SEC. ___. AUTHORITY TO ACQUIRE AND DISPOSE OF MATERIALS FOR THE NATIONAL DEFENSE STOCKPILE.

(a) DISPOSAL AUTHORITY.--Pursuant to section 5(b) of the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98d(b)), the National Defense Stockpile Manager may dispose of 4,031,000 pounds of tungsten ores and concentrates contained in the National Defense Stockpile (in addition to any amount previously authorized for disposal).

(b) ACQUISITION AUTHORITY.—Using funds available in the National Defense Stockpile Transaction Fund, the National Defense Stockpile Manager may acquire the following materials determined to be strategic and critical materials required to meet the defense, industrial, and essential civilian needs of the United States:

(1) Dysprosium

(2) Rare earth cerium compounds

(3) Rare earth lanthanum compounds

(4) Neodymium oxide, Praseodymium oxide and Neodymium Iron Boron (NdFeB) magnet block.

(5) Yttrium

(6) Samarium–Cobalt (Sm-Co) alloy

(c) AMOUNT OF AUTHORITY.—The National Defense Stockpile Manager may use up to $50,000,000 in the National Defense Stockpile Transaction Fund for acquisition of the materials specified in subsection (b).

(d) FISCAL YEAR LIMITATION.—The authority under subsection (b) is available for purchases during fiscal year 2021 through fiscal year 2025.

Section-by-Section Analysis

This proposal would authorize acquisition of certain materials for the National Defense Stockpile (NDS) under the Strategic and Critical Materials Stock Piling Act (Act).

DISPOSAL

Subsection (a) of this proposal would authorize the National Defense Stockpile Manager to dispose of materials that have been determined, based upon the analysis required by the Act to be excess to Stockpile requirements.

ACQUISITION

Subsection (b) of this proposal would provide authority under section 5(a)(1) of the Act (50 U.S.C. 98d(a)(1)) to acquire strategic and critical materials for the Stockpile.

The materials for which acquisition authority is requested have been identified as necessary to meet the military, industrial, and essential civilian needs of the United States through a rigorous analytical requirements determination processes and are identified in the 2017 and 2019 Biennial Report to the Congress on Stockpile Requirements (Report). The Report is prepared pursuant to the Act, which applies a rigorous analytical process to identify strategic and critical materials required to sustain the United States during various military conflict scenarios developed by the Under Secretary of Defense for Policy. A discussion of the materials follows.

Dysprosium. Dysprosium metal improves the ability of NdFeB magnets to resist demagnetization in demanding, high temperature, service environments. China accounted for approximately 100% of dysprosium production over the past five years. Terbium may serve as a substitute for dysprosium in magnets with a minimum reduction in properties. However, terbium is relatively scarcer than dysprosium and is much more expensive. In addition, substituting terbium for dysprosium would require re-engineering of the magnet and further qualification work thus possibly lengthening time of any supply disruption for NdFeB magnets.

Rare earth cerium compounds. Virtually every integrated circuit chip fabricated today requires multiple steps of polishing with sophisticated formulations of slurries containing cerium in a process known as Chemical Mechanical Planarization (CMP). In the transportation fuels sector, consumption of additive cerium-based catalysts from oil refineries is growing in order to reduce sulfur oxide (SOx) and nitrogen oxide (NOx) emissions and to eliminate metal elements in the crude that have deleterious effects in the process of producing petrochemical distillates. The production of cerium-based cover glass for solar panels is critical for protection against ultraviolet (UV) radiation on geostationary and non-geostationary space satellites.

Rare earth lanthanum compounds. Lanthanum is critical to the production of certain petroleum products that, in turn, are essential to the national economy. The use of lanthanum as a component of fluid cracking catalysts (FCC) used in oil refining is tantamount for maintaining the supply chains for transportation fuels across the country. It is notable that FCCs account for 70% of the U.S.'s lanthanum consumption. Currently, the U.S. imports all of its lanthanum oxide. The civilian economy and the military are dependent on a continuous, reliable supply of transportation fuel from this supply chain.

Neodymium oxide, Praseodymium oxide and Neodymium Iron Boron (NdFeB) magnet block. The United States does not possess the industrial capability to manufacture a type of rare earth permanent magnets (REPM) known as neodymium-iron-boron (NdFeB) magnets. Stockpiling REPMs and related raw materials is a cost-effective, relatively quick albeit short-term stopgap solution to the U.S.'s foreign reliance on REPMs. Numerous weapon systems rely upon NdFeB magnets to function, and a disrupted foreign supply would similarly disrupt the manufacture of these systems. Select critical NdFeB magnet applications include Joint Direct Attack Munition (JDAM) kits, multiple radar systems, and a next-generation submarine propulsion system.

DLA Strategic Materials recommends implementing a stockpiling strategy for NdFeB magnets consisting of separate Nd oxide and Pr oxide in order to provide operational flexibility to manufacturers of NdFeB magnets should there be a requirement for a particular magnet specification. Stockpiling large quantities of NdFeB magnet block or NdFeB alloy has several limitations, most notably technological obsolescence and shelf life. Furthermore, there are currently about 80 different grades of NdFeB magnets making a grade determination highly uncertain, a problem compounded by the existence of several business proprietary blends of NdFeB magnet materials in defense platforms.

While there are noted limitations with storing multiple grades of magnetic block, DLA Strategic Materials is aware of a specific grade of NdFeB magnet block that meets military specifications. Having some of the material in the block form will shorten the manufacturing time. DLA Strategic Materials recommends acquisition of magnet block, along with the Nd oxide and Pr oxide, as part of an overall risk mitigation strategy.

Yttrium. Yttrium is a required material used in numerous defense and essential civilian applications (e.g. lasers and radar, sensors, visual displays and lighting, high-temperature ceramics, and metal alloys). Lasers for range finders and target designators are important military applications for yttrium. While the U.S. has a robust domestic supply chain for lasers, the U.S. is currently 100% dependent upon imports of yttrium most of which comes from China. Alternate sources including Japan, France, and Austria likely produce yttrium-containing materials from concentrates and intermediate compounds imported from China. Procurement of quantities of high-purity yttrium oxide for the NDS Program inventory will provide for a domestic source of this critical material in the event of a supply disruption during a national emergency.

Samarium–Cobalt (Sm-Co) alloy: Currently, the United States only has one manufacturer capable of producing a type of rare earth permanent magnet (REPM) known as samarium cobalt (SmCo) magnets. This sole source domestic producer relies on foreign supplies of samarium metal and cobalt metal for needed raw materials. Stockpiling SmCo magnet raw materials is a cost-effective, relatively quick short-term solution to the U.S.'s foreign reliance on samarium metal and cobalt metal. Numerous defense systems rely on SmCo magnets for actuator motors and traveling wave tubes incorporated into precision guided munitions and a variety of radar systems.

Budgetary Implications: The National Defense Stockpile Transaction Fund (T-Fund) has a projected Fiscal Year 2019 ending unobligated balance of $235 million. Budgeted costs of the

Stockpile average $72.4 million per annum for fiscal years 2021-2025. This budget includes the $50 million of funding required in order to execute the proposed acquisitions. In lieu of an appropriation, the proposed disposal authorities will generate revenue and serve as the financing source to fund these acquisitions, provided that the revenues generated from these disposals are retained in the T-Fund. The resources impacted are reflected in the table below and are included within the Fiscal Year (FY) 2021 President's Budget Request.

		Budget Table							
	FY 2021	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**BA**	**BLI/SAG**	**Total**	**Appropriation**
FY 2020 Budget ($Millions)	**$83.6**	**$77.1**	**$72.2**	**$64.9**	**$64.4**	**04**	**UNDD**	**$362.2**	National Defense Stockpile Transaction Fund
		Proposed Acquisitions ($Millions)							
Material	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**			**Total**	**Appropriation**
Dysprosium	$0.432	$0.432	$0.432	$0.432	$0.432			**$2.16**	National Defense Stockpile Transaction Fund
Rare earth cerium compounds	$0.188	$0.188	$0.188	$0.188	$0.188			**$0.94**	National Defense Stockpile Transaction Fund
Rare earth lanthanum compounds	$0.924	$0.924	$0.924	$0.924	$0.924			**$4.62**	National Defense Stockpile Transaction Fund
Nd-Pr Oxide and NdFeB magnet blocks	$7.37	$7.37	$7.37	$7.37	$7.37			**$36.85**	National Defense Stockpile Transaction Fund
Yttrium	$0.27	$0.27	$0.27	$0.27	$0.27			**$1.35**	National Defense Stockpile Transaction Fund
Sm-Co alloy	$0.818	$0.818	$0.818	$0.818	$0.818			**$4.09**	National Defense Stockpile

									Transaction Fund
Acquisition Sub-Total	**$10**	**$10**	**$10**	**$10**	**$10**			**$50**	National Defense Stockpile Transaction Fund
		Proposed Disposals ($Millions)							
Material	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**			**Total**	**Appropriation**
Tungsten O&C	$10	$10	$10	$10	$10			**$50**	National Defense Stockpile Transaction Fund
Revenue Sub-Total	**$10**	**$10**	**$10**	**$10**	**$10**			**$50**	National Defense Stockpile Transaction Fund

Changes to Existing Law: This proposal would not change the text of any existing statute.