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Emergency Access to Strategic and Critical Materials: The National Defense Stockpile

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In wartime, without sufficient raw materials available in useable form, militaries and companies manufacturing defense equipment may struggle to resupply materiel fast enough to keep up with equipment losses and combat operations. Domestic industries may also lack the raw material inventories and reliable suppliers needed to maintain or rebuild critical infrastructure at home. Finding the natural resources of the United States “deficient or insufficiently developed” to supply domestic raw material demand “in times of national emergency,” Congress since 1939 has authorized the U.S. Government to stockpile “strategic and critical materials” and to develop domestic sources of their supply.

Currently managed by the Department of Defense (DOD), this **National Defense Stockpile (NDS)** may be used to provide domestic manufacturers with emergency access to essential production inputs “to serve the interest of national defense only.” These materials typically include nonfuel mineral commodities purchased from domestic or foreign sources prior to the onset of a national emergency through government contracts. The U.S. Government stockpiles these materials to meet the *estimated needs* of the United States for national defense in the event of particular national emergency scenarios (such as, for example, large-scale conventional war with China) for a specified duration (established by Congress in law).

As of March 2023, the National Defense Stockpile contains \$1.3 billion in total assets, including \$912.3 million of stockpiled material. As of April 2023, current NDS inventory mitigates less than half of estimated strategic and critical materials shortfalls for military requirements; less than 10% of essential civilian demand shortfalls; and approximately 6% of total net shortfalls in “base case” national emergency scenarios. The vast majority of the \$13.5 billion gap between current stockpile assets and current stockpile requirements would support nondefense critical infrastructure demand in the event of an attack on the United States.

While NDS acquisitions and operating costs are typically self-funded by revenue from stockpile sales rather than congressional appropriations, since FY2022 both Congress and the executive branch have expressed renewed interest in appropriating funds for new NDS acquisitions and modifying aspects of stockpile management.

In addition to providing background on the NDS, this report analyzes selected issues that Congress may face related to NDS management, including:

- Assessing NDS funding tradeoffs;
- Determining which national emergency scenarios should be used to generate NDS requirements;
- Assessing market impacts of rapid stockpile acquisition strategies;
- Adapting stockpiles to anticipate and incorporate technological innovation;
- Private sector stockpiles of strategic and critical materials;
- Nondisclosure agreements with industry for robust NDS planning; and
- Addressing material weaknesses in NDS financial audits

According to the White House, “Nearly every agency of the U.S. Government has a unique capability that can be brought to bear to increase the sustainability of strategic and critical materials supply chains.” Since 1939, the NDS has provided a method of mitigating strategic and critical materials supply chain risk, deterring aggression, and facilitating whole-of-government emergency preparedness.

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Introduction

For more than a century, national security policymakers have approached physical stockpiling of industrial raw materials as one policy option for mitigating national defense supply chain risks, deterring aggression, and anticipating “actions or events outside the control of the Government of the United States.”¹ Finding the natural resources of the United States “deficient or insufficiently developed to supply the military, industrial, and essential civilian needs of the United States for national defense,” Congress since 1939 has utilized the Strategic and Critical Materials Stock Piling Act (50 U.S.C. §98, *et. seq.*, as amended) to develop and oversee a national stockpile of certain “strategic and critical materials.”

This report provides background on this **National Defense Stockpile (NDS)** and analyzes selected issues that Congress may face related to its management, including:

- Assessing NDS funding tradeoffs
- Determining which national emergency scenarios should be used to generate NDS requirements
- Assessing market impacts of rapid stockpile acquisition strategies
- Adapting stockpiles to anticipate and incorporate technological innovation
- Private sector stockpiles of strategic and critical materials
- Nondisclosure agreements with industry for robust NDS planning
- Addressing material weaknesses in NDS financial audits

The NDS’s statutory purpose is:

to provide for the acquisition and retention of stocks of certain strategic and critical materials and to encourage the conservation and development of sources of such materials within the United States and thereby to decrease and to preclude, when possible, a dangerous and costly dependence by the United States upon foreign sources or a single point of failure for supplies of such materials in times of national emergency.²

The Department of Defense (DOD) manages the NDS and has delegated authority as the National Defense Stockpile Manager to release stockpiled materials to eligible domestic manufacturers in the defense industrial base and other critical infrastructure sectors under certain conditions.³

¹ “As early as 1921 the War and Navy Departments were interested in a program for the stockpiling of strategic and critical materials.” Department of Defense, *Stockpiling report by the Secretary of War and the Secretary of the Navy to the Congress pursuant to section 4 of public law 520, 79th Congress covering operations from 7 June 1939 to 31 December 1946*, 23 January 1947, p. I-1. On stockpiles as a deterrent: the July 1949 stockpile report to Congress states, “When the stockpile of strategic and critical materials has been completed, the world should be informed of the fact. This knowledge will be a significant factor in preventing future war. By possession of these...materials, this Nation will present a more impregnable front to discourage any would-be aggressor.” DOD, *Stockpile Report to the Congress*, July 23, 1949, p. 23. See also U.S. Congress, House Committee on Public Lands, Subcommittee on Mines and Mining, *Stock Piling of Strategic and Critical Materials and Metals*, Committee Hearing No. 3, 80th Cong., 1st sess., February 11 and 12, 1947, p. 48, where Major General S.P. Spalding, Deputy Executive Chairman of the Army-Navy Munitions Board, states, “If they [i.e., potential adversaries] knew that we had the full stock pile [of strategic and critical materials], that might be a deterrent.” The Strategic and Critical Materials Board of Directors is currently tasked by statute with developing strategic approaches to securing supplies of certain materials in anticipation of “actions or events outside the control of the Government of the United States.” See 50 U.S.C. §98h-1(f)(1)B.

² 50 U.S.C. §98a(b). Reference to “a single point of failure” was added by P.L. 112-239.

³ E.O. 12626, “National Defense Stockpile Manager,” 53 *Federal Register* 6114, February 25, 1988. The Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) has specific delegated authority to release NDS (continued...)

Defining “Strategic and Critical Materials”

50 U.S.C. §98h-3 provides an overarching definition of strategic and critical materials. They are “materials that (a) would be needed to supply the military, industrial, and essential civilian needs of the United States during a national emergency, and (b) are not found or produced in the United States in sufficient quantities to meet such need.” (See **Appendix B** for a list of these materials.)

50 U.S.C. §98b gives the President authority to determine which materials are strategic and critical.⁴ Since 1939, various agencies have used delegated authority and interagency coordination to make definitive lists of strategic and critical materials.⁵ Currently, the Department of Energy (DOE) makes a definitive list of “critical materials”; the Department of the Interior’s (DOI’s) U.S. Geological Survey (USGS) makes a definitive list of “critical minerals” (a subset of critical materials); and the Defense Logistics Agency, utilizing delegated Secretary of Defense authority, incorporates these lists into its own assessment of National Defense Stockpile requirements, generating a definitive list of strategic and critical materials for purposes of the Stock Piling Act.⁶

Defining “National Emergency”

50 U.S.C. §98f authorizes the President to release stockpiled materials “in time of war declared by Congress or during a national emergency.”⁷ 50 U.S.C. §98h-3 defines a national emergency as “a general declaration of emergency with respect to the national defense made by the President or by the Congress.” Throughout the stockpile’s history, several proclamations, executive orders,

materials; see E.O. 14051, “Designation to Exercise Authority over the National Defense Stockpile,” 86 *Federal Register* 60747, October 31, 2021. Stockpiled materials may also be loaned to the Department of Energy or military departments under 50 U.S.C. §98e(f) or bartered under conditions established by 50 U.S.C. §98e(c). U.S. policy currently designates 16 critical infrastructure sectors, including the defense industrial base sector. “Essential civilian needs” during a national emergency may include functionality of the other 15 critical infrastructure sectors, including the critical manufacturing sector.

⁴ Functions of the President under 50 U.S.C. §98b were delegated to the Secretary of Defense by section 1 of E.O. 12626, “National Defense Stockpile Manager,” February 25, 1988, 53 *Federal Register* 6114.

⁵ In addition to the phrase “strategic and critical materials,” the act also refers to “materials critical to national security,” tasking the Strategic and Critical Materials Board of Directors with recommending to the Secretary of Defense a strategy for ensuring a secure supply of these materials. See 50 U.S.C. §98h-1.

⁶ See U.S. Department of Energy, *Critical Materials Assessment*, July 2023, p. 1. DOE funds critical materials research and development to mitigate supply chain vulnerabilities using authorities derived elsewhere than the Strategic and Critical Materials Stock Piling Act, such as the Energy Act of 2020, which was passed as Division Z of the Consolidated Appropriations Act, 2021 (P.L. 116-260). For snapshots of interagency strategic and critical materials supply chain resilience challenges, see The White House, *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth: 100-Day Reviews under Executive Order 14017*, June 2021.

⁷ 50 U.S.C. §98f (b) states that any order to release stockpiled materials under this subsection “shall be promptly reported” in writing to the House and Senate Armed Services Committees. While the Strategic and Critical Materials Stock Piling Act was initially enacted to mitigate supply disruptions associated with wartime industrial mobilization and sustained wartime production demands, 50 U.S.C. §98f as currently written provides the President (and USD (A&S)) with some discretion to release stockpiled materials outside of explicit war or national emergency situations. 50 U.S.C. §98f (a)(1) and (a)(3) allow for release of stockpiled materials whenever the President, or USD(A&S) as presidential designee, determines the release of such materials is required “for purposes of the national defense.” These authorities in conjunction with authorities to dispose of excess stockpiled materials have governed stockpile releases in peacetime conditions. Historically, some analysts have claimed that instances of stockpile material release and disposal nominally aligned to “national defense purposes” have overlapped with “economic or budgetary purposes” currently prohibited by 50 U.S.C. §98a(c). This ambiguity was particularly salient in the decades following WWII, when the NDS represented perhaps “the largest body of marketable commodities under the control of one market actor in the world.” See Patricia Elaine Perkins, “The United States strategic stockpile and price determination in international metals markets” (Ph.D. diss., University of Toronto, 1989), p. 1.

joint resolutions and treaties respecting war, neutrality, and peace have declared (or terminated) states of war or national emergencies, affecting national stockpile strategy.⁸

A network of laws and administrative policy situates NDS management within whole-of-government approaches to “national security emergency preparedness” and critical infrastructure protection.⁹ U.S. policy currently designates 16 critical infrastructure sectors, including the defense industrial base (DIB); critical manufacturing; and nuclear reactors, materials, and waste. The Stock Piling Act requires the President to prioritize stockpile allocations toward “military, industrial, and essential civilian needs” in a national emergency, which may entail allocating stockpiles to ensure functionality of critical infrastructure sectors.¹⁰

The Stock Piling Act itself does not provide details about the administrative and contractual mechanisms used to allocate stockpiled materials under a declared war or national emergency. These mechanisms are set forth in other locations in the *U.S. Code* or Code of Federal Regulations (CFR) and are implemented by allocation policies established by executive branch policy guidance, individual agency procedures, emergency acquisition, and contingency contracting.¹¹

⁸ Months after Congress signed the Stock Piling Act in June 1939, for example, President Franklin D. Roosevelt proclaimed a national emergency to enforce U.S. neutrality in WWII and strengthen national defenses “within the limits of peacetime authorizations.” See Proc. No. 2352, Sept. 8, 1939, 4 F.R. 3851, 54 Stat. 2643. President Roosevelt then proclaimed “an unlimited national emergency” on May 27, 1941; see Proc. No. 2487, May 27, 1941, 6 F.R. 2617, 55 Stat. 1647. For information on post-Vietnam national emergency declarations, see the National Emergencies Act (50 U.S.C. Chapter 34) along with CRS Report 98-505, *National Emergency Powers*, by Elizabeth M. Webster; CRS Report R46567, *National Emergencies Act: Expedited Procedures in the House and Senate*, by Michael Greene; and CRS Legal Sidebar LSB10267, *Definition of National Emergencies Act*, by Jennifer K. Elsea. On declarations of war, see CRS Report RL31133, *Declarations of War and Authorizations for the Use of Military Force: Historical Background and Legal Implications*, by Jennifer K. Elsea and Matthew C. Weed, p. 47. For current military doctrine related to military mobilization planning and expectations of national emergency declaration aligned to conflict intensity and duration, see DOD, *Joint Publication 4-05, Joint Mobilization Planning*, October 23, 2018, p. IV-12.

⁹ President Jimmy Carter on September 10, 1979, delegated several NDS functions to the Federal Emergency Management Agency (FEMA); see E.O. 12155, “Strategic and Critical Materials,” 44 *Federal Register* 53071. In February 1988, NDS operations management responsibilities shifted to DOD; see E.O. 12626, “National Defense Stockpile Manager,” February 25, 1988, 53 *Federal Register* 6114. In November 1988, President Ronald Reagan took executive action situating the DOD-managed NDS as part of an effort “to have sufficient capabilities at all levels of government to meet essential defense and civilian needs during any national security emergency.” See E.O. 12656, “Assignment of emergency preparedness responsibilities,” November 18, 1988, 53 *Federal Register* 47491, Sections 101 and 501(15). For NDS’s role in emergency preparedness during the Nixon administration, see E.O. 11490, “Assigning Emergency Preparedness Functions to Federal Departments and Agencies,” October 28, 1969, 3 CFR, 1966 to 1970 Comp., Part 20, which itself revoked and replaced a related set of 21 executive orders and two Defense Mobilization Plans signed during the administrations of Presidents Truman, Eisenhower, Kennedy, and Lyndon B. Johnson.

¹⁰ Executive Office of the President, *Presidential Policy Directive/PPD-21: Critical Infrastructure Security and Resilience*, February 12, 2013. The 16 critical infrastructure sectors are: Chemical; Commercial Facilities; Communications; Critical Manufacturing; Dams; Defense Industrial Base; Emergency Services; Energy; Financial Services; Food and Agriculture; Government Facilities; Healthcare and Public Health; Information Technology; Nuclear Reactors, Materials, and Waste; Transportation Systems; Water and Wastewater Systems. For more information on the DIB, see CRS In Focus IF10548, *Defense Primer: U.S. Defense Industrial Base*, by Luke A. Nicastro and Heidi M. Peters.

¹¹ On stockpile allocation policies in a national emergency: for example, in October 1965 the Executive Office of the President’s Office of Emergency Planning (which then administered the NDS) issued *Emergency Defense Mobilization Order 8600.1*, which stated that, “in the event of enemy attack,” large-quantity stockpile release orders would be issued by the Director of the Office of Emergency Planning, but “must be supplemented by allocation directives issued by the Departments responsible for control of the particular resource” in the contemporary federal emergency preparedness framework. These allocation orders would typically be terse statements signed by the department head listing the (continued...)

Strategic Context

Strategic stockpiling reflects and responds to a basic tension in U.S. public policy. On one hand, “Congress finds that the security of the United States is dependent on the ability of the domestic industrial base to supply materials and services for the national defense and to prepare for and respond to military conflicts, natural or man-caused disaster, or acts of terrorism within the United States;” on the other, “Congress finds that the natural resources of the United States in certain strategic and critical materials are deficient or insufficiently developed to supply the military, industrial, and essential civilian needs of the United States for national defense.”¹²

Since passage of the Strategic and Critical Materials Stock Piling Act in 1939, executive branch officials have wielded increasingly sophisticated analytical tools for assessing national defense requirements. Using economic modeling, cost estimates, intelligence forecasts, and regularly revised combat scenarios, these analytic assessments reflect current strategic threat perceptions and in turn drive DOD’s annual budget requests.¹³

During testimony before the House Armed Services Committee on March 29, 2023, the then-Chairman of the Joint Chiefs of Staff General Mark Milley stated, “If there was a war on the Korean peninsula or great power war between the United States and Russia or the United States and China, the consumption rates [of conventional munitions such as rockets and guided missiles] would be off the charts.”¹⁴ The Chairman added that DOD has reassessed the quantity of munitions it would likely expend during such a war, adding: “[I]t’s those estimates that then form the basis of the munitions request in the budget.” He concluded by saying: “We’ve got a ways to go to make sure our stockpiles are prepared for the real contingencies.”¹⁵

The Chairman’s remarks emphasize War Reserve Materiel but may implicate the NDS.¹⁶ If the United States entered a large-scale conventional war (or armed conflict national emergency) with

quantity and material needed by a given industrial sector under that department’s emergency control, along with a statement about which national stockpile should be drawn from (e.g., the NDS). The stockpile operations manager (in 1965, the General Services Administration, but today the Defense Logistics Agency) would then “arrange outshipments from depots it selects” to deliver the industrial raw materials to the nearest qualified domestic manufacturers “regardless of regional boundaries.” See Executive Office of the President, *Stockpile Report to the Congress: July – December 1965*, April 1966, Annex 1. In March 2012, President Barack Obama authorized DOD under national emergency conditions to invoke Defense Production Act (DPA) Title I authorities to “control the general distribution of any material...in the civilian market” with respect to “stockpiles managed by the Department of Defense.” See E.O. 13603, “National Defense Resources Preparedness,” March 16, 2012, 77 *Federal Register* 16651, Sections 101, 201, 202(a), 303(b), 306, 801(j) and 801(m). Note that 50 U.S.C. §4516 also designates “energy” as a strategic and critical material under these conditions. See 50 U.S.C. Chapter 55 (the Defense Production Act). In an emergency, DPA Title I authorities could be utilized for acquiring stockpiles of strategic and critical materials. For consideration of additional DPA authorities to expand industrial capacity related to strategic and critical materials, see CRS Report R47124, *2022 Invocation of the Defense Production Act for Large-Capacity Batteries: In Brief*, by Heidi M. Peters et al.

¹² 50 U.S.C. §4502(a)(1); 50 U.S.C. §98a.

¹³ U.S. officials have since the 1770s undertaken to stockpile essential materials based on estimated national defense requirements. The Second Continental Congress formed a secret committee in 1775 to establish clandestine supply chains with neutral countries in the War of Independence, purchasing gunpowder stockpiles in secret from Spain (and through the Dutch Caribbean free port of St. Eustatia) while gathering intelligence needed to seize British ammunition stockpiles. See Central Intelligence Agency, *Intelligence in the War of Independence*, 2007, pp. 10, 15. For more on the DOD budget process, see CRS Report R47178, *DOD Planning, Programming, Budgeting, and Execution (PPBE): Overview and Selected Issues for Congress*, by Brendan W. McGarry.

¹⁴ Testimony of Chairman, Joint Chiefs of Staff General Mark Milley, in U.S. Congress, House Armed Services Committee, *Fiscal Year 2024 Defense Budget Request*, hearings, 118th Cong., 1st sess., March 29, 2023.

¹⁵ *Ibid.*

¹⁶ See DOD, *DOD Instruction 3110.06: War Reserve Materiel (WRM)*, January 7, 2019, p. 16.

a major naval power, supply-and-demand networks for industrial raw materials could be disrupted, affecting critical infrastructure sectors including the defense industrial base.¹⁷ Export controls or boycotts implemented by an adversary country or other economic actors might constrain U.S. Government and domestic industry access to certain raw materials markets. It might become difficult for government agencies and domestic industries to trade with some countries, or obtain industrial raw materials from certain foreign locations through ocean, air, rail, or ground transportation. An adversary might attack, attempt to blockade, or facilitate sabotage along trade routes at critical chokepoints, directly or through proxies.¹⁸

In the early stages of conflict, armed forces would generally be reliant on redistribution of current equipment stocks, transportation of War Reserve Materiel under contested logistics, accelerated depot-level maintenance output, diverted security assistance production, and purchase of dual-use, commercial-off-the-shelf products.¹⁹ In a prolonged conflict depleting reserve inventories of key weapon systems, munitions, and combat support equipment, DOD might leverage its global defense posture of forces, facilities, and international agreements but might also, under certain conditions, face constraints that jeopardize the achievement of operational and strategic objectives.²⁰

In prolonged conventional armed conflict scenarios, the risk to national security arising from inadequate domestic raw material inventories depends to a great degree on assumptions about successful homeland defense; weapon and munition usage rates; equipment losses; control of sea lanes of trade; air superiority; enduring access to key foreign suppliers; durability of international agreements and domestic critical infrastructure; private sector emergency stockpiling initiatives; and the efficacy of the domestic industrial base in surging production or transitioning to full or total mobilization of the armed forces and national economy.²¹

“Realistic Stockpiling” for Great Power Conflict

In meeting the actual needs of “real contingencies” related to large-scale armed conflict, the National Defense Stockpile has been seen as inadequately stocked at the moment conflict arose, as former President Dwight Eisenhower reflected in 1963:

You will recall that, when we became involved in World War II, our lack of an adequate stockpile of strategic and critical materials gravely impeded our military operations. We were therefore forced into costly and disruptive expansion programs. The nation was compelled to divert, at a most critical time, scarce equipment and machinery and manpower to obtain the necessary materials.... But even after this experience we had not fully learned our lesson.... After we became involved in hostilities in Korea, we went through experiences almost identical with those of World War II—only then did realistic stockpiling begin.²²

¹⁷ Defense Advanced Research Projects Agency (DARPA), “Resilient Supply-and-Demand Networks (RSDN),” web resource at <https://www.darpa.mil/program/resilient-supply-and-demand-networks>; CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O’Rourke, pp. 49-51.

¹⁸ Lincoln F. Pratson, “Assessing impacts to maritime shipping from marine chokepoint closures,” *Communications in Transportation Research*, Volume 3, December 2023, pp. 1-16.

¹⁹ DOD, *Joint Publication 4-05, Joint Mobilization Planning*, October 23, 2018, p. IV-12.

²⁰ See DOD, *DOD Instruction 3000.12, Management of U.S. Global Defense Posture*, May 6, 2016, p. 18-19.

²¹ For an overview of the military conflict and homeland defense scenarios grounding stockpile requirements, see DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, pp. 18-23.

²² Dwight D. Eisenhower, “Letter to Senator Clifford Case, September 24, 1963,” quoted in Kenneth Kessel, *Strategic* (continued...)

During WWII, the Metals Reserve Company (MRC), a subsidiary of the government-owned Reconstruction Finance Corporation, spent \$2.75 billion (approximately \$42.9 billion in FY2024 constant dollars) on the direct purchase of 50 “strategic and critical metals and minerals” from “51 countries, 39 states, and the Philippines” to meet the immediate requirements of wartime production in the domestic industrial base.²³ The United States used MRC for procurement of strategic and critical materials in lieu of NDS inventories for those requirements. The NDS was used as a “last ditch” supply of strategic and critical materials during WWII, due in large part to its inadequate size upon formal declaration of war.²⁴ The first stockpile report to Congress, covering the period from June 7, 1939, to December 31, 1946, states: “Had that Act [i.e., the Stock Piling Act passed June 7, 1939] been passed in the early 1930s, and adequately implemented by appropriations, most if not all of the highly expensive procurement activity which took place during the war could have been obviated.”²⁵

Post-Cold War vs. Post-post-Cold War Stockpile Strategy

Compared to high-intensity, long-duration great power armed conflicts, post-Cold War and counterinsurgency-centered armed conflict scenarios have tended to imply less supply chain risk.²⁶ In the post-Cold War era, stockpile planners incorporating assumptions from the National Military Strategy reportedly assumed a seven- to nine-year period of “early strategic warning,” during which time emerging strategic threats could be identified and stockpiles of strategic and critical materials acquired to prepare for and deter large-scale armed conflict.²⁷ Stockpiles accumulated since the Korean War were largely liquidated as part of a post-Cold War “peace

Materials: U.S. Alternatives (Washington, D.C.: National Defense University, 1990), p. 300. A 1964 stockpile report to Congress notes that in 1963 the U.S. Government began modeling the strategic and critical materials needs of all “major segments of the economy” following a nuclear war, to include “requirements not only for survival but also for rehabilitation and reconstruction of new facilities as needed.” Stockpile requirements planning thus considered both conventional and nuclear war scenarios in this period while implementing U.S. emergency preparedness policy. See Executive Office of the President, *Stockpile Report to the Congress: January – June 1964*, November 1964, p. viii.

²³ National Archives and Records Administration, *Request for Records Disposition Authority NI-234-12-2: Reconstruction Finance Corporation Unscheduled Records (Record Group 234)*, August 22, 2012 at https://www.archives.gov/files/records-mgmt/rcs/schedules/independent-agencies/rg-0234/n1-234-12-002_sf115.pdf. During WWII, the Metals Reserve Company also provided \$350 million (approximately \$5.5 billion in FY2024 constant dollars) in direct subsidy payments to domestic producers “for the development of new sources [of supply] and maximum production of such materials as were in short supply.”

²⁴ U.S. Congress, House Committee on Public Lands, Subcommittee on Mines and Mining, *Stock Piling of Strategic and Critical Materials and Metals*, Committee Hearing No. 3, 80th Cong., 1st sess., February 11 and 12, 1947, p. 22.

²⁵ DOD, *Stockpiling report by the Secretary of War and the Secretary of the Navy to the Congress pursuant to section 4 of public law 520, 79th Congress covering operations from 7 June 1939 to 31 December 1946*, 23 January 1947, p. I-2.

²⁶ DOD policy currently defines “supply chain risk” as:

The risk of intentional or unintentional disruptions to the flow of product, materiel, information, and finances across the lifecycle of a weapon or support system which negatively impact the integrity of DoD logistics infrastructure; materiel acquisition and supply (including critical suppliers and critical components); key transportation modes and routes; and storage and stockpile activities. Disruptions could arise in any sub-set of the DoD supply chain, such as cybersecurity, software assurance, obsolescence, counterfeit parts, foreign ownership of sub-tier vendors, climate change-related risks, and other categories of risk that affect the supply chain. The risk that an adversary may sabotage, maliciously introduce unwanted function, or otherwise subvert the design, integrity, manufacturing, production, distribution, installation, operation, or maintenance of a system so as to surveil, deny, disrupt, or otherwise degrade the function, use, or operation of such system.

See Department of Defense, *DOD Manual 4140.01, Volume 3: DOD Supply Chain Materiel Management Procedures: Materiel Sourcing*, August 26, 2022, pp. 51-52.

²⁷ National Research Council, *Managing Materials for a Twenty-first Century Military* (Washington, D.C.: The National Academies Press, 2008), pp. 57, 59.

dividend” reflecting broad access to foreign sources of supply under contemporary combat scenarios.²⁸

For decades, “realistic stockpiling,” to use President Eisenhower’s phrase, led to disposal [sale] of stockpiled materials no longer estimated to be in material shortfall under anticipated emergency conditions. According to DOD, “Beginning with the early 1990s, the Department of Defense determined that over 99% of the [NDS] inventory was excess to the Department’s needs and Congress authorized its disposal.”²⁹ Today, DOD reports \$1.3 billion in total NDS assets—comparable to pre-WWII levels—including \$912.3 million in material inventories.³⁰

The October 2022 National Security Strategy announces that “the post-Cold War era is definitively over and a competition is underway between the major powers to shape what comes next.”³¹ After 20 years of counterinsurgency focus, recent national strategy documents and DOD budgets reflect great power armed conflict scenarios and strategic threat perceptions.³²

January 1, 2035: Statement of Policy

Section 848 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (P.L. 116-283) directs the Secretary of Defense to utilize the National Defense Stockpile, among other tools, to ensure “access to secure sources of supply for strategic and critical materials” that “fully meet the demands of the defense industrial base” and “eliminate the dependence of the United States on potentially vulnerable sources of supply” not later than January 1, 2035.³³ These policy aims involve the U.S. military’s full global defense posture and imply prolonged whole-of-government coordination across military, informational, diplomatic, financial, intelligence, economic, legal, and developmental (MIDFIELD) instruments of national power.³⁴ Their achievement may depend on efforts beyond DOD’s control, including congressional appropriations over the coming decade.

²⁸ *Ibid.*, pp. 113-116, 146.

²⁹ DOD, *Strategic and Critical Materials Operations Report to Congress: Operations under the Strategic and Critical Materials Stock Piling Act during the Period October 2007 through September 2008*, 2008, p. 1. For FY1999, estimated shortfalls reportedly totaled \$6 million. See U.S. General Accounting Office, GAO-01-17, *National Defense Stockpile: improved financial plan needed to enhance decision making*, January 2001, p. 3.

³⁰ Congress appropriated \$74.5 million (approximately \$1.3 billion in FY2024 constant dollars) for stockpiling strategic and critical materials from 1938 to 1941, through naval appropriations and through the Stock Piling Act. See U.S. Congress, House Committee on Public Lands, Subcommittee on Mines and Mining, *Stock Piling of Strategic and Critical Materials and Metals*, Committee Hearing No. 3, 80th Cong., 1st sess., February 11 and 12, 1947, p. 18. In addition to material inventories, NDS assets currently include \$326 million in unobligated cash expected to remain available by the end of FY2024. See Under Secretary of Defense (Comptroller)/DOD Chief Financial Officer, *Department of Defense Revolving Funds Justification/Overview: Fiscal Year (FY) 2024 Budget Estimates*, March 2023, p. 58. Note also, according to DOD, “Mercury stocks account for a large portion of the overall NDS market value. However, due to the Mercury Export Ban of 2008 and the Minamata Convention of 2013, the NDS is prohibited from selling mercury, and thus it has no realizable value to the NDS program.” See Office of the Under Secretary of Defense for Acquisition & Sustainment, *FY2021 National Defense Stockpile Annual Operations and Planning Report*, February 2022, p. 5.

³¹ White House, *National Security Strategy*, October 2022, p.6.

³² *Ibid.*, pp. 8, 11-13.

³³ P.L. 116-283 §848 “Supply of strategic and critical materials for the Department of Defense.”

³⁴ DOD policy defines global defense posture in terms of three interdependent elements (forces, footprints, agreements), with agreements defined as “a series of treaties, access, transit, support, and status-protection agreements and arrangements with allies and partners that set the terms regarding the U.S. military’s presence within the territory of the host country, as agreed to with the host government.” See DOD, *DOD Instruction 3000.12, Management of U.S. Global Defense Posture*, May 6, 2016, p. 22. For more on the MIDFIELD acronym, see DOD Joint Chiefs of Staff, *Joint Doctrine Note 1-18: Strategy*, April 25, 2018, p. viii.

Current Stockpile Requirements

Currently, DOD selects strategic and critical materials for inclusion in the National Defense Stockpile that are expected to be in “material shortfall” in a national emergency scenario “consisting of a military conflict combined with an attack on the Homeland.”³⁵ This “base case” scenario lasts a total of four years, the first year of which involves active combat followed by three subsequent years of post-conflict industrial recovery and replenishment.³⁶ Shortfall materials generally include nonfuel mineral commodities like cobalt and tin, along with semi-processed or processed materials such as TNT and high-purity carbon fiber that function as common production inputs for national defense applications.³⁷ While details of some shortfalls are classified, a 2023 unclassified NDS inventory list is provided in **Appendix B**.³⁸

DOD’s Defense Logistics Agency (DLA) reportedly monitored 283 candidate materials for its 2021 and 2023 stockpile assessments, with 148 incorporated into formal NDS planning models.³⁹

Results of 2021 Stockpile Requirements Assessment

In the 2021 stockpile requirements assessment, 53 materials were determined to be in shortfall and therefore “strategic and critical” in a congressionally mandated, classified armed conflict scenario involving China.⁴⁰ Of these 53 materials, according to the assessment, 37 have supply chains controlled by a “foreign market dominator” (i.e., more than half of global production occurs in a single foreign country). Twenty-nine of 53 materials have one domestic provider qualified to meet military or essential civilian requirements (as of June 2021), according to the assessment, and an additional 18 materials “have no domestic production at all.”⁴¹ According to a review of strategic and critical materials supply chains published by The White House in June 2021, U.S. import dependence for these 53 materials extends to 84 countries:

- 27 countries each produce exactly 1 shortfall material;
- 20 countries each produce 2 shortfall materials;
- 16 countries each produce between 3 and 5 shortfall materials;
- 11 countries each produce between 6 and 10 shortfall materials;
- 7 countries each produce between 11 and 20 shortfall materials;
- and 3 countries each produce more than 20 shortfall materials.⁴²

³⁵ DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 12. The 2023 assessment also includes a climate change event in the base case scenario. See *Ibid.*, p. 20.

³⁶ 50 U.S.C. §98h-5(b)-(c); P.L. 117-263 §1415; Robert J. Atwell et al., *Generic Unclassified Stockpile Sizing Module (SSM) Training and Testing for the National Defense Stockpile (NDS) 2015*, August 2014, p. 5 at <https://www.jstor.org/stable/pdf/resrep23589.4.pdf>. Note: stockpile requirements draw upon classified data, with assessments occurring on classified computer systems. *Ibid.*, p. 6.

³⁷ The White House, *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth: 100-Day Reviews under Executive Order 14017*, June 2021, p. 184.

³⁸ *Ibid.*, p. 179; DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 24.

³⁹ DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 9.

⁴⁰ The White House, *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth: 100-Day Reviews under Executive Order 14017*, June 2021, pp. 177, 184.

⁴¹ *Ibid.*, p. 179.

⁴² *Ibid.*, pp. 184-185.

The People's Republic of China (China, or PRC) is the primary global producer and/or primary U.S. supplier of 20 or more shortfall materials.⁴³ This is potentially significant in part because the “base case” armed conflict scenario grounding current stockpile requirements involves a conventional armed conflict with China.⁴⁴

Results of 2023 Stockpile Requirements Assessment

The FY2023 stockpile assessment discovered net shortfalls in 88 materials valued at \$14.83 billion.⁴⁵ Of this total, \$12.21 billion worth of shortfalls would cover essential civilian demand for 24 materials and \$2.41 billion would cover military requirements associated with 69 materials.⁴⁶ Given March 2023 reported stockpile inventories of \$912.3 million, the FY2023 stockpile assessment suggests current NDS inventories cover 37.9% of projected military shortfalls, 7.5% of essential civilian demand shortfalls, and 6.2% of total net shortfalls in base case national emergency scenarios.⁴⁷ As of April 2023, the gap between total NDS assets (\$1.3 billion) and total net shortfalls is \$13.5 billion.⁴⁸

Congressional NDS Appropriations

Congress appropriated a total of \$218.5 million for new NDS acquisitions in FY2022 and FY2023.⁴⁹ Since 1969, however, NDS acquisitions have typically been funded with revenue generated from sales of excess inventory in the stockpile.

From the inception of the stockpile in 1939 through 1969, Congress appropriated over \$94 billion in constant FY2024 dollars for the acquisition, storage, maintenance, and upgrade of strategic and critical materials in the National Defense Stockpile. **Table 1** lists congressional appropriations for the stockpile prior to establishment of the NDS Transaction Fund in 1979, which Congress established to allow revenues from stockpile disposals to fund the acquisition of new materials and other necessary NDS expenses.⁵⁰

⁴³ CRS analysis of DOD, *Strategic and Critical Materials 2021 Report on Stockpile Requirements*, February 2021, pp. 7-10; U.S. Geological Survey, *Mineral Commodity Summaries 2023*, January 2023, p. 21.

⁴⁴ P.L. 117-263 §1415 requires DOD to “conduct a study on the strategic materials required by the Department of Defense to sustain combat operations for not less than one year against the pacing threat identified in the National Defense Strategy” for stockpile reports required by 50 U.S.C. 98h-5(a) (“Biennial report on stockpile requirements.”)

⁴⁵ DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 7.

⁴⁶ *Ibid.*, p. 7.

⁴⁷ *Ibid.*, p. 7; Under Secretary of Defense (Comptroller)/DOD Chief Financial Officer, *Department of Defense Revolving Funds Justification/Overview: Fiscal Year (FY) 2024 Budget Estimates*, March 2023, p. 58. Based upon CRS interviews and correspondence with NDS planners from the Institute for Defense Analyses in July 2023, if the congressionally-mandated base case military conflict scenario were to markedly increase in intensity and/or duration, stockpile requirements may increase significantly. 50 U.S.C. §98h-5(b) also requires DOD to disclose the “national emergency planning assumptions” built in to these risk assessments and mitigation models.

⁴⁸ CRS analysis of Under Secretary of Defense (Comptroller)/DOD Chief Financial Officer, *Department of Defense Revolving Funds Justification/Overview: Fiscal Year (FY) 2024 Budget Estimates*, March 2023, p. 58 and DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 7.

⁴⁹ The FY2023 NDAA (P.L. 117-263) authorized \$1.0 billion for the NDS Transaction Fund. Section 8034 of the Consolidated Appropriations Act, 2023 (P.L. 117-328) provided \$93.5 million with two-year obligation authority. Section 8035 of the Consolidated Appropriations Act, 2022 (P.L. 117-103) appropriated \$125.0 million, also available for placement on contract for two fiscal years.

⁵⁰ For more on necessary expense doctrine, see Government Accountability Office, *Principles of Federal Appropriations Law*, GAO-17-797SP, Fourth Edition, 2017 Revision, Chapter 3, pp. 14-17.

Table I. Congressional Appropriations Providing New Budget Authority for NDS Purposes, 1939-1969

In current dollars and constant FY2024 dollars

Fiscal Year	Appropriated Amounts (current dollars)	Appropriated Amounts (constant FY2024 dollars)	Public Law
1940	\$10,000,000	\$209,429,967	P.L. 76-361
1940	\$3,000,000	\$62,828,990	P.L. 76-442
1941	\$9,500,000	\$161,587,963	P.L. 76-442
1941	\$47,500,000	\$807,939,815	P.L. 76-667
1947	\$100,000,000	\$1,581,672,817	P.L. 79-663
1948	\$100,000,000	\$1,685,321,101	P.L. 80-271
1948	\$300,000,000	\$5,055,963,303	P.L. 80-785
1949	\$40,000,000	\$677,681,159	P.L. 81-119
1950	\$525,000,000	\$8,801,792,699	P.L. 81-150
1950	\$605,000,000	\$10,143,018,253	P.L. 81-759
1950	\$573,232,449	\$9,610,425,113	P.L. 81-843
1951	\$1,834,911,000	\$29,022,288,498	P.L. 81-911
1951	\$790,216,500	\$12,498,639,574	P.L. 82-253
1952	\$203,979,000	\$3,104,101,729	P.L. 82-455
1954	\$379,952,000	\$5,148,369,619	P.L. 83-663
1955	\$321,721,000	\$4,221,439,121	P.L. 84-112
1955	\$27,400,000	\$359,527,143	P.L. 84-112
1958	\$3,000,000	\$33,721,154	P.L. 85-844
1959	\$(58,370,923)	\$(613,729,925)	P.L. 86-255
1960	\$22,237,000	\$236,318,664	P.L. 86-626
1961	\$16,682,510	\$173,982,479	P.L. 87-141
1962	\$8,729,887	\$90,970,516	P.L. 87-741
1963	\$23,925,000	\$238,489,593	P.L. 88-215
1964	\$9,319,168	\$91,687,208	P.L. 88-507
1965	\$118,500	\$1,169,449	P.L. 89-16
1965	\$16,096,284	\$158,850,434	P.L. 89-128
1966	\$18,493,789	\$174,220,976	P.L. 89-555
1967	\$244,000	\$2,226,825	P.L. 90-21
1967	\$16,341,212	\$149,135,305	P.L. 90-121
1968	\$15,176,387	\$132,217,588	P.L. 90-550
Total	\$5,963,404,763	\$94,021,287,130	

Source: CRS analysis of Stockpile Reports to Congress, 1947-1969; CRS analysis of Office of Management and Budget, *Budget of the United States Government, Fiscal Year 2024*, Historical Tables, Table 10.1, "Gross Domestic Product and Deflators Used in the Historical Tables: 1940-2028."

Notes: Real dollar values are net amounts reported in stockpile reports to Congress, excluding administrative transfers of budget authority to non-NDS accounts during a given fiscal year and excluding multi-year contracting authority in advance of appropriations, as authorized in the respective Public Law and reported in subsequent Stockpile Reports to Congress. Values in the “Appropriated Amounts (current dollars)” column therefore may not match appropriated amounts listed in the respective Public Law. Cases where two entries cover the same Public Law represent appropriations for new stockpile activities along with appropriations to reimburse stockpile accounts for obligations incurred pursuant to advance contracting authority (in lieu of appropriations) provided in prior Public Laws.

Since 2022, Congress has expressed renewed interest in providing budget authority for new stockpile acquisitions, in part because DOD has expressed concern that annual stockpile operations cannot be sustained in the long term with current NDS assets.⁵¹

NDS Organizational Structure⁵²

This section surveys key features of stockpile strategic planning, management, acquisition and disposal, resource management, research and development, and congressional reporting under 50 U.S.C. Chapter 5, Subchapter III: Acquisition and Development of Strategic Raw Materials.

Strategic and Critical Materials Board of Directors⁵³

Section 1411(b) of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, (P.L. 117-263) established a board of directors to develop and assess NDS strategic plans and operations. The board must at minimum include 13 members:

- The Assistant Secretary of Defense for Industrial Base Policy is the chair
- Four additional members are chosen by the chair of the board, with relevant expertise (e.g., one member each specialized in “military affairs, defense procurement, production of strategic and critical materials, and finance”)⁵⁴
- Four members total designated by each of the Secretaries of Commerce, State, Energy, and the Interior
- Four members total designated by House and Senate Armed Services Committees (i.e., the Chairman and Ranking Member of the Readiness Subcommittee in each chamber choose one board member each)

Congress has tasked this board with developing stockpile strategy for submission to the Secretary of Defense; approving an annual budget plan; reviewing planned stockpile acquisitions or sales against “projected domestic and foreign economic effects;” and establishing performance metrics for evaluating whether the National Defense Stockpile Manager is adequately implementing stockpile strategy.⁵⁵

⁵¹ DOD, *FY2022 National Defense Stockpile Annual Operations and Planning Report*, March 2023, p. 12.

⁵² For an early organizational and political history of the stockpile, see Glenn Herald Snyder, *Stockpiling strategic materials: politics and national defense* (San Francisco, CA: Chandler Publishing Company, 1966).

⁵³ 50 U.S.C. §98h-1.

⁵⁴ *Ibid.*

⁵⁵ P.L. 117-263 was passed December 22, 2022. The law requires the Board to meet annually. Official stockpile reports to Congress have yet to describe its membership and by-laws.

National Defense Stockpile Manager

P.L. 100-180 Division C, Title II, the “National Defense Stockpile Amendments of 1987” amended the Stock Piling Act, requiring the President to designate “a single Federal office to perform the functions of the President under this Act.”⁵⁶ To implement the requirement, President Ronald Reagan issued Executive Order 12626 designating the Secretary of Defense to perform this role of “National Defense Stockpile Manager.”⁵⁷ The executive order also authorized the Secretary to delegate responsibilities under the act as needed to perform these functions.

The Stockpile Manager has a variety of responsibilities under the act, including:

- Use appropriated funds to acquire shortfall materials, even doing so without explicit authorization in law under certain circumstances.⁵⁸
- Receive advice from the Strategic and Critical Materials Board of Directors.⁵⁹
- Submit financial statements and an Annual Materials and Operations Plan to the Board of Directors.⁶⁰
- Submit an annual report to the congressional defense committees on foreign and domestic stockpile purchases, disposals, barter transactions, research and development efforts, and planned expenditures over the next five years.⁶¹

Within DOD, the Secretary delegates these functions to the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), who further delegates responsibilities to the Director of the Defense Logistics Agency (DLA), the nation’s combat logistics support agency.⁶² DLA manages day-to-day NDS operations with oversight from the Strategic and Critical Materials Board of Directors.

Day-to-Day NDS Operations and Material Assessment: DLA-SM

To consolidate NDS operational activities under one entity, DOD has delegated day-to-day stockpile management responsibilities specifically to the Defense Logistics Agency’s Strategic Materials field activity (DLA-SM). DLA-SM maintains the specialized facilities, personnel, equipment and software required to execute NDS material acquisition, storage, management,

⁵⁶ 50 U.S.C. §98 h-7.

⁵⁷ E.O. 12626, “National Defense Stockpile Manager,” 53 *Federal Register* 6114, February 25, 1988.

⁵⁸ 50 U.S.C. §98d(a)(3).

⁵⁹ 50 U.S.C. §98h-1(c)(3).

⁶⁰ 50 U.S.C. §98h-2(a)(2)(B).

⁶¹ 50 U.S.C. §98h-2(b)(1).

⁶² 50 U.S.C. §98h-7; 50 U.S.C. §98, *et. seq.*; E.O. 12626, “National Defense Stockpile Manager,” 53 *Federal Register* 6114, February 25, 1988); DOD, *DOD Directive 5135.02: Under Secretary of Defense for Acquisition and Sustainment (USD(A&S))*, July 15, 2020, Section 4, clause aq; DOD, *DOD Directive 5105.22: Defense Logistics Agency (DLA)*, June 29, 2017, Section 2, clause y. Note that 50 U.S.C. §98h-7(c) states that certain NDS functions assigned to the President cannot be delegated; in particular, ordering the release of NDS materials per 50 U.S.C. §98f(a)(1). However, 50 U.S.C. §98f(a)(3) authorizes the Under Secretary of Defense for Acquisition and Sustainment to perform this function if designated (i.e., delegated the responsibility) to do so by the President. Accordingly, E.O. 14051, “Designation to Exercise Authority over the National Defense Stockpile,” 86 *Federal Register* 60747, October 31, 2021 delegated this authority to the USD(A&S). Upon receiving such an order, DLA as NDS Manager would implement the order.

disposal, and recovery activities. It also assesses stockpile composition and quality and provides NDS contract oversight and resource management.⁶³

The field activity reports NDS inventories at six locations in Indiana, Ohio, West Virginia, New York, and Arizona.⁶⁴ For a list of NDS materials at these facilities as of the end of FY2022, see **Appendix B**. In FY2022, DLA-SM reported employing 72 civilian personnel, led by an Administrator and Deputy Administrator headquartered at Fort Belvoir, Virginia and organized into two directorates: one for strategic planning and market research, and a second for materiel management.⁶⁵

As the National Defense Stockpile Manager, DLA-SM tasks include:

- Purchase strategic and critical materials of domestic origin (and prioritize purchases from the national technology and industrial base above other foreign sources if not available domestically).⁶⁶
- Contract with domestic facilities to process and refine stockpile materials.
- Qualify domestic facilities to receive NDS materials under a declared national emergency and fulfill specific military and essential civilian requirements.
- Contract with domestic facilities to recycle strategic and critical materials.⁶⁷

Recovering Strategic and Critical Materials from Recycling Operations

Section 1411 of the National Defense Authorization Act for Fiscal Year 2014 (P.L. 113-66) requires the Stockpile Manager to recover strategic and critical minerals from “excess materials made available for recovery purposes by other Federal agencies.” Recycling programs are now an increasingly important DLA-SM contracting activity and an area of significant innovation. The most recent FY2022 stockpile report to Congress details some of these initiatives under the Strategic Materials Recovery and Reuse Program (SMRRP).

In FY2022, germanium recovery from military branch “end-of-life scrap” turned discarded night vision lenses and Bradley Fighting Vehicle turret windows into “3,000 kilograms of 99.999 percent pure germanium ingots.”⁶⁸ For context, this represents “approximately 10 percent of U.S.

⁶³ 50 U.S.C. §98e(b) requires DLA-SM to follow the Federal Acquisition Regulation in procurement actions.

⁶⁴ DLA, “Depot Information,” at <https://www.dla.mil/Strategic-Materials/Resource/>. Following World War II, NDS materials were maintained at hundreds of facilities nationwide: for example, a 1961 stockpile report lists 46 million tons of strategic and critical materials stored at 58 military depots; 22 General Services Administration depots; 10 other government-owned sites; 39 industrial plant sites; 16 leased commercial sites; and 68 commercial warehouses. See Executive Office of the President, *Stockpile Report to the Congress: January – June 1961*, October 1961, p. 5. In 1997, after declaring 99% of remaining NDS inventories “excess material,” DLA-SM “established a long-range plan to vacate 66 sites.” See U.S. General Accounting Office, *National Defense Stockpile: improved financial plan needed to enhance decision making*, January 2001, p. 4. At some of these locations, “past material storage and handling practices allowed chemical constituents to leach into soil and water.” See DOD, *FY2022 National Defense Stockpile Annual Operations and Planning Report*, March 2023, p. 15. DOD keeps Congress apprised of ongoing environmental remediation efforts at these sites through its annual reports and congressional briefings.

⁶⁵ DOD, *Defense Manpower Profile Report: Fiscal Year 2023*, July 2022, p. 141; DLA-SM, “About Strategic Materials,” web resource at <https://www.dla.mil/Strategic-Materials/About/>.

⁶⁶ The national technology and industrial base (NTIB) is defined in 10 U.S.C. §4801 as “the persons and organizations that are engaged in research, development, production, integration, services, or information technology activities conducted within the United States, the United Kingdom of Great Britain and Northern Ireland, Australia, New Zealand, and Canada.”

⁶⁷ 50 U.S.C. § 98h-6.

⁶⁸ DOD, *FY2022 National Defense Stockpile Annual Operations and Planning Report*, March 2023, p. 11. DLA-SM (continued...)

demand for purified germanium.”⁶⁹ This recovered germanium is to be stored in the NDS for emergency use.⁷⁰

Also reported in FY2022, DLA-SM’s boron carbide recovery program is to turn demilitarized body armor plates “that would have been landfilled” into a processed powder stored in the NDS. In an emergency, this powder could be recast into new hard armor plates. DOD reportedly disposes of approximately 120,000 body armor plates each year, with 30% of these plates reportedly containing high concentrations (up to 90%) of boron carbide.⁷¹

To the extent that recovery operations reliably yield large quantities of certain strategic and critical materials, these operations may be assessed as potential complements or alternatives to other domestic or foreign sources of supply in emergency scenarios.⁷²

Analytic Support to DLA-SM: Institute for Defense Analyses

DLA-SM also plays a central role in the interagency effort to analyze alternative sources of supply through stockpile planning. To assess stockpile requirements DLA-SM contracts with a federally funded research and development center (FFRDC), the Systems and Analyses Center (SAC), run by the Institute for Defense Analyses (IDA). Since June 1988, SAC has constructed the interagency analytic backbone of the National Defense Stockpile, known as the Risk Assessment and Mitigation Framework for Strategic Materials (RAMF-SM).⁷³

RAMF-SM is “a set of models, procedures, and databases” designed to recommend which strategic and critical materials should be stockpiled, and in what quantities.⁷⁴ The framework incorporates a combat scenario provided by the Office of the Under Secretary of Defense for Policy; data on equipment losses, weapons platform requirements, and consumables provided by the Joint Staff in coordination with the military departments; and data from interagency partners (including the intelligence community) and industry stakeholders to estimate what may happen to supply chains for candidate materials under certain conditions.⁷⁵

partnered with the Anniston Army Depot to implement this project. See DLA, “Strategic Material Recovery and Reuse Program (SMRRP),” website at <https://www.dla.mil/Strategic-Materials/Business/Recycling-and-Reuse-Program-SMRP/>.

⁶⁹ Ibid., p. 11.

⁷⁰ Ibid., p. 8. The Senate-passed version of a National Defense Authorization Act for Fiscal Year 2024 (H.R. 2670) §1513 would authorize DOD to sell 5,000 kilograms of germanium from the stockpile (i.e., satisfy ~16.7% of total U.S. annual demand).

⁷¹ Ibid., p. 9-10.

⁷² 50 U.S.C. §98e(a)(5) requires the Stockpile Manager to “provide for the appropriate recovery of any strategic and critical materials...that may be available from excess materials made available for recovery purposes by other Federal agencies.”

⁷³ IDA, *Strategic and Critical Non-Fuel Materials and the National Defense Stockpile*, IDA Document D-1878, September 1996, p. S-1.

⁷⁴ For an overview of the risk modeling process used for generating stockpile requirements, see Institute for Defense Analyses (IDA), *The Risk Assessment and Mitigation Framework for Strategic Materials (RAMF-SM)*, IDA document D-33112, May 2022; IDA, *Formal Processes for Mitigating Risks of Strategic Materials Shortfalls*, IDA document D-33375, March 2023; IDA, *The RAMF-SM Stockpile Sizing Module: Updated Documentation and User’s Guide*, IDA document P-22696, April 2022; IDA, *The RAMF-SM Material Demand Computation Program: Documentation and User’s Guide*, IDA document P-22689; and IDA, *Material Prioritization via Linear Programming (MPLP): Proof of Concept and Initial Results*, IDA document P-33037. Based on CRS interviews and correspondence with NDS planners at IDA in July 2023, the MPLP module was first incorporated into the FY2023 NDS Requirements report to Congress.

⁷⁵ IDA, *The RAMF-SM Stockpile Sizing Module: Updated Documentation and User’s Guide*, IDA document P-22696, April 2022, p. 39 on supply ability factors in material shortfall analysis: “Generally, the data come from the intelligence (continued...)”

The baseline scenario for these calculations is termed the “base case” and by law must be “a military conflict scenario consistent with the scenario used by the Secretary [of Defense] in budgeting and defense planning.”⁷⁶ Stockpile models must also encompass “those strategic and critical materials necessary for the United States to replenish or replace, within three years of the end of the military conflict scenario...all munitions, combat support items, and weapons systems that would be required after such a military conflict.”⁷⁷

Ultimately, outputs from RAMF-SM provide decision support to the National Defense Stockpile Manager and Strategic and Critical Materials Board of Directors.⁷⁸ In the event that DOD leadership uses model outputs to justify acquiring or selling stockpile materials, the NDS has built-in bureaucratic mechanisms for anticipating the market impacts of these actions via the board and the NDS Market Impact Committee.

NDS Market Impact Committee⁷⁹

Section 3314 of the National Defense Authorization Act for Fiscal Year 1993 (P.L. 102-484) established an interagency Market Impact Committee (MIC) to advise the National Defense Stockpile Manager on “the projected domestic and foreign economic effects of all acquisitions and disposals of materials from the stockpile.” Co-chaired by the Departments of Commerce and State, the MIC includes additional representatives from the Departments of Agriculture, Defense, Energy, Homeland Security, the Interior, and the Treasury.⁸⁰

The MIC facilitates outreach to industry and public stakeholders by periodically publishing a notice of inquiry and request for public comments in the *Federal Register*. Such a notice was

community.” For an overview of Joint Staff activities that may generate data informing RAMF-SM, see DOD, *Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3100.01E, Joint Strategic Planning System*, May 21, 2021; and DOD, *DOD Directive (DODD) 8260.05, Support for Strategic Analysis*, July 7, 2011. The latter describes organizational relationships for generating baseline conflict scenarios, incorporating data from current operations, Combatant Commander plans, force management decisions, and intelligence estimates. As with any sophisticated modeling and simulation enterprise, RAMF-SM can be extremely sensitive to assumptions, constraints, and empirical uncertainty. See Justin M. Lloyd et al., “Methods in macroeconomic forecasting uncertainty analysis: an assessment of the 2015 National Defense Stockpile Requirements Report,” *Mineral Economics*, vol. 31, 269-281 (2018) and IDA, *The RAMF-SM Stockpile Sizing Module: Updated Documentation and User’s Guide*, IDA paper P-22696, April 2022, pp. 38-39, which notes that “shortfall results can be highly sensitive” to variable values representing the availability of strategic and critical materials from specific countries under emergency conditions.

⁷⁶ 50 U.S.C. §98h-5(b).

⁷⁷ 50 U.S.C. §98h-5(c). This subsection also requires DOD to consider the impact of “alternative mobilization periods” and “a range of other military conflict scenarios addressing potentially more serious threats to national security” than the base case scenario, reporting to Congress the effect these alternatives would have on stockpile requirements. The FY2023 James M. Inhofe National Defense Authorization Act also required DOD to assess “the strategic materials required...to sustain combat operations for not less than one year against the pacing threat identified in the National Defense Strategy” (i.e., China), and to submit a classified report on the results by January 15, 2024. See P.L. 117-263 §1415 and 50 U.S.C. §98d Statutory Notes and Related Subsidiaries.

⁷⁸ RAMF-SM output recommendations are provided to DOD senior leaders, who may or may not request congressional appropriations in a given year to acquire some portion of the materials estimated to be in shortfall.

⁷⁹ From October 1992 to December 2022, Congress utilized 50 U.S.C. §98h-1 to require a Market Impact Committee to perform roles outlined in this section. In December 2022, P.L. 117-263 §1411 replaced the MIC’s role in 50 U.S.C. §98h-1 with a Strategic and Critical Materials Board of Directors. The MIC has continued its public-facing activities from December 2022 to present; however, pending publication of the board’s membership and by-laws, the role of the MIC in stockpile management moving forward is uncertain.

⁸⁰ U.S. Department of Commerce Bureau of Industry and Security, “Request for public comments on the potential market impact of the proposed fiscal year 2025 Annual Materials Plan from the National Defense Stockpile Market Impact Committee,” 88 *Federal Register* 60633, September 5, 2023.

published on September 5, 2023, for the NDS FY2025 Annual Materials Plan.⁸¹ These notices provide a list of materials being considered for “acquisition, disposal, upgrade, conversion, recovery, reprocessing, or sales” along with a “maximum quantity” of each material that might be affected over the course of the fiscal year in question.

These public notices emphasize an important and historically contentious feature of the Stock Piling Act: “The NDS is a strategic stockpile, not an economic stockpile. It is not intended to influence prices in the market or insulate private industry from supply shocks.”⁸² The Stock Piling Act states: “The purpose of the National Defense Stockpile is to serve the interest of national defense only. The National Defense Stockpile is not to be used for economic or budgetary purposes.”⁸³ This congressional declaration followed decades of politically contentious stockpile acquisition and disposal decisions, which some analysts, industry associations, and Members of Congress argued unduly shaped market prices or implemented economic and foreign policy.⁸⁴

To the extent that NDS acquisitions or sales play a role in U.S. supply chain resilience policies in coming years, the MIC and Board of Directors may face potential ambiguity between future stockpile transactions intended “for national defense only” and those intended (or projected) to have economic impacts favoring nascent domestic industries, insulating the national technology and industrial base from supply shocks, or engaging in strategic competition with foreign sources of supply.⁸⁵

NDS Transaction Fund (Resource Management)

The National Defense Stockpile Transaction Fund (NDSTF) was established by the Strategic and Critical Materials Stock Piling Revision Act of 1979 (P.L. 96-41) to finance authorized NDS operations without requiring annual congressional appropriations. The NDSTF houses “all moneys received from the sale of materials in the stockpile,” including any strategic and critical materials resulting from “excess materials made available for recovery purposes by other Federal

⁸¹ Ibid.

⁸² Ibid.

⁸³ 50 U.S.C. §98a(c). The prohibition on using the NDS for budgetary purposes references efforts to use NDS Transaction Fund assets to reduce annual budget deficits and the like.

⁸⁴ The earliest stockpile reports to Congress, declassified in the early 2000s, emphasize that planned stockpile acquisitions should be kept secret because “public knowledge of stockpile procurement plans would affect the prices at which urgently needed materials would be offered to the Government.” See DOD, *Stockpiling Report by the Munitions Board to The Congress*, January 23, 1948, front matter. For contemporary analysis of stockpile politics and market impacts, see Glenn Herald Snyder, *Stockpiling strategic materials: politics and national defense* (San Francisco, CA: Chandler Publishing Company, 1966), p.3; and Patricia Elaine Perkins, “The United States strategic stockpile and price determination in international metals markets,” (Ph.D. diss., University of Toronto, 1989), arguing that the impact of the NDS on market prices historically depended on its size over time. The American Mining Congress in 1976 testified to Congress that the stockpile had “an extremely disruptive influence in the market for metals and minerals” and that most mining industry CEOs “would just as soon have no [national] stockpiles at all.” See Ibid., p. 29 and U.S. Congress, Joint Committee on Defense Production, *Hearings: Defense Industrial Base, Part 3: New Stockpile Objectives*, 94th Cong., 2nd sess., November 24, 1976, pp. 64, 80). During these hearings, committee chair Senator Proxmire stated: “Moreover, the history of our stockpiles is replete with examples of their use or abuse for budget balancing, for price stabilization and for almost every other purpose other than the only legal one—strategic mobilization.” Ibid., p. 1.

⁸⁵ The NDS Board of Directors is chaired by the Assistant Secretary of Defense for Industrial Base Policy, whose priorities include executing authorities under 10 U.S.C. §4811 to ensure supply chain resilience in the national technology and industrial base, i.e., ensuring the capacity of private industry to withstand supply shocks. In addition, Section 1 of E.O. 14051, “Designation to Exercise Authority over the National Defense Stockpile,” 86 *Federal Register* 60747, October 31, 2021 frames the NDS as “a model for the private sector” to “create a buffer against potential shortages and import dependencies.”

agencies.”⁸⁶ 50 U.S.C. §98h sets out a number of lawful uses of NDSTF funds “(subject to such limitations as may be provided in appropriations Acts),” from acquisition, maintenance, and disposal of materials to quality control testing, facility and infrastructure improvement, pay of employees, research and development, and environmental remediation.

During the post-Cold War era, sales of excess materials from the stockpile generated billions of dollars in revenue. Rather than maintain large cash reserves in the NDS Transaction Fund, Congress from 2002 to 2022 “transferred more than \$6 billion from the Transaction Fund to the General Fund and other mandatory programs unrelated to the NDS mission.”⁸⁷ As a result, DOD has stated that current stockpile inventories and unobligated balances in the fund may not cover anticipated program requirements.⁸⁸ One method of increasing the Transaction Fund balance is through appropriations.⁸⁹

In general, “Moneys in the fund shall remain available until expended.”⁹⁰ However, the FY2022 and FY2023 appropriations acts added a total of \$218.5 million to the NDSTF with a two-year period of availability, meaning that these funds must be placed on a contract or otherwise obligated within two fiscal years of legislative enactment and fully disbursed within seven fiscal years.⁹¹ NDSTF resource managers apply internal controls to appropriated funds to facilitate contracting actions and obligation planning within this period of availability.

NDS Research and Development Activities

Title 50 U.S.C. §98g requires the National Defense Stockpile Manager (as the President’s designee) to “make scientific, technologic, and economic investigations” to develop new domestic sources of supply and new production methods for strategic and critical materials, along with *substitutes* for “essential ores and mineral products.”

DLA-SM provides grants to universities and sign contracts with federal research and development (R&D) agencies and private companies to perform R&D-type activities:⁹²

- Development, mining, preparation, treatment, and utilization of ores and other mineral substances.

⁸⁶ 50 U.S.C. §98h; 50 U.S.C. §98e(b)(5)-(6). Historically, P.L. 77-76 of May 28, 1941 amended the original Stock Piling Act of 1939 “so as to provide for a revolving fund, or the availability for re-use of all proceeds from sales of material from the stockpile.” However, Congress reversed this decision with P.L. 79-520 of July 9, 1946 in favor of placing all sales revenue into “the general receipts of the Treasury.” Rather than introducing a new approach to stockpile resource management in 1979, Congress was largely reinstating an approach from WWII. See Department of Defense, *Stockpiling report by the Secretary of War and the Secretary of the Navy to the Congress pursuant to section 4 of public law 520, 79th Congress covering operations from 7 June 1939 to 31 December 1946*, 23 January 1947, p. I-1, I-4.

⁸⁷ DOD, *FY2022 National Defense Stockpile Annual Operations and Planning Report*, March 2023, p. 12.

⁸⁸ DOD’s FY2022 stockpile report to Congress states: “The Department has determined that excess materials remaining in the NDS were inadequate to generate the revenues required to finance all identified critical material risks and sustain general operations of the NDS.” DOD, *FY2022 National Defense Stockpile Annual Operations and Planning Report*, March 2023, p. 12.

⁸⁹ Alternatively, Congress may authorize other revolving funds to purchase strategic and critical materials for transfer into NDS inventories. House-engrossed FY2024 NDAA version (H.R. 2670) §863 would authorize such acquisitions through the Industrial Base Fund (redesignated as the Industrial Base and Operational Infrastructure Fund).

⁹⁰ 50 U.S.C. §98h.

⁹¹ P.L. 117-103 §8035 appropriated \$125.0 million; P.L. 117-328 §8034 provided \$93.5 million.

⁹² The following four bullet points reproduce 50 U.S.C. §98g(a)-(d) sub-headings.

- Development of sources of supplies of agricultural materials; use of agricultural commodities for manufacture of materials.
- Development of sources of supply of other materials; development or use of alternative methods for refining or processing materials in the stockpile.
- Grants and contracts to encourage conservation of strategic and critical materials.

Historically, the U.S. Department of the Interior’s U.S. Geological Survey (USGS) has performed many of the R&D activities related to domestic development and mining.⁹³ The U.S. Department of Agriculture similarly performed investigations into various agricultural commodities once deemed strategic and critical materials, such as wool, vegetable tannins, and opium.⁹⁴

As DOD weapons systems have increased in technological sophistication, a wider array of R&D performers, including universities, have obtained DLA-SM contracts and grants.⁹⁵ In FY2022, DLA-SM reported seven R&D projects totaling \$3.7 million, including a contract with the Department of Energy’s Oak Ridge National Laboratory (ORNL) to test a new process for recovering critical rare earth elements from discarded electronics hardware (i.e., e-waste).⁹⁶

In addition, DLA-SM seeks to qualify (i.e., certify) industrial operations to provide reliable alternative sources of supply for strategic and critical materials. To that end, in FY2022 DLA reported “a qualification program of antimony trisulfide from Mexico to replace the only qualified source located in China.”⁹⁷

Current NDS Transaction Fund unobligated cash balances (\$326 million projected for end of year FY2024) may provide ample resources for the National Defense Stockpile Manager to accelerate R&D efforts and qualify additional industrial operations.⁹⁸ In addition, 50 U.S.C. §98g may authorize DOD to leverage advances in biomining and biomanufacturing of strategic and critical materials to acquire NDS inventories.⁹⁹

⁹³ For current U.S. interagency critical materials R&D policy outside the Stock Piling Act framework, see 30 U.S.C. Chapter 28—Materials and Minerals Policy, Research, and Development. Until closure in 1996, the Department of Interior’s Bureau of Mines performed NDS R&D work alongside USGS. In 1996, these Bureau of Mines functions were returned to the USGS. See USGS, “How can I find U.S. Bureau of Mines publications?” at <https://www.usgs.gov/faqs/how-can-i-find-us-bureau-mines-publications>.

⁹⁴ DOD, *Stockpiling report by the Secretary of War and the Secretary of the Navy to the Congress pursuant to section 4 of public law 520, 79th Congress covering operations from 7 June 1939 to 31 December 1946, 23 January 1947*, p. I-4. Executive Office of the President, *Stockpile Report to the Congress: July-December 1957*, April 1958, p. 9.

⁹⁵ For a representative historical example, in FY1989 DLA provided research grants to the University of Texas at El Paso, University of Hawaii at Manoa, Loyola College in Maryland, University of Idaho, University of Utah, University of Arizona, University of New Mexico, and University of Nevada. See DLA, *FY1990/FY1991 Biennial Budget Estimates Submitted to Congress: National Defense Stockpile Transaction Fund and William Langer Jewel Bearing Plant*, January 1989, p. 3.

⁹⁶ DOD, *FY2022 National Defense Stockpile Annual Operations and Planning Report*, March 2023, p. 11. “Specifically, dysprosium (Dy) will be separated from rare earth oxides (REOs) recovered from scrap permanent magnets of e-waste” using a novel “membrane solvent extraction (MSX) process.” The remaining FY2022 R&D projects focused on developing domestic supply chains for explosives and propellants.

⁹⁷ *Ibid.*, p. 11.

⁹⁸ *Ibid.*, p. 12 notes that unobligated balances in the Transaction Fund are “controlled by the apportionment process,” meaning that access to these funds for new initiatives may require approval from the Office of Management and Budget. See DOD, *DOD 7000.14-R, Financial Management Regulation, Volume 12, Chapter 1*, February 2023, p. 1-8. In addition, DOD notes that unobligated balances “do not take into consideration future funded expenses related to environmental liabilities.” DLA states these future liabilities total \$6 million (DOD, *FY2022 National Defense Stockpile Annual Operations and Planning Report*, March 2023, p. 13).

⁹⁹ See Defense Advanced Research Projects Agency, “DARPA names teams to develop biotechnology to purify critical (continued...)”

NDS Congressional Reporting Requirements

Congress exercises oversight of DOD programs by requiring various analytic reports and briefings. The NDS is subject to a variety of congressional reporting requirements.¹⁰⁰

Special Presidential Disposal Authority

50 U.S.C. §98f requires the President or USD(A&S) to notify the House and Senate Armed Services Committees any time they utilize special presidential authority to release stockpile materials for use, sale, or other disposition.

*Reports by the National Defense Stockpile Manager and Board of Directors*¹⁰¹

Following the end of each fiscal year, DLA-SM must submit a report to the House and Senate Armed Services and Appropriations Committees including:

- information with respect to foreign and domestic purchases of materials for the stockpile during the preceding fiscal year;
- information with respect to the acquisition and disposal of materials under this subchapter by barter, during such fiscal year;
- information with respect to the activities by the National Defense Stockpile Manager to encourage the conservation, substitution, and development of strategic and critical materials;
- information with respect to the research and development activities conducted under section 98g of this title;
- audited annual financial statements for the Strategic and Critical Materials Fund;¹⁰²
- other pertinent information on the administration of this subchapter as will enable the Congress to evaluate the effectiveness of the program;
- details of all planned expenditures from the Strategic and Critical Materials Fund over the Future Years' Defense Program and anticipated receipts from proposed disposals of stockpile materials; and
- a report prepared by the Strategic and Critical Materials Board of Directors detailing the activities of the Board to carry out their duties; and the most recent NDS Annual Materials and Operations Plan.

elements,” press release at <https://www.darpa.mil/news-events/2022-10-06a>. See also energetic materials applications at DARPA, “DARPA successfully transitions synthetic biomanufacturing technologies to support national security objectives,” press release at <https://www.darpa.mil/news-events/2021-12-08>.

¹⁰⁰ In addition to reporting requirements outlined directly in the 50 U.S.C. §98, *et. seq.*, 30 U.S.C. §1604(d) requires the Secretary of Defense to submit to Congress an assessment of critical materials needs related to national security, “revised periodically as deemed necessary.” The report must identify “the steps necessary to meet those needs,” including an assessment of the Defense Production Act and Strategic and Critical Materials Stock Piling Act.

¹⁰¹ Bullet points in this sub-section are quotations from 50 U.S.C. §98h-2, except the final bullet which paraphrases the content of the report to be prepared by the Board.

¹⁰² P.L. 117-263 §1411 refers to a “Strategic and Critical Materials Fund” where previous versions of 50 U.S.C. §98h-2 referred to the “National Defense Stockpile Transaction Fund.” The NDS Transaction Fund (NDSTF) is the subject of annual financial statements submitted by DLA to Congress, where the NDSTF is designated by Treasury Account Symbol (TAS) 97X4555. See Defense Logistics Agency, *Defense Logistics Agency: Fiscal Year 2022 Agency Financial Report – Transaction Fund (Unaudited)*, 2022, p. 85.

Biennial Report on Stockpile Requirements¹⁰³

DOD delivers recommendations every other year to Congress on stockpile requirements, disclosing the “national emergency planning assumptions” underlying its analytic process. DOD is required to disclose:

- The length and intensity of the assumed military conflict.
- The military force structure to be mobilized.
- The losses anticipated from enemy action.
- The military, industrial, and essential civilian requirements to support the national emergency.
- The availability of supplies of strategic and critical materials from foreign sources during the mobilization period, the military conflict, and the subsequent period of replenishment, taking into consideration possible shipping losses.
- The domestic production of strategic and critical materials during the mobilization period, the military conflict, and the subsequent period of replenishment, taking into consideration possible shipping losses.
- Civilian austerity measures required during the mobilization period and military conflict.

The biennial report must also include “an examination of the effect that alternative mobilization periods...as well as a range of other military conflict scenarios addressing potentially more serious threats to national security, would have on the Secretary's recommendations.”¹⁰⁴ The FY2023 NDAA (P.L. 117-263) §1415 further required DOD to submit with its 2023 biennial report a classified report on the strategic materials required to sustain a one-year-long armed conflict with the pacing threat identified in the National Defense Strategy (i.e., China).¹⁰⁵ The provision requires DOD to acquire the highest priority strategic and critical materials identified in this scenario “subject to the availability of appropriations.”¹⁰⁶

The Stock Piling Act does not establish requirements for ensuring this biennial assessment integrates armed conflict scenario data emerging from other congressional reporting requirements. For example, by February 2024 DOD is required by law (10 U.S.C. §118b) to submit to Congress a classified National Defense Sustainment and Logistics Review containing long-term strategic assessments (5-, 10-, and 25-years out) of global defense posture elements, defense industrial base capabilities, supply chain risks, and logistics assets in realistic armed conflict scenarios. Inasmuch as these assessments contain the highest quality, most comprehensive data integration DOD can deploy for strategic analysis, these data may be available for integration into future biennial NDS requirements assessments.

¹⁰³ Bullet points in this subsection are quotations from 50 U.S.C. §98h-5(b). The FY2017 NDAA (P.L. 114-328) §1061(i)(30) set a termination date (December 31, 2021) for this biennial report. The White House’s 100-day supply chain review of DOD strategic and critical materials recommended that Congress reinstate this reporting requirement (The White House, *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth: 100-Day Reviews under Executive Order 14017*, June 2021, p. 201). The FY2022 NDAA (P.L. 117-81) §1064 reinstated the requirement.

¹⁰⁴ 50 U.S.C. §98h-5(d).

¹⁰⁵ P.L. 117-263 §1415; DOD, *2022 National Defense Strategy of the United States of America*, October 2022, p. 4. The provision also requires DOD to submit an unclassified study by January 15, 2024 of “the energy storage and electronic components necessary” to sustain combat in the same scenario.

¹⁰⁶ P.L. 117-263 §1415.

Issues Facing Congress

The following section considers issues that Congress may face involving National Defense Stockpile legislation and oversight.

Assessing NDS Funding Tradeoffs

Since 2022, executive branch budget requests and legislative activity related to NDS acquisitions have displayed considerable variability. DOD requested \$253.5 million in new budget authority for NDS acquisitions in FY2023 (and \$7.6 million for FY2024).¹⁰⁷ The enacted FY2023 NDAA (P.L. 117-263) authorized \$1.0 billion, while the Consolidated Appropriations Act, 2023 (P.L. 117-328) appropriated \$93.5 million.¹⁰⁸ Congress may wish to assess the extent to which resource allocation tradeoffs are currently affecting national stockpile strategy.

There is currently no statutory requirement for the President's Budget Request to include plans for stockpiling 100% of estimated material shortfalls of strategic and critical materials. The Risk Assessment and Mitigation Framework for Strategic Materials (RAMF-SM) generates estimated requirements and provides these estimates to senior leaders as decision support in budget planning. Executive branch officials may elect not to request funds to fill estimated shortfalls. DOD budget decisions may consider that most shortfalls cover nondefense demand.

The executive branch may face tradeoffs in assessing whether to request new budget authority for NDS acquisitions. To the extent that budget topline for discretionary defense spending are fixed, dollars spent storing raw materials for nondefense critical infrastructure demand in a national emergency may be viewed as competing with requirements for present-day military operations and equipment maintenance, procurement of weapons, or research and development of next-generation military platforms.

Congress may also face resource allocation tradeoffs in considering further NDS appropriations, with budget authority for emergency stockpile acquisitions competing with other national priorities.

Both the executive branch and Congress may face variation among expert opinions in assessing the comparative value of the National Defense Stockpile. To the extent that emergency raw material stockpiles provide deterrence value, investments in strategic weapons, additional war reserve materiel, enhanced warfighter training, or diplomatic engagement may be assessed as providing greater or lesser deterrence value. Similarly, to the extent that emergency raw material stockpiles increase supply chain resilience, other investments that increase near-, mid-, or long-term domestic industrial base capacity, incentivize *friend-shoring* of value chains, or strengthen global maritime logistics may be viewed as providing greater or lesser supply chain resilience. And to the extent that emergency raw material stockpiles facilitate whole-of-government emergency preparedness, other investments in non-DOD federal agencies, nondefense national stockpiles, or partnerships with nondefense critical infrastructure industries may be viewed as providing greater or lesser whole-of-government emergency preparedness.

¹⁰⁷ Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Operation and Maintenance Programs (O-1): Revolving Management Funds (RF-1), Fiscal Year 2023*, April 2022, p. 6A; Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Operation and Maintenance Programs (O-1): Revolving Management Funds (RF-1), Fiscal Year 2024*, March 2023, p. 9.

¹⁰⁸ P.L. 117-263 §1414;

DOD's 2021 biennial stockpile assessment stated that "stockpiling is only a temporary stopgap mitigation strategy" for some materials.¹⁰⁹ Comprehensive risk mitigation, according to the assessment, may require alternative resource allocations to "implement a permanent solution," including Title III Defense Production Act and Industrial Base and Sustainment (IBAS) investments.¹¹⁰

Given budget constraints, techniques for assessing these tradeoffs and improving resource allocation may become important tools for national security policymaking.

Determining Which National Emergency Scenarios Should be Used to Generate NDS Requirements

The National Defense Stockpile Manager currently establishes biennial stockpile requirements using a base case armed conflict scenario consisting of one year of active combat and three years of post-conflict industrial replenishment. Congress may wish to consider whether current strategic threat assessments justify modification of base case scenarios.

For example, Section 1411 of the House-passed FY2024 NDAA (H.R. 2670) would triple the assumed length of active combat in the scenario to three years while maintaining a three-year industrial replenishment period. In addition, this provision would require stockpile planners to model the "total mobilization of the economy of the United States" and encourage DOD to obtain stockpiles sufficient to meet these new requirements "on or after" January 1, 2028.¹¹¹

A historical perspective may assist policymakers in anticipating the general effect of this modified planning scenario and acquisition schedule on biennial stockpile requirements.¹¹²

In December 1987, the National Defense Authorization Act for Fiscal Years 1988 and 1989 (P.L. 100-180) established a three-year active conflict scenario (modeled on sustained conventional global war with a contemporary adversary). The three-year industrial replenishment period was only established as a stockpile requirement in 1996 (P.L. 104-201 §3311) alongside a reduction in the active conflict period. In March 1988, DOD reported that the shift to a three-year active combat period "(at 31 March 1988 prices) would require acquisition of additional materials valued at approximately \$12.3 billion" in addition to the \$7.1 billion in non-excess inventory the NDS already had on hand.¹¹³

In other words, DOD reported to Congress in 1988 that strategic and critical materials shortfalls for a contemporary three-year, high-intensity active combat scenario would amount to \$19.4 billion, without providing stockpiles for a three-year industrial replenishment period.

Strategic and critical materials shortfalls in the 2024 to 2028 timeframe may differ in many respects from requirements in 1988. Nevertheless, NDS requirements would increase

¹⁰⁹ DOD, *Strategic and Critical Materials 2021 Report on Stockpile Requirements*, February 2021, pp. 6-7.

¹¹⁰ *Ibid.*, pp. 6-7. See also DOD, Fiscal Year 2021 Industrial Capabilities Report to Congress, March 2023, p. 7 and CRS Report R43767, *The Defense Production Act of 1950: History, Authorities, and Considerations for Congress*, by Alexandra G. Neenan and Luke A. Nicastro, pp. 9-14.

¹¹¹ The provision states that stockpiled materials "should be" sufficient "on or after January 1, 2028" to meet "the national defense needs of the United States, for a period of not less than three years" "necessitating the total mobilization of the economy of the United States for a sustained conventional global war of indefinite duration." See H.R. 2670 §1411.

¹¹² In practice, the language in the House-passed NDAA provision admits of several possible operationalizations, which may require DOD planners to clarify congressional intent to facilitate implementation and assessment.

¹¹³ DOD, *Strategic and Critical Materials Report to the Congress: Operations under the Strategic and Critical Materials Stock Piling Act during the period October 1987 – March 1988*, September 1988, p. 4.

significantly if Congress required stockpile planners to model a three-year sustained global conventional war featuring total mobilization of the U.S. economy while maintaining a three-year post-conflict industrial replenishment requirement.¹¹⁴ As previously noted, a gap of \$13.5 billion already exists between current NDS assets and estimated shortfalls in a base case national emergency scenario modeling one year of active conflict.

Given a desire to strategically balance national defense stockpiling and national security preparedness with all other national priorities, Congress may wish to assess several alternative base case scenarios to decide its resource allocation preferences.

Assessing market impacts of rapid stockpile acquisition strategies

The current gap between National Defense Stockpile assets and estimated material shortfalls is \$13.5 billion, primarily for non-defense critical infrastructure demand rather than defense industrial base requirements.¹¹⁵ The 118th Congress is currently considering a legislative proposal in the House-passed version of an FY2024 NDAA (H.R. 2670 §1411) that historical precedent suggests could triple estimated shortfalls, while adding a requirement for DOD to acquire materials to mitigate these shortfalls on or after January 1, 2028.¹¹⁶ Current shortfalls and pending legislative proposals therefore raise questions about the potential market impacts of rapid stockpile acquisitions.

There are several ways to obtain NDS inventories:

- **Market exchange:** Historically, the primary method of obtaining stockpile materials has been purchasing non-fuel mineral commodities at market prices from foreign sources, adhering to standard federal procurement practices.¹¹⁷
- **Barter:** 50 U.S.C. §98e also authorizes the use of barter when practical; for example, “To the extent otherwise authorized by law, property owned by the United States may be bartered for materials needed for the stockpile.”¹¹⁸
- **Recycling and Recovery.** Since FY2014, Congress has authorized NDS operations to recover strategic and critical materials from federal agency end-of-life scrap and excess equipment such as night vision goggles and Bradley Fighting Vehicle turret windows.¹¹⁹

In the absence of multi-billion-dollar appropriations, barter and recycling and recovery operations may present alternative pathways for bridging NDS material shortfalls.

Congress could assess a range of barter options. These options would typically obtain strategic and critical materials from international markets at negotiated prices in exchange for goods or services rather than cash payment. As a result, the Strategic and Critical Materials Board of Directors and NDS Market Impact Committee may assess the market impacts of rapid acquisition

¹¹⁴ CRS email correspondence with NDS planners at Institute for Defense Analyses, July 6, 2023, generally corroborated that the House-passed provision in question, if enacted, would increase stockpile requirements, though precise amounts were not discussed.

¹¹⁵ CRS analysis of Under Secretary of Defense (Comptroller)/DOD Chief Financial Officer, *Department of Defense Revolving Funds Justification/Overview: Fiscal Year (FY) 2024 Budget Estimates*, March 2023, p. 58; DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 7.

¹¹⁶ See H.R. 2670 §1411.

¹¹⁷ 50 U.S.C. §98e(b).

¹¹⁸ 50 U.S.C. §98e(c)(4).

¹¹⁹ P.L. 113-66 §1411.

via barter in a manner similar to acquisition via appropriations. In both cases, assessing market impacts involves estimating whether stockpile acquisitions would unduly affect commodity prices over time.

NDS recycling and recovery operations may provide a way to acquire shortfall materials while developing new sources of supply. To the extent that recycling and recovery operations could provide reliable domestic sources of supply under wartime conditions, these operations may contribute to reducing NDS biennial shortfalls.

Section 1512 of the Senate-passed version of an FY2024 NDAA would amend the Stock Piling Act to authorize DOD to co-fund new recycling and recovery business model designs (i.e., “bankable feasibility studies”).¹²⁰ The White House’s 100-day strategic and critical materials supply chain review recommended a “government-wide” recycling and recovery program to obtain strategic and critical materials from federal data warehouse e-waste.¹²¹ The Strategic and Critical Materials Board of Directors, NDS Market Impact Committee, and Congress may wish to assess the potential market impacts of rapidly scaling up such operations.

Adapting stockpiles to anticipate and incorporate technological innovation

In a June 1946 address to the Army Ordnance Association, Army Chief of Staff and future President Dwight Eisenhower pointed out a potential weakness of a national stockpiling strategy. He stated: “Security is not static. Military stockpiles can become junk because of a single scientific development and the security they lend can be wiped out by a single laboratory experiment.”¹²² This remark calls attention to the limitations of stockpiling strategies that fail to anticipate or rapidly adapt to emerging technologies and technological innovation.

The current statutory framework for the NDS combines short-term stockpile planning with a mid- and long-term vision, authorizing the use of NDS funds for “scientific, technologic, and economic investigations” that generate “more efficient methods of production” and “develop new materials for the stockpile.”¹²³ Thus, apart from policy proposals that may increase or decrease stockpile quantities, what Eisenhower later called “realistic stockpiling” might take the form of enhanced coordination of such scientific, technological, and economic investigations.

DOD Chief Technology Officer / Under Secretary of Defense for Research & Engineering

There is currently no strategic planning, operations management, or research and development (R&D) role stipulated in the Stock Piling Act for the DOD Chief Technology Officer (CTO)/Under Secretary of Defense for Research and Engineering (USD(R&E)).¹²⁴ The Defense Logistics Agency and Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) currently play central roles in NDS strategic planning and management of operations, including

¹²⁰ Senate-engrossed version of H.R. 2670 §1512.

¹²¹ The White House, *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth: 100-Day Reviews under Executive Order 14017*, June 2021, p. 197.

¹²² National Archives, “Pre-Presidential Speeches,” Dwight D. Eisenhower Presidential Library, June 3, 1946, p. 77 at https://www.eisenhowerlibrary.gov/sites/default/files/file/pre_presidential_speeches.pdf.

¹²³ 50 U.S.C. §98g.

¹²⁴ The DOD Chief Technology Officer is also the Under Secretary of Defense for Research and Engineering. See DOD Chief Technology Officer, “Leadership,” web resource at <https://www.cto.mil/leadership/>.

development of R&D projects pursuing alternative materials and domestic sources of supply. As part of these R&D efforts, DLA-SM currently contracts, for example, with the Army Research Laboratory to develop new refinement and production processes. The NDS Board of Directors is chaired by the Assistant Secretary of Defense for Industrial Base Policy within USD(A&S).

Congress could assess the costs and benefits of authorizing, encouraging, or requiring participation from the DOD CTO/USD(R&E) in aspects of NDS strategic planning, operations, or R&D efforts. Offices within the DOD CTO/USD(R&E) hierarchy generate insight into emerging trends in critical technology areas;¹²⁵ innovation in industrial processes;¹²⁶ trends in strategic and critical material composition in DOD weapons systems and munitions; strategic intelligence and analysis related to emerging adversaries;¹²⁷ cutting-edge supply chain mapping methodologies;¹²⁸ digital repositories of technical information; and access to “strategic capital,” engaging vendors and bringing external investors into direct conversation with engineers developing possible new technical solutions to existing operational challenges.¹²⁹

Congress may consider to what extent CTO/USD(R&E) areas of specialization may add value to NDS strategic planning, operations, and R&D such as:

- Current efforts to obtain strategic and critical materials from recycling and recovery operations.¹³⁰
- “Transportation, processing, refining, storage, security, maintenance, rotation, and disposal of materials.”¹³¹
- Materials development and research, including alternative methods to convert stockpile materials into more suitable forms.¹³²
- Development of sources of supplies of agricultural materials; use of agricultural commodities (e.g., biotechnology or synthetic biology approaches).¹³³
- Approaches to grantmaking at academic institutions for purposes of assessing potential material substitutes or “more efficient methods of production” and material usage.¹³⁴

¹²⁵ DOD, *National Defense Science & Technology Strategy 2023*, pp. 3.

¹²⁶ *Ibid.*, p. 6.

¹²⁷ DOD, “Leadership: Research and Engineering,” web resources at <https://www.cto.mil/leadership/>.

¹²⁸ See Defense Advanced Research Projects Agency (DARPA), “Resilient Supply-and-Demand Networks (RSDN),” website at <https://www.darpa.mil/program/resilient-supply-and-demand-networks>

¹²⁹ DOD Chief Technology Officer, “Office of Strategic Capital,” website at <https://www.cto.mil/osc/>. OSC is reportedly “investigating the use of non-acquisition-based tools, such as loans and loan guarantees,” which have also been utilized historically in conjunction with Defense Production Act authorities to pursue Stock Piling Act purposes. See DOD, “Secretary of Defense establishes Office of Strategic Capital,” press release, December 1, 2022 at <https://www.defense.gov/News/Releases/Release/Article/3233377/secretary-of-defense-establishes-office-of-strategic-capital/>. Congress may also assess whether OSC would be considered by DOD in reference to the bankable feasibility studies authorized by Section 1512 of the Senate-passed FY2024 NDAA (H.R. 2670). Further, Congress may assess whether OSC’s “patient capital” prototype-to-market efforts might be deployed to target prototypes that recycle and recover strategic and critical materials; extract or refine them using research outcomes in critical technology areas such as biotechnology or nanotechnology; or maintain them using additive manufacturing or artificial intelligence.

¹³⁰ 50 U.S.C. §98e(a)(5).

¹³¹ 50 U.S.C. §98d(c); 50 U.S.C. §98e(a).

¹³² 50 U.S.C. §98g(c).

¹³³ 50 U.S.C. §98g(b).

¹³⁴ 50 U.S.C. §98g(d).

Congressional action is not necessarily required for increased CTO/USD R&E involvement in NDS planning and operations. The Stock Piling Act provides the Strategic and Critical Materials Board of Directors considerable flexibility in expanding Board membership, adopting by-laws, and considering matters assigned to it by the Board chair.¹³⁵ The Board itself may thus consider the costs and benefits of integrating DOD CTO/USD(R&E) into Board membership, initiatives, or execution of duties established in 50 U.S.C. §98h-1(c). Since the Board was established recently with the FY2023 NDAA (P.L. 117-263 §1411), Congress could consider periodically reviewing Board action to assess the extent of CTO/USD R&E involvement in NDS planning and operations.

Private sector stockpiles of strategic and critical materials

The Biden Administration has stated that increasing inventories in the National Defense Stockpile could “provide a model for the private sector” to increase inventories of raw materials for enhanced supply chain resilience, “while recognizing that private sector stockpiles and reserves can differ from government ones.”¹³⁶ Congress may consider assessing incentive structures in the private sector that affect industry behavior vis-à-vis stockpiling strategic and critical materials.

Public policies and industry behaviors that reliably increase the domestic availability of strategic and critical materials during a national emergency may tend to reduce NDS requirements.¹³⁷ However, peacetime conditions may disincentivize emergency stockpiles of strategic and critical materials among competitive firms. Having too much raw material on hand at any given time may negatively affect a company’s balance sheet and overall financial performance, imposing costs that could otherwise be redirected to more productive activity.

Supply chain volatility associated with the COVID-19 pandemic has triggered a rethinking of inventory management principles and supply chain risk management throughout the private sector.¹³⁸ To the extent that companies *expect* supply chain volatility in the future, they may opt for increased inventories of certain raw materials in anticipation of future supply shortages. However, as expected volatility decreases, safety stocks and emergency inventory levels may tend to decrease.¹³⁹ When NDS planners generate stockpile requirements, they factor in an expectation that domestic private sector companies will likely procure additional stocks of strategic and critical materials *during a national emergency* “without government intervention.”¹⁴⁰

¹³⁵ 50 U.S.C. §98h-1.

¹³⁶ see E.O. 14051, “Designation to Exercise Authority over the National Defense Stockpile,” 86 *Federal Register* 60747, October 31, 2021, Section 1.

¹³⁷ As discussed throughout this report, inventories in the National Defense Stockpile are based on estimates of military and essential civilian demand under national emergency conditions. DOD estimates the expected quantity of strategic and critical materials that will be available in an armed conflict scenario and compares this quantity to the estimated total military and essential civilian demand for strategic and critical materials for the duration of the scenario. The difference between the total demand and the estimated availability produces a “material shortfall” that can be used to justify new stockpile acquisitions (or disposals).

¹³⁸ For example, during periods of high volatility, “just-in-time” inventory management tends to yield to “just-in-case” inventory management, characterized by increased safety stocks of key production inputs. However, as volatility decreases, many firms revert back to “just-in-time” inventory management due to pressures on financial performance. See, for example, the Federal Reserve Bank of Atlanta’s regional assessment of economic activity on or before January 2023 in Board of Governors of the Federal Reserve System, “Beige Book – January 18, 2023,” online resource at <https://www.federalreserve.gov/monetarypolicy/beigebook202301.htm>.

¹³⁹ *Ibid.*

¹⁴⁰ DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 9, which notes that stockpile planners combine these expected market responses to their initial calculations of gross material shortfalls to generate an estimate of net material shortfalls. These net shortfalls are then reported to Congress.

Congress from 1984 to 2020 expressed its finding that “establishing critical materials reserves, both by the public and private sectors...represents one means of responding to the genuine risks to our economy and national defense from dependency on foreign sources.”¹⁴¹ Since the 1980s, the Executive Office of the President has developed and maintained interagency organizations to pursue policies rooted in similar findings.¹⁴²

Congress may wish to assess the extent to which current federal policies incentivize increased domestic availability of strategic and critical materials prior to, during, or following a national emergency.

Nondisclosure agreements with industry for robust NDS planning

Congress could also consider assessing DOD’s current practices for soliciting and utilizing microeconomic, firm-level data in generating National Defense Stockpile requirements.

In practice, NDS planning involves two levels of industry data, referred to as Study List 1 (SL1) and Study List 2 (SL2).¹⁴³ SL1 data are macroeconomic data from the U.S. Department of Commerce and U.S. Geological Survey, describing flows of natural resources, goods, and finances for approximately 150 materials affecting 350 economic sectors and industry classifications.¹⁴⁴ SL2 data are microeconomic, individual firm-level data provided by domestic companies that mine, process, or use strategic and critical materials. SL2 data typically include open source and proprietary information related to the supply chains of individual companies in critical infrastructure sectors.¹⁴⁵ To obtain SL2 data, the Institute for Defense Analyses (IDA) routinely signs nondisclosure agreements (NDAs) with such companies. In practice, many companies are hesitant to provide proprietary SL2 data to stockpile planners.¹⁴⁶

Congress may wish to assess to what extent relevant companies provide SL2 data for NDS planning, and whether there is currently a robust mechanism, either in statute or in current organizational practice, to solicit, obtain, secure, and fully utilize large quantities of SL2 data in biennial assessments of stockpile requirements. Congress could also assess incentive structures among individual firms to provide or not provide DOD with SL2 data.

Addressing material weaknesses in NDS financial audits

Ernst & Young’s independent audit of DLA’s FY2022 financial operations disclosed material weaknesses and significant deficiencies in several aspects of NDS resource management.¹⁴⁷

¹⁴¹ This finding from the National Critical Materials Act of 1984 (P.L. 98-373 §202; 30 U.S.C. §1801(a)(6)) was repealed by the Consolidated Appropriations Act, 2021 (P.L. 116-260 §7002(n)(1)).

¹⁴² From 1984 through 2020, the National Critical Materials Council (NCMC) exemplified such an organization. See 30 U.S.C. §1801, *et. seq.* (prior to Supplement II of the 2018 edition). The Consolidated Appropriations Act, 2021 (P.L. 116-260 §7002) established a framework whereby the Office of Science and Technology Policy’s National Science and Technology Council (NSTC) subsumed research coordination activities of the NCMC. See 30 U.S.C. §1604(b).

¹⁴³ DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, April 2023, p. 13.

¹⁴⁴ *Ibid.*, pp. 7, 13, 33.

¹⁴⁵ *Ibid.*, p. 13.

¹⁴⁶ CRS interviews and correspondence with NDS planners at the Institute for Defense Analyses, July 2023.

¹⁴⁷ Defense Logistics Agency, *Defense Logistics Agency: Fiscal Year 2022 Agency Financial Report – Transaction Fund (Unaudited)*, 2022, pp. 50-67. A material weakness is “a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity’s financial statements will not be prevented, or detected and corrected on a timely basis.” *Ibid.*, pp. 49-50.

Auditors reported inadequate policies, procedures, and internal controls for: managing physical inventory counts; maintaining NDS Transaction Fund account balances with the Treasury; tracking amounts owed to third parties for contracted work; preparing official financial reports; and operating information systems containing NDS financial data.¹⁴⁸

Auditors provided a list of corrective actions to mitigate these material weaknesses, including design and implementation of controls over physical inventory counts and design and implementation of policies and procedures for the processing and posting of transactions to the correct fiscal period in the general ledger.¹⁴⁹

Congress could assess DLA's progress in implementing corrective actions to ensure ongoing operations and future NDS inventory decisions accurately reflect the value of assets and liabilities.

¹⁴⁸ Ibid., pp. 50-67.

¹⁴⁹ Ibid., Appendix A – Material Weaknesses.

Appendix A. Title 50 U.S. Code §98, et. seq., Strategic and Critical Materials Stock Piling Act (as of October 13, 2023)

Active Executive Documents

Executive Order 12626 of February 25, 1988, designated the Secretary of Defense as National Defense Stockpile Manager and authorized the Secretary to “delegate such functions as he may deem appropriate, subject to his direction.”

Executive Order 15051 of October 31, 2021, designated the Under Secretary of Defense for Acquisition and Sustainment “to have authority to release strategic and critical materials from the National Defense Stockpile” for “use, sale, or other disposition only when required for use, manufacture, or production for purpose of national defense.” Prior to ordering any release, relevant executive departments and agencies must be consulted.

50 U.S.C. 98a. Congressional findings and declaration of purpose

- (a) The Congress finds that the natural resources of the United States in certain strategic and critical materials are deficient or insufficiently developed to supply the military, industrial, and essential civilian needs of the United States for national defense.
- (b) It is the purpose of this subchapter to provide for the acquisition and retention of stocks of certain strategic and critical materials and to encourage the conservation and development of sources of such materials within the United States and thereby to decrease and to preclude, when possible, a dangerous and costly dependence by the United States on foreign sources or a single point of failure for supplies of such materials in times of national emergency.
- (c) The purpose of the National Defense Stockpile is to serve the interest of national defense only. The National Defense Stockpile is not to be used for economic or budgetary purposes

50 U.S.C. 98b. National Defense Stockpile

- (a) Determination of materials; quantities

Subject to subsection (c), the President shall determine from time to time (1) which materials are strategic and critical materials for the purposes of this subchapter, and (2) the quality and quantity of each such material to be acquired for the purposes of this subchapter and the form in which each such material shall be acquired and stored. Such materials when acquired, together with the other materials described in section 98c of this title, shall constitute and be collectively known as the National Defense Stockpile (hereinafter in this subchapter referred to as the "stockpile").

- (b) Guidelines for exercise of Presidential authority

The President shall make the determinations required to be made under subsection (a) on the basis of the principles stated in section 98a(c) of this title.

- (c) Quantity change; notification to Congress

- (1) The quantity of any material to be stockpiled under this subchapter, as in effect on September 30, 1987, may be changed only as provided in this subsection or as otherwise provided by law enacted after December 4, 1987.

(2) The President shall notify Congress in writing of any increase proposed to be made in the quantity of any material to be stockpiled that involves the acquisition of additional materials for the stockpile. The President may make the increase after the end of the 30-day period beginning on the date of the notification. The President shall include a full explanation and justification for the proposed increase with the notification.

50 U.S.C. 98c. Materials constituting the National Defense Stockpile

(a) Contents

The stockpile consists of the following materials:

(1) Materials acquired under this subchapter and contained in the national stockpile on July 29, 1979.

(2) Materials acquired under this subchapter after July 29, 1979.

(3) Materials in the supplemental stockpile established by section 1704(b) of Title 7 (as in effect from September 21, 1959, through December 31, 1966) on July 29, 1979.

(4) Materials acquired by the United States under the provisions of Section 4533 of this title and transferred to the stockpile by the President pursuant to subsection (f) of such section.

(5) Materials transferred to the United States under Section 2423 of Title 22 that have been determined to be strategic and critical materials for the purposes of this subchapter and that are allocated by the President under subsection (b) of such section for stockpiling in the stockpile.

(6) Materials acquired by the Commodity Credit Corporation and transferred to the stockpile under section 714b(h) of Title 15.

(7) Materials acquired by the Commodity Credit Corporation under paragraph (2) of Section 1743(a) of Title 7, and transferred to the stockpile under the third sentence of such section.

(8) Materials transferred to the stockpile by the President under paragraph (4) of Section 1743(a) of Title 7.

(9) Materials transferred to the stockpile under subsection (b).

(10) Materials transferred to the stockpile under subsection (c).

(b) Transfer and reimbursement

Notwithstanding any other provision of law, any material that (1) is under the control of any department or agency of the United States, (2) is determined by the head of such department or agency to be excess to its needs and responsibilities, and (3) is suitable for transfer or disposal through the stockpile shall be transferred to the stockpile. Any such transfer shall be made without reimbursement to such department or agency, but all costs required to effect such transfer shall be paid or reimbursed from funds appropriated to carry out this subchapter.

(c) Transfer and disposal

The Secretary of Defense shall determine whether materials are suitable for transfer to the stockpile under subsection (b), are suitable for disposal through the stockpile, and are uncontaminated.

50 U.S.C. 98d. Authority for stockpile operations

(a) Funds appropriated for acquisitions; proposed stockpile transactions; significant changes therein

(1) Except for acquisitions made under the authority of paragraph (3) of this section 1 or under the authority of paragraph (3) or (4) of Section 98e(a) of this title, no funds may be obligated or appropriated for acquisition of any material under this subchapter unless funds for such acquisition have been authorized by law. Funds appropriated for any acquisition of materials under this subchapter (and for transportation and other incidental expenses related to such acquisition) shall remain available until expended, unless otherwise provided in appropriation Acts.

(2) If for any fiscal year the President proposes (or Congress requires) a significant change in any stockpile transactions proposed in the Annual Materials and Operations Plan for such fiscal year after the Board submits the report under Section 98h-2(b)(2) of this title containing such plan, or a significant transaction not included in such plan, no amount may be obligated or expended for such transaction during such year until the President has submitted a full statement of the proposed transaction to the appropriate committees of Congress and a period of 45 days has passed from the date of the receipt of such statement by such committees.

(3) Using funds appropriated for acquisition of materials under this subchapter, the National Defense Stockpile Manager may acquire materials determined to be strategic and critical under Section 98b(a) of this title without regard to the requirement of the first sentence of paragraph (1) if the Stockpile Manager determines there is a shortfall of such materials in the stockpile.

(b) Disposal

Except for disposals made under the authority of paragraph (3), (4), or (5) 2 of Section 98e(a) of this title or under Section 98f(a) of this title, no disposal may be made from the stockpile unless such disposal, including the quantity of the material to be disposed of, has been specifically authorized by law.

(c) Authorization of appropriations

There is authorized to be appropriated such sums as may be necessary to provide for the transportation, processing, refining, storage, security, maintenance, rotation, and disposal of materials contained in or acquired for the stockpile. Funds appropriated for such purposes shall remain available until expended, unless otherwise provided in appropriations acts.

Department of Defense Readiness to Support Prolonged Conflict

P.L. 117-263, div. A, Title XIV, §1415, Dec. 23, 2022, 136 Stat. 2873, provided that:

"(a) Studies Required.-

"(1) In general.-For each report required by Section 14(a) of the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98h-5(a)), the National Defense Stockpile Manager shall-

"(A) conduct a study on the strategic materials required by the Department of Defense to sustain combat operations for not less than one year against the pacing threat identified in the National Defense Strategy; and

"(B) not later than January 15, 2024, submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on such study in a classified form with an unclassified summary.

"(2) Energy storage and electronic components.-

"(A) In general.-The Under Secretary of Defense for Acquisition and Sustainment shall conduct a study of the energy storage and electronic components necessary to sustain combat operations for not less than one year against the pacing threat identified in the National Defense Strategy.

"(B) Report.-

"(i) In general.-Not later than January 15, 2024, the Under Secretary of Defense for Acquisition and Sustainment shall submit to the congressional defense committees a report on the study required under subparagraph (A).

"(ii) Form.-The report required by clause (i) shall be submitted in an unclassified form but may contain a classified annex.

"(iii) Elements.-The report required by clause (i) shall include the following:

"(I) A description of the specific number and type of energy storage and electronic components that the Department of Defense requires for the manufacture of munitions, combat support items, and weapon systems to sustain combat operations.

"(II) A description of the specific number and type of energy storage and electronic components that the Department of Defense requires to replenish or replace munitions, combat support items, and weapon systems that are lost or expended during the execution and sustainment of the relevant operational plan.

"(III) A description of supply chain vulnerabilities during the sustainment and execution period, such as sole sources of supply, war damage, and shipping interdiction.

"(IV) A description of supply chain vulnerabilities prior to the sustainment and execution period and the replenishment and replacement period, such as reliance on sole sources of supply, geographic proximity to strategic competitors, and diminishing manufacturing sources.

"(V) An identification of alternative sources of supply for energy and electronics components that are domestic or are from allies or partners of the United States.

"(VI) An assessment of the technical and economic feasibility of the preparedness and response programs of the Department of Defense, such as the National Defense Stockpile, the Warstopper program, war reserves and pre-positioned stocks, contract options, or other methods to mitigate postulated shortfalls to Department of Defense requirements.

"(VII) Any other such elements deemed appropriate by the Under Secretary of Defense for Acquisition and Sustainment.

"(C) Energy storage and electronic component defined.-In this paragraph, the term 'energy storage and electronic component' includes-

"(i) an item that operates by controlling the flow of electrons or other electrically charged particles in circuits, using interconnections of electrical devices such as resistors, inductors, capacitors, diodes, switches, transistors, or integrated circuits; and

"(ii) battery cells, battery modules, battery packs, and other related components related to batteries.

"(b) Acquisition Priority. -Consistent with the authority in Section 5 of the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98d) and subject to the availability of appropriations, the National Defense Stockpile Manager shall acquire the highest priority strategic and critical materials identified in the report submitted under subsection (a)(1).

"(c) Strategic and Critical Materials Defined.-In this section, the term 'strategic and critical materials' has the meaning given such term in Section 12 of the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98h-3)."

50 U.S.C. 98e Stockpile management

(a) Presidential powers

The President shall-

- (1) acquire the materials determined under Section 98b(a) of this title to be strategic and critical materials;
- (2) provide for the proper storage, security, and maintenance of materials in the stockpile;
- (3) provide for the upgrading, refining, or processing of any material in the stockpile (notwithstanding any intermediate stockpile quantity established for such material) when necessary to convert such material into a form more suitable for storage, subsequent disposition, and immediate use in a national emergency;
- (4) provide for the rotation of any material in the stockpile when necessary to prevent deterioration or technological obsolescence of such material by replacement of such material with an equivalent quantity of substantially the same material or better material;
- (5) provide for the appropriate recovery of any strategic and critical materials under Section 98b(a) of this title that may be available from excess materials made available for recovery purposes by other Federal agencies;
- (6) subject to the notification required by subsection (d)(2), provide for the timely disposal of materials in the stockpile that (A) are excess to stockpile requirements, and (B) may cause a loss to the Government if allowed to deteriorate; and
- (7) subject to the provisions of Section 98d(b) of this title, dispose of materials in the stockpile the disposal of which is specifically authorized by law.

(b) Federal procurement practices

Except as provided in subsections (c) and (d), acquisition of strategic and critical materials under this subchapter shall be made in accordance with established Federal procurement practices, and, except as provided in subsections (c) and (d) and in Section 98f(a) of this title, disposal of strategic and critical materials from the stockpile shall be made in accordance with the next sentence. To the maximum extent feasible-

- (1) competitive procedures shall be used in the acquisition and disposal of such materials; and

(2) efforts shall be made in the acquisition and disposal of such materials to consult with producers and processors of such materials to avoid undue disruption of the usual markets of producers, processors, and consumers of such materials and to protect the United States against avoidable loss.

(c) Barter; use of stockpile materials as payment for expenses of acquiring, refining, processing, or rotating materials

(1) The President shall encourage the use of barter in the acquisition under subsection (a)(1) of strategic and critical materials for, and the disposal under subsection (a)(5) or (a)(6) of materials from, the stockpile when acquisition or disposal by barter is authorized by law and is practical and in the best interest of the United States.

(2) Materials in the stockpile (the disposition of which is authorized by paragraph (3) to finance the upgrading, refining, or processing of a material in the stockpile, or is otherwise authorized by law) shall be available for transfer at fair market value as payment for expenses (including transportation and other incidental expenses) of acquisition of materials, or of upgrading, refining, processing, or rotating materials, under this subchapter.

(3) Notwithstanding Section 98b(c) of this title or any other provision of law, whenever the President provides under subsection (a)(3) for the upgrading, refining, or processing of a material in the stockpile to convert that material into a form more suitable for storage, subsequent disposition, and immediate use in a national emergency, the President may barter a portion of the same material (or any other material in the stockpile that is authorized for disposal) to finance that upgrading, refining, or processing.

(4) To the extent otherwise authorized by law, property owned by the United States may be bartered for materials needed for the stockpile.

(d) Waiver; notification of proposed disposal of materials

(1) The President may waive the applicability of any provision of the first sentence of subsection (b) to any acquisition of material for, or disposal of material from, the stockpile. Whenever the President waives any such provision with respect to any such acquisition or disposal, or whenever the President determines that the application of paragraph (1) or (2) of such subsection to a particular acquisition or disposal is not feasible, the President shall notify the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives in writing of the proposed acquisition or disposal at least 45 days before any obligation of the United States is incurred in connection with such acquisition or disposal and shall include in such notification the reasons for not complying with any provision of such subsection.

(2) Materials in the stockpile may be disposed of under subsection (a)(5) only if such congressional committees are notified in writing of the proposed disposal at least 45 days before any obligation of the United States is incurred in connection with such disposal.

(e) Leasehold interests in property

The President may acquire leasehold interests in property, for periods not in excess of twenty years, for storage, security, and maintenance of materials in the stockpile.

(f) Loan of stockpile materials

The President may loan stockpile materials to the Department of Energy or the military departments if the President-

- (1) has a reasonable assurance that stockpile materials of a similar or superior quantity and quality to the materials loaned will be returned to the stockpile or paid for;
- (2) notifies the congressional defense committees (as defined in Section 101(a) of Title 10), in writing, not less than 30 days before making any such loan; and
- (3) includes in the written notification under paragraph (2) sufficient support for the assurance described in paragraph (1).

50 U.S.C. 98e– 1. Transferred (to Section 98h-7 of this title)

50 U.S.C. 98f. Special Presidential disposal authority

- (a) Materials in the stockpile may be released for use, sale, or other disposition-
- (1) on the order of the President, at any time the President determines the release of such materials is required for purposes of the national defense;
 - (2) in time of war declared by the Congress or during a national emergency, on the order of any officer or employee of the United States designated by the President to have authority to issue disposal orders under this subsection, if such officer or employee determines that the release of such materials is required for purposes of the national defense; and
 - (3) on the order of the Under Secretary of Defense for Acquisition and Sustainment, if the President has designated the Under Secretary to have authority to issue release orders under this subsection and, in the case of any such order, if the Under Secretary determines that the release of such materials is required for use, manufacture, or production for purposes of national defense.
- (b) Any order issued under subsection (a) shall be promptly reported by the President, or by the officer or employee issuing such order, in writing, to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives.

50 U.S.C. 98g. Materials development and research

- (a) Development, mining, preparation, treatment, and utilization of ores and other mineral substances
- (1) The President shall make scientific, technologic, and economic investigations concerning the development, mining, preparation, treatment, and utilization of ores and other mineral substances that (A) are found in the United States, or in its territories or possessions, (B) are essential to the national defense, industrial, and essential civilian needs of the United States, and (C) are found in known domestic sources in inadequate quantities or grades.
 - (2) Such investigations shall be carried out in order to-
 - (A) determine and develop new domestic sources of supply of such ores and mineral substances;
 - (B) devise new methods for the treatment and utilization of lower grade reserves of such ores and mineral substances; and
 - (C) develop substitutes for such essential ores and mineral products.
 - (3) Investigations under paragraph (1) may be carried out on public lands and, with the consent of the owner, on privately owned lands for the purpose of exploring and determining

the extent and quality of deposits of such minerals, the most suitable methods of mining and beneficiating such minerals, and the cost at which the minerals or metals may be produced.

(b) Development of sources of supplies of agricultural materials; use of agricultural commodities for manufacture of materials

The President shall make scientific, technologic, and economic investigations of the feasibility of developing domestic sources of supplies of any agricultural material or for using agricultural commodities for the manufacture of any material determined pursuant to Section 98b(a) of this title to be a strategic and critical material or substitutes therefor.

(c) Development of sources of supply of other materials; development or use of alternative methods for refining or processing materials in stockpile

The President shall make scientific, technologic, and economic investigations concerning the feasibility of-

(1) developing domestic sources of supply of materials (other than materials referred to in subsections (a) and (b)) determined pursuant to Section 98b(a) of this title to be strategic and critical materials; and

(2) developing or using alternative methods for the refining or processing of a material in the stockpile so as to convert such material into a form more suitable for use during an emergency or for storage.

(d) Grants and contracts to encourage conservation of strategic and critical materials

The President shall encourage the conservation of domestic sources of any material determined pursuant to Section 98b(a) of this title to be a strategic and critical material by making grants or awarding contracts for research regarding the development of-

(1) substitutes for such material; or

(2) more efficient methods of production or use of such material.

50 U.S.C. 98h. National Defense Stockpile Transaction Fund

(a) Establishment

There is established in the Treasury of the United States a separate fund to be known as the National Defense Stockpile Transaction Fund (hereinafter in this section referred to as the "fund").

(b) Fund operations

(1) All moneys received from the sale of materials in the stockpile under paragraphs (5) and (6) of Section 98e(a) of this title shall be covered into the fund.

(2) Subject to Section 98d(a)(1) of this title, moneys covered into the fund under paragraph (1) are hereby made available (subject to such limitations as may be provided in appropriation Acts) for the following purposes:

(A) The acquisition, maintenance, and disposal of strategic and critical materials under Section 98e(a) of this title.

(B) Transportation, storage, and other incidental expenses related to such acquisition, maintenance, and disposal.

- (C) Development of current specifications of stockpile materials and the upgrading of existing stockpile materials to meet current specifications (including transportation, when economical, related to such upgrading).
 - (D) Encouraging the appropriate conservation of strategic and critical materials.
 - (E) Testing and quality studies of stockpile materials.
 - (F) Studying future material and mobilization requirements for the stockpile.
 - (G) Activities authorized under section 98h–6 of this title.
 - (H) Contracting under competitive procedures for materials development and research to
 - (i) improve the quality and availability of materials stockpiled from time to time in the stockpile; and
 - (ii) develop new materials for the stockpile.
 - (I) Improvement or rehabilitation of facilities, structures, and infrastructure needed to maintain the integrity of stockpile materials.
 - (J) Disposal of hazardous materials that are stored in the stockpile and authorized for disposal by law.
 - (K) Performance of environmental remediation, restoration, waste management, or compliance activities at locations of the stockpile that are required under a Federal law or are undertaken by the Government under an administrative decision or negotiated agreement.
 - (L) Pay of employees of the National Defense Stockpile program.
 - (M) Other expenses of the National Defense Stockpile program.
- (3) Moneys in the fund shall remain available until expended.
- (c) Moneys received from sale of materials being rotated or disposed of
- All moneys received from the sale of materials being rotated under the provisions of Section 98e(a)(4) of this title or disposed of under Section 98f(a) of this title shall be covered into the fund and shall be available only for the acquisition of replacement materials.
- (d) Effect of bartering
- If, during a fiscal year, the National Defense Stockpile Manager barter materials in the stockpile for the purpose of acquiring, upgrading, refining, or processing other materials (or for services directly related to that purpose), the contract value of the materials so bartered shall-
- (1) be applied toward the total value of materials that are authorized to be disposed of from the stockpile during that fiscal year;
 - (2) be treated as an acquisition for purposes of satisfying any requirement imposed on the National Defense Stockpile Manager to enter into obligations during that fiscal year under subsection (b)(2); and
 - (3) not increase or decrease the balance in the fund.

50 U.S.C. 98h-1. Strategic and Critical Materials Board of Directors

- (a) Establishment

There is established a Strategic and Critical Materials Board of Directors (in this subchapter referred to as the “Board”).

(b) Members

The Board shall be composed, at a minimum, of the following:

- (1) The Assistant Secretary of Defense for Industrial Base Policy, who shall serve as chairman of the Board.
- (2) One designee of each of the Secretary of Commerce, the Secretary of State, the Secretary of Energy, and the Secretary of the Interior.
- (3) One designee of each of the Chairman and Ranking Member of the Readiness Subcommittee of the House Committee on Armed Services.
- (4) One designee of each of the Chairman and Ranking Member of the Readiness Subcommittee of the Senate Committee on Armed Services.
- (5) Four designees of the chairman of the Board, who shall have expertise relating to military affairs, defense procurement, production of strategic and critical materials, finance, or any other disciplines deemed necessary by the chairman to conduct the business of the Board.

(c) Duties of the Board

In addition to other matters assigned to it by the chairman, the Board shall conduct the following, without power of delegation:

- (1) Adopt by-laws that ensure sufficient oversight, governance, and effectiveness of the National Defense Stockpile program.
- (2) Elect or remove Board members.
- (3) Advise the National Defense Stockpile Manager.
- (4) Establish performance metrics and conduct an annual performance review of the National Defense Stockpile Manager.
- (5) Set compensation for the National Defense Stockpile Manager.
- (6) Review and approve the annual budget of the National Defense Stockpile program and conduct appropriate reviews of annual financial statements.
- (7) Reallocate budget resources within the annual budget of the National Defense Stockpile program.
- (8) Review and approve the Annual Materials and Operations Plan required by Section 98h–2(a)(2) of this title, including a review of the projected domestic and foreign economic effects of proposed actions to be taken under the Annual Materials and Operations Plan.
- (9) Complete and submit the annual Board Report, in accordance with Section 98h–2(b)(2) of this title.
- (10) Recommend to the Secretary of Defense-
 - (A) a strategy to ensure a secure supply of materials designated as critical to national security; and
 - (B) such other strategies as the Board considers appropriate to strengthen the industrial base with respect to materials critical to national security.

(d) Board meetings

The Board shall meet as determined necessary by the chairman but not less frequently than once every year to fulfill the duties described in subsection (c).

(e) Application of Federal Advisory Committee Act

Section 14 of the Federal Advisory Committee Act (5 U.S.C. App.) 1 shall not apply to the Board.

(f) Definitions

In this section:

(1) Materials critical to national security

The term “materials critical to national security” means materials-

- (A) upon which the production or sustainment of military equipment is dependent; and
- (B) the supply of which could be restricted by actions or events outside the control of the Government of the United States.

(2) Military equipment

The term "

“military equipment” means equipment used directly by the Armed Forces to carry out military operations.

(3) Secure supply

The term “secure supply”, with respect to a material, means the availability of a source or sources for the material, including the full supply chain for the material and components containing the material.

50 U.S.C. 98h-2. Reports

(a) Reports to the Board

The National Defense Stockpile Manager shall submit to the Board the following:

- (1) Not later than 40 calendar days after the last day of each of the first three fiscal quarters in each fiscal year, unaudited financial statements and a Manager's Discussion and Analysis for the immediately preceding fiscal quarter.
- (2) Not later than 60 calendar days after the conclusion of the fourth quarter of each fiscal year-
 - (A) audited financial statements and a Manager's Discussion and Analysis for the immediately preceding fiscal year; and
 - (B) an Annual Materials and Operations Plan for the forthcoming year.

(b) Reports to Congress

(1) Reports by National Defense Stockpile Manager

Not later than 90 days after the conclusion of the fourth quarter of each fiscal year, the National Defense Stockpile Manager shall submit to the congressional defense committees (as defined in Section 101(a) of Title 10) a report that shall include-

- (A) information with respect to foreign and domestic purchases of materials for the stockpile during the preceding fiscal year;

- (B) information with respect to the acquisition and disposal of materials under this subchapter by barter, during such fiscal year;
- (C) information with respect to the activities by the National Defense Stockpile Manager to encourage the conservation, substitution, and development of strategic and critical materials;
- (D) information with respect to the research and development activities conducted under Section 98g of this title;
- (E) audited annual financial statements for the Strategic and Critical Materials Fund
- (F) other pertinent information on the administration of this subchapter as will enable the Congress to evaluate the effectiveness of the program;
- (G) details of all planned expenditures from the Strategic and Critical Materials Fund over the Future Years' Defense Program and anticipated receipts from proposed disposals of stockpile materials; and
- (H) the report required by paragraph (2).

(2) Report by the Board

The Board shall prepare a written report to accompany the report required by paragraph (1) which shall include-

- (A) the activities of the Board to carry out the duties listed in Section 98h-1(c) of this title; and
- (B) the most recent Annual Materials and Operations Plan submitted under subsection (a)(2)(B).

50 U.S.C. 98h-3. Definitions

For the purposes of this subchapter:

- (1) The term "strategic and critical materials" means materials that (A) would be needed to supply the military, industrial, and essential civilian needs of the United States during a national emergency, and (B) are not found or produced in the United States in sufficient quantities to meet such need.
- (2) The term "national emergency" means a general declaration of emergency with respect to the national defense made by the President or by the Congress.
- (3) The term "national technology and industrial base" has the meaning given such term in Section 2500 of Title 10.

50 U.S.C. 98h-4. Importation of strategic and critical materials

The President may not prohibit or regulate the importation into the United States of any material determined to be strategic and critical pursuant to the provisions of this subchapter, if such material is the product of any foreign country or area not listed in general note 3(b) of the Harmonized Tariff Schedule of the United States (19 U.S.C. 1202), for so long as the importation into the United States of material of that kind which is the product of a country or area listed in such general note is not prohibited by any provision of law.

50 U.S.C. 98h-5. Biennial report on stockpile requirements

(a) In general

Not later than January 15 of every other year, the Secretary of Defense shall submit to Congress a report on stockpile requirements. Each such report shall include-

- (1) the Secretary's recommendations with respect to stockpile requirements; and
- (2) the matters required under subsection (b).

(b) National emergency planning assumptions

Each report under this section shall set forth the national emergency planning assumptions used by the Secretary in making the Secretary's recommendations under subsection (a)(1) with respect to stockpile requirements. The Secretary shall base the national emergency planning assumptions on a military conflict scenario consistent with the scenario used by the Secretary in budgeting and defense planning purposes. The assumptions to be set forth include assumptions relating to each of the following:

- (1) The length and intensity of the assumed military conflict.
- (2) The military force structure to be mobilized.
- (3) The losses anticipated from enemy action.
- (4) The military, industrial, and essential civilian requirements to support the national emergency.
- (5) The availability of supplies of strategic and critical materials from foreign sources during the mobilization period, the military conflict, and the subsequent period of replenishment, taking into consideration possible shipping losses.
- (6) The domestic production of strategic and critical materials during the mobilization period, the military conflict, and the subsequent period of replenishment, taking into consideration possible shipping losses.
- (7) Civilian austerity measures required during the mobilization period and military conflict.

(c) Period within which to replace or replenish materials

The stockpile requirements shall be based on those strategic and critical materials necessary for the United States to replenish or replace, within three years of the end of the military conflict scenario required under subsection (b), all munitions, combat support items, and weapons systems that would be required after such a military conflict.

(d) Effect of alternative mobilization periods

The Secretary shall also include in each report under this section an examination of the effect that alternative mobilization periods under the military conflict scenario required under subsection (b), as well as a range of other military conflict scenarios addressing potentially more serious threats to national security, would have on the Secretary's recommendations under subsection (a)(1) with respect to stockpile requirements.

(e) Plans of President

The President shall submit with each report under this section a statement of the plans of the President for meeting the recommendations of the Secretary set forth in the report.

(f) Briefings on shortfalls in stockpile

(1) Not later than March 1 each year, the National Defense Stockpile Manager shall provide to the congressional defense committees a briefing on strategic and critical materials that-

(A) are determined to be in shortfall in the most recent report on stockpile requirements submitted under subsection (a); and

(B) the acquisition or disposal of which is included in the Annual Materials and Operations Plan for the operation of the stockpile during the next fiscal year submitted under Section 98h-2(b) of this Title.

(2) Each briefing required by paragraph (1) shall include-

(A) a description of each material described in that paragraph, including the objective to be achieved if funding is provided, in whole or in part, for the acquisition of the material to remedy the shortfall;

(B) an estimate of additional amounts required to provide such funding, if any; and

(C) an assessment of the supply chain for each such material, including any assessment of any relevant risk in any such supply chain.

Appendix B. Unclassified Strategic and Critical Materials List

The following list of NDS inventories is taken from DOD's unclassified *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, delivered to Congress on May 19, 2023. The inventories appear on pages 16 and 17 of the report. The list is current as of the end of Fiscal Year 2022 (September 30, 2022).

Table B-I. Reported Unclassified NDS Inventories as of September 30, 2022

Material	Unit	Inventory
Antimony	LB	198,763
Beryl	LB	1,897
Beryllium Metal HPP	ST	48
Beryllium Metal Rods	LB	13,175
Beryllium Metal Vac Cast	ST	7
Beryllium Structural Powder	LB	15,541
Cadmium Zinc Telluride Substrates	EA	5
Carbon Fibers Pan	LB	49,890
Chromium – Ferro High Carbon	ST	18,930
Chromium – Ferro Low Carbon	ST	29,288
Chromium Metal (for sale)	ST	3,826
Cobalt	LB	666,135
Cobalt Alloys	LB	31,271
Columbium Metal Ingots	LB	22,099
Dysprosium	KG	203
Europium Oxide	KG	23,159
Europium (SEG)	KG	12,595
Ferro-dysprosium	KG	526
Ferroniobium	LB	1,199,301
Germanium Metal – Intrinsic	KG	14,047
Germanium Wafer	EA	68,671
Germanium Scrap	KG	6,905
Iron Alloys	LB	39,578
Lithium Ion – LCO	KG	752
Lithium Ion – LNCA	KG	2,698
Lithium Ion – MCMB	KG	2,205
Manganese Ferro High Carbon	ST	114,287
Manganese Metallurgical Grade Ore	SDT	320,238
Mercury	LB	9,781,604

Material	Unit	Inventory
Nickel Alloys	LB	1,672,781
Platinum Group Metals – Iridium	Tr. Oz.	489
Platinum Group Metals – Palladium	Tr. Oz.	0.139
Platinum Group Metals – Platinum	Tr. Oz.	8,380
Platinum Group Metal Alloys – Pd-Co Wire	Tr. Oz.	4
Platinum Group Metal Compounds – Iridium Alloy	LB	195
Quartz Crystals	LB	15,712
Rayon	LB	207,295
Silicon Carbide Fibers	KG	1,563
Tantalum Columbium Concentrate	LB	202,921
Tantalum Metal	LB	187
Tantalum Alloy	LB	3
Tin	MT	3,578
Titanium Alloys	LB	229,076
Plastic Bonded Explosives (TATB)	LB	19,218
Tungsten Ores & Concentrates	LB	13,237,580
Tungsten Rhenium Ingots	KG	5,001
Yttrium Oxide High-Grade/Purity	KG	7,000
Yttrium Oxide Low-Grade/Purity	KG	18,004
Zinc	ST	7,118

Source: DOD, *Strategic and Critical Materials 2023 Biennial Report on Stockpile Requirements*, May 19, 2023, pp. 16-17.

Notes: EA means each (i.e., individual items); KG means kilograms; LB means pounds; MT means metric tons; SDT means short dry tons; ST means short tons; Tr. Oz. means troy ounces. Columbium is synonymous with niobium, both referring to the chemical element with atomic number 41; see Department of the Interior, “Niobium and Tantalum Statistics and Information,” web resource at <https://www.usgs.gov/centers/national-minerals-information-center/niobium-and-tantalum-statistics-and-information>. An “NDS Strategic and Critical Materials List” from a 2022 DLA-SM Broad Agency Announcement (BAA) includes the following materials not listed in the Table: Aluminum Oxide, Fused Crude; Aluminum-Lithium Alloys; Beryl Ore; Beryllium-Copper Master Alloy (BCMA); Bismuth; Boron; Cerium; Erbium; Ferrochrome; Fluorspar, Acid Grade; Fluorspar, Metallurgical Grade; Gadolinium; Gallium; Graphite; Holmium; Indium; Lanthanum; Lead; Lutetium; Magnesium; Neodymium; Praseodymium; Rhenium; Samarium; Scandium; Strontium; and Tellurium. See DLA-SM, *SP8000-22-R-BAA1: National Defense Stockpile (NDS) Research Broad Agency Announcement*, 2022, p. 16.

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