may be exactly the shop that a surge production line needs.

The distinction is between a demand-side readiness tool and a supply-side discovery capability. LYNX, which is part of DoD's APEX Accelerator network, and the compliance threshold reductions in the FY2026 NDAA all improve the conditions under which willing manufacturers can enter the defense ecosystem. None of them go out and find the manufacturing capacity that is unaware it is relevant. That proactive discovery function, operating at national scale and at machine speed, is the missing infrastructure.

IV. Why the Current Approach Cannot Close This Gap

The standard institutional responses to industrial base visibility challenges follow a predictable pattern: convene a task force, commission a study, build a portal, fund an accelerator program. While each of these efforts has value at the margin, the effort begins to become a predictable exercise that does not generate necessary results. The Booz Allens and Deloittes that are brought in as the program manager do not have the necessary depth of knowledge to understand how a part or a sub-assembly is actually manufactured. The third-party company that is hired out of habit – because they have been hired before for other IT needs – to design and build the software know even less about manufacturing, let alone how manufacturing integrates into the DIB.

The problem is not managing known relationships better. The problem is understanding the sources of data, where to find these disparate bits of information, and the true nature of the information needed. Before a modern data lakehouse architecture can even be built, this understanding of system discovery of manufacturing capacity outside known systems must exist. The next challenge is building this to achieve results at speed and at scale that operational

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[14] National Defense Authorization Act for Fiscal Year 2026, Pub. L. No. 119-[TBD], § 812 (2026).
[15] U.S. Department of Defense, Office of Small Business Programs, LYNX platform launch, January 30, 2026. https://www.lynxconnect.io

reality demands. Reactive discovery, scrambling to find suppliers after a shortage emerges, is precisely what we are watching play out in real time. The Pentagon's emergency mineral request the day before Epic Fury began is the most visible example. The invisible examples are the component-level bottlenecks that will surface over the next 90 days as surge production demands propagate down the supply chain.

The revolving door between DoD acquisition leadership and major defense primes, the consultant-driven conference circuit, and the incentive structures of large advisory contracts all point resources toward the known ecosystem. The small and medium manufacturers who represent the actual latent surge capacity of the American economy are structurally absent from those conversations. They were absent before this conflict began. They will remain absent unless the policy framework changes.

The depth of this data problem is confirmed by an unlikely source. Palantir Technologies serves as the lead AI platform contractor for the Navy's Maritime Industrial Base program. Palantir is among the most sophisticated data integration and decision-support platforms deployed by the U.S. government. In the course of the MIB program's technology development work, Palantir's own program managers reviewed foundational manufacturing discovery technology and confirmed what this brief argues: the underlying data does not exist in any form their platform can access or reason over. They need a manufacturing data layer that no current government database, commercial data provider, or prior technology effort has built. Palantir is a decision tool. It reasons over data that already exists. The manufacturing visibility problem sits upstream of what any decision-support platform can solve. Until the foundational data layer is built, even the most capable AI platforms deployed by DoD are working from an incomplete picture of what the American manufacturing economy can actually produce.

A Live Case: The Navy's Maritime Industrial Base

The shipbuilding industrial base faces the same visibility problem as the munitions supply chain. Congress and the Navy agree that the United States must build two Virginia-class and one Columbia-class submarine per year to maintain strategic deterrence[16]. The shipbuilding industrial base cannot currently sustain that rate. U.S. warship construction takes roughly twice as long as allied shipbuilders[17]. The gap between what the nation requires and what the industrial base can deliver is widening under the same conditions this brief describes: no systematic picture of sub-

What makes the Navy's case instructive is that the Navy actually got the hard part right. NAVSEA's Maritime Industrial Base program office and its designated technology accelerator, Blue Forge Alliance, built an effective process for identifying real supply chain problems, finding organizations with deployable solutions, and scoping contracts to put those solutions to work. That process worked exactly as intended. Multiple organizations with validated, ready

[16] U.S. Navy, Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels (FY2026); National Defense Authorization Act for Fiscal Year 2025, shipbuilding provisions.
[17] U.S. House Armed Services Committee, Seapower and Projection Forces Subcommittee hearings, 2024–2025; see also Jerry Hendrix, "America's Shipbuilding Deficit," Center for a New American Security, 2024.

technology received scoped contracts. The work was vetted. The need was confirmed. The solutions were ready to deploy.

The bottleneck is not the program office. It is not the technology. It is not the private sector. Administrative friction at organizational echelons above MIB has prevented execution. Validated, scoped contracts sit idle. The Navy's own vetting process has done everything right; the delay is organizational, driven by leadership transitions and bureaucratic realignment above the program level. Meanwhile, the shipbuilding industrial base goes without the supplier visibility tools it needs to approach the 2+1 production mandate. This is the institutional failure this brief diagnoses: the machinery of reform works at the program level and stalls above it. The pattern is not unique to shipbuilding.

V. What Technology Makes Possible Today

The manufacturing visibility problem is solvable. The tools required exist and are mature. What has been absent is the systematic application of those tools at national scale, prior to the moment of need.

Artificial intelligence systems capable of reasoning from engineering geometry, from the actual geometric and material requirements encoded in technical data packages, can identify which manufacturing processes a given component requires. Those same systems can then search the broader manufacturing economy, including commercial and industrial sectors with no current defense relationship, to identify manufacturers with the machine tools, materials certifications, and workforce skills that match those requirements. This technology is deployable now having been developed through other US DoW R&D funding sources.

The complementary requirement is a continuously maintained industrial data asset covering the full breadth of the U.S. manufacturing economy, updated in near-real time, and structured for machine reasoning rather than human browsing. Such an asset, built with semi-autonomous data collection and human expert curation, would allow the question of who in the United States can make this part to be answered in minutes rather than months. It would allow surge planners to generate production networks dynamically rather than relying on relationships established years earlier.

This capability does not require a new government program of the traditional kind. It does not require a new agency. It requires policy that treats industrial visibility as national security infrastructure, and investment that reflects that treatment.

VI. Policy Recommendations

Operation Epic Fury is no longer a short-war scenario. Ten days in, Iran has a new supreme leader, a declared intention to continue fighting, and an active missile and drone campaign spanning six countries. The NIC has assessed that regime change is unlikely. There is no exit timeline. This is the context in which the industrial base replenishment argument must now be made, and it is a stronger argument than it was on Day One. The munitions burn rate is on the front page. The Hormuz closure is in the financial pages. The sub-tier supply chain bottleneck

that will determine whether the quadrupling commitment becomes reality is in no publication at all. The policy response should address that problem directly.

Four actions are executable within existing authority structures:

- Direct the Office of the Under Secretary of Defense for Acquisition and Sustainment to establish full-tier manufacturing visibility, from prime contractor through feedstock source, as a formal program objective with dedicated funding and a 24-month delivery timeline.
- Direct the Defense Logistics Agency to partner with technology providers capable of AI-driven supplier discovery, with the explicit objective of identifying qualified manufacturers outside the current Defense Industrial Base for critical component categories before the next surge demand emerges.
- Establish a continuously maintained national manufacturing data asset, built on a semi-autonomous data collection architecture with subject matter expert curation, as critical national security infrastructure with standing equivalent to the National Defense Stockpile.
- Require that technical data packages for critical components be maintained in modern digital formats enabling AI-assisted manufacturing network generation, with submission as a condition of contract completion on all new defense production contracts.

The long-term objective is a defense industrial base that can see itself: one where the question of who can build what, where, and at what scale is answered in real time, not in response to an emergency that has already arrived. The manufacturing capacity to support that objective exists in the American economy. We have simply never built the infrastructure to find it.

About the Author

Michael Morford is the Founder, Chairman, and CEO of the Knudsen Institute and CEO of Iron Horse Holdings, the Institute's commercial technology partner. A U.S. Army Captain and disabled veteran of the Iraq War, he served as a theater-level logistics war planner for the 377th Theater Support Command during the 2003 invasion and is a 2001 recipient of the Douglas MacArthur Leadership Award presented by the Chief of Staff of the U.S. Army. His work across both organizations centers on strengthening U.S. defense industrial base surge capacity through applied research, policy, and the development of foundational AI systems, including SADE and SIROS, designed to discover manufacturing capacity invisible to current procurement systems and translate engineering data into actionable production requirements. His career spans Wall Street investment banking, precision aerospace manufacturing, and defense technology. He is a founding board member of the Oklahoma Defense Industry Association, a National Security Fellow of the Truman National Security Project, and a life member and former National Treasurer of the Reserve Officers Association. He holds a BS in Engineering and an MBA from Tulane University and is a graduate of the U.S. Army Logistics University and U.S. Army Finance School.

About Knudsen Institute

The Knudsen Institute is a 501(c)(3) nonprofit organization focused on strengthening U.S. defense industrial base surge capacity through applied research, policy advocacy, and technology development. The Institute's work centers on the premise that the United States possesses substantial untapped manufacturing capacity, and that the primary barrier to mobilizing that capacity is the absence of data infrastructure to identify and qualify it. For more information, visit www.knudseninstitute.org.

The Defense Industrial Base Conference (DIBCON), convened by The Knudsen Institute, brings together defense manufacturers, policymakers, and technology leaders to address the challenges of industrial base expansion. DIBCON Milwaukee is scheduled for April 7-9, 2026. For more information, visit www.dibcon.us.