

The 2027 Cliff

On 1 January the Pentagon stops contracting for magnets, tungsten and tantalum mined or refined in China. The rule is narrower than reported. The gap it exposes is wider.

A forensic assessment of United States legal, industrial, grid and workforce readiness for the defence critical-materials ban, with every claim in the circulating draft checked against the primary text.

SUMMARY

Five findings

The cliff is real, but it is not where the draft put it. Magnet tonnage is not the constraint. The constraint sits upstream, in heavy rare earths, samarium and tungsten, where no contractor can fix supply in the 66 days left. *[NPSI assessment]*

300 t

Of about 48,000 tonnes of NdFeB magnets the United States used in 2025, about 300 came from domestic sources. Capacity is on track for 5,000 tonnes by the end of 2026. *[Source: Arthur D. Little via Reuters (demand, supply); Reuters (capacity), 27 Jul 2026]*

>99%

China's share of refined dysprosium and terbium, the heavy rare earths that keep a magnet working when a motor, actuator or seeker runs hot. *[Source: Adamas Intelligence, Dec 2025]*

16.3×

Dysprosium oxide outside China against the price inside it, late September. NdPr oxide, the light rare earth, now trades slightly below the Chinese price. *[Source: Benchmark Mineral Intelligence, 25 Sep 2026]*

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Tungsten mines producing commercially in the United States, none since 2015. Tungsten APT rose from a 2025 low of \$331 per unit to above \$3,000 by April 2026. *[Source: USGS, Feb 2026; Reuters, 29 Apr 2026]*

10 Jan

Beijing says the arrangement under which it suspended its October 2025 rare earth controls now runs to 10 January, nine days after the rule takes effect. The suspension notice itself still reads 10 November. *[Source: MOFCOM, 28 Sep 2026; MOFCOM Announcement 70, 7 Nov 2025]*

I • THE RULE

Three instruments, three texts

The statute. 10 U.S.C. § 4872 bars the Department of Defense from acquiring covered materials melted or produced in a covered nation: China, Russia, Iran and North Korea. Covered materials are samarium-cobalt and neodymium-iron-boron magnets, tantalum metals and alloys, tungsten metal powder and tungsten heavy alloy. The FY2026 act added molybdenum at once, and gallium and germanium from 18 December 2027. [Source: Pub. L. 115-232 § 871, the FY2019 act; Pub. L. 119-60 § 844]

The upstream step. Section 844 of the FY2021 act would have reached back to material "mined, refined, separated" after five years. Section 854 of the FY2024 act changed five to six, which puts it on 1 January 2027. The FY2026 act then rewrote the instruction. From that date a new paragraph bars the Secretary from entering "into a contract for any covered material mined, refined, or separated in any covered nation." [Source: Pub. L. 116-283 § 844; Pub. L. 118-31 § 854; Pub. L. 119-60 § 848]

The regulation. The DFARS clause in most contracts, 252.225-7052 of May 2024, carries the older wording, "mined, refined, separated, melted, or produced", and turns on the delivery date. Clause 252.225-7961 (June 2026), issued under a class deviation revised on 1 July, turns on the award date, and it does not amend existing contracts by itself. A contract signed in 2025 with the older clause can still catch material delivered after 1 January; one law firm reads it as giving no general grandfather for inventory. [Source: 89 FR 46816, 30 May 2024; Pillsbury, 21 Oct 2026; Wiley, 24 Jul 2026]

The exceptions narrow. From 1 January a commercial off-the-shelf item escapes only if it is less than 50% covered material by weight; until now that test applied to tungsten alone. Mill products not yet in an end item, the bars, billets, slabs, plates and sheets, stay covered. The clause flows down to every tier, commercial items included. [Source: Pub. L. 116-283 § 844, as amended by Pub. L. 119-60 § 848; 48 CFR 225.7018-3]

Two clauses, one date, and a statute the regulation has not caught up with.

QUESTION	UNTIL 31 DECEMBER 2026	FROM 1 JANUARY 2027
Stages reached	Melted or produced	Also mined, refined or separated
COTS exception	Lost only if 50% or more tungsten by weight	Lost if 50% or more of any covered material
Item waiver	Up to 36 months where supply is unavailable at a reasonable price	Only with an accepted mitigation plan; national security waivers too, or on request to the NSA (EO 14415)
Covered metals	Magnets, tungsten, tantalum; molybdenum in statute	Same; gallium and germanium from 18 Dec 2027
Clause trigger	252.225-7052: delivery date	252.225-7961: award date. Both may sit in one contract

II • THE CALENDAR

Sixty-six days

The legal dates cluster inside a quarter. The supply that would answer them is spread across four years. Every arrival in the lower panel is a company target, and most sit after the date the rule takes effect.

Three dates in the first panel are not in the Pentagon's control. Beijing's notice suspending its October 2025 rare earth controls still expires on 10 November, though a September readout extended the wider trade arrangement to 10 January. Its pause on the December 2024 ban on gallium and germanium exports to the United States lapses on 27 November. No instrument extending either had been published at the time of writing. And the House's FY2027 defence bill would repeal the upstream provision on the earlier of 31 December or enactment. [Source: MOFCOM Announcements 70 and 72, Nov 2025;

MOFCOM, 28 Sep 2026; H.R. 8800 § 1803(c), 22 Jul 2026]

FIG. 01

The rules arrive in a quarter. The supply arrives over four years.

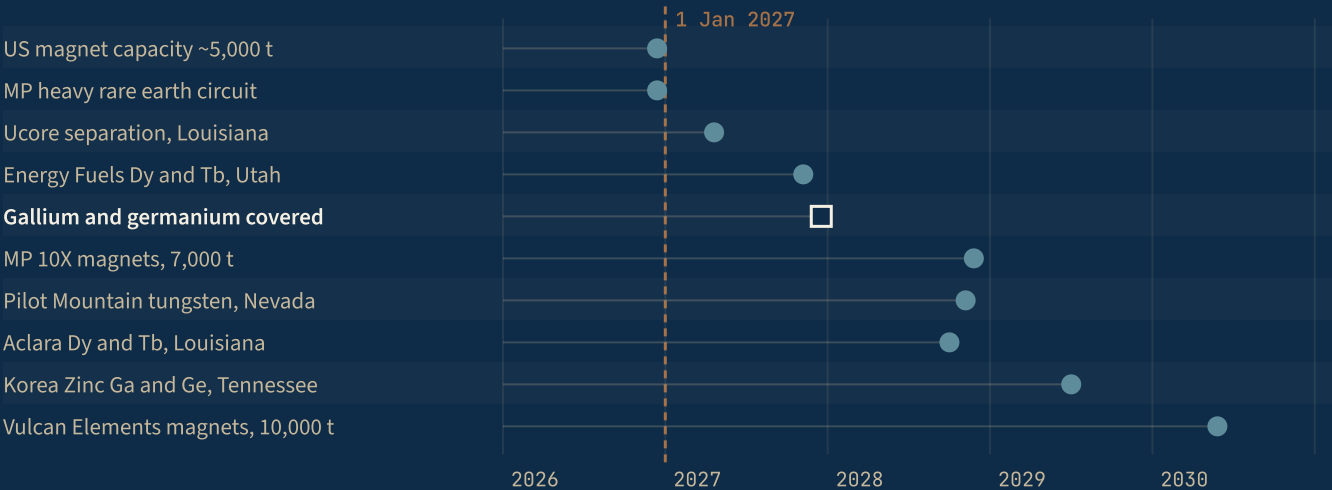
Panel A in date order, 27 October 2026 to 16 January 2027. Panel B by year, 2026 to 2030.

PANEL A • THE NEXT 81 DAYS, IN ORDER



Stops are in date order, not to scale: the last six fall within 67 days.

PANEL B • WHAT ARRIVES, AND WHEN



Supply dates are company targets, not deliveries. Square marks a legal date.

Source: Pub. L. 119-60; EO 14415; H.R. 8800; MOFCOM; company filings and releases (MP Materials, Energy Fuels, Aclara, Guardian Metal, Korea Zinc, Vulcan Elements). 2025 to 2026.

III • THE ORDER

The waiver becomes a plan

Executive Order 14415, **Securing America's Defense Supply Chains and Ensuring Domestic Acquisition of Critical Materials**, was signed on 20 July and published three days later. [Source: 91 FR 46693, 23 Jul 2026]

Its centre of gravity is section 2. From 1 January the Secretary of War "shall cease to issue waivers" under § 4872(c)(1), the nonavailability exception. National security waivers under § 4872(e) follow the same terms, or need a request to the national security adviser. A waiver survives only where the Secretary accepts a contractor's mitigation plan that documents exhaustive efforts and a timeline to phase out covered-nation material. Failure to qualify a domestic source "shall not constitute non-availability" unless the contractor shows "active, adequately funded, and ongoing efforts" to qualify one. [Source: EO 14415 §§ 2(a) to 2(c)]

Section 3 tells the rule-writers what to require: an indentured bill of materials traced to the origin of raw materials; vetting of suppliers for financial risk, foreign ownership, control or influence, and supply concentration; notice of significant risks within 15 days of vetting; and a confidential corrective action plan within 45. These bind no contractor until the regulations exist. Guidance is due around 16 January, the rules about 90 days later. [Source: EO 14415 § 3; Orrick, 1 Oct 2026]

The remedies are contractual: suspended task orders, declined options, termination, and referral to the Attorney General for fraud. The order does not mention the False Claims Act or debarment. That exposure appears in law-firm analysis, not in the text. [Source: EO 14415 §§ 2(d), 4; Orrick, 1 Oct 2026]

Section 6 leaves the government's own channels alone: Project Vault, the \$12 billion stockpile launched in February, and projects financed by EXIM or the DFC. In April, officials said Vault would first buy from "anywhere in the world," China included. [Source: EO 14415 § 6; Reuters, 27 Jul 2026] The order tightens contractor sourcing and leaves the stockpile's channel open. [NPSI assessment]

Congress may still move the floor. The House bill, passed on 22 July, rewrites § 4872 into a tiered regime and repeals the upstream bar on the earlier of 31 December or enactment. The Senate bill, reported but not passed, would push molybdenum to the gallium and germanium date. Neither is law, and the bill heads into a lame-duck session. [Source: H.R. 8800 § 1803; S. 4784 § 816; CRS IN12704]

WHAT THE ORDER DOES

Stops nonavailability waivers from 1 Jan, unless a mitigation plan is accepted

Rules out "no domestic source qualified" as nonavailability

Orders regulations on bills of materials, vetting and notice

Exempts Project Vault, EXIM and DFC channels

WHAT IT DOES NOT SAY

"Global" nonavailability

False Claims Act or treble damages

Debarment under FAR Subpart 9.4

Any binding 15-day or 45-day clock before the rules exist

IV • THE DRAFT, CHECKED • PART ONE: THE LAW

The draft, line by line

The draft that prompted this briefing circulated in October. Its frame holds; many particulars do not. This page checks its legal claims against the enrolled law, the Federal Register and the clause text. The next two check its industrial, energy and workforce claims.

CLAIM IN THE DRAFT	VERDICT	WHAT THE RECORD SAYS
DFARS 252.225-7052 and 225.7018-2 implement § 854 of the FY2024 NDAA, codified at 10 U.S.C. § 4872.	Partly	The DFARS cites both. Section 854 only moved an effective date from five years to six; it is a statutory note.
From 1 Jan 2027 the ban expands to material mined, refined, separated, melted or produced in a covered nation.	Partly	That is the DFARS wording. The statute, as rewritten by FY2026 § 848, adds a contract bar on material mined, refined or separated.
Covered: SmCo and NdFeB magnets, tungsten, tantalum, molybdenum.	Partly	Molybdenum is in the statute since 18 Dec 2025 but not yet in the DFARS clauses. Tungsten is limited to powder and heavy alloy.
The COTS exemption excludes items 50% or more covered material by weight.	Verified	Effective 1 Jan 2027; the test previously applied to tungsten only.
Unincorporated mill products are covered.	Verified	Bars, billets, slabs, plates and sheets stay covered. The clause numbering is inconsistent with 225.7018-3.
Gallium and germanium enter on 18 Dec 2027.	Verified	FY2026 NDAA § 844(b), two years after enactment.
EO 14415 was signed on 20 July 2026.	Verified	91 FR 46693, published 23 Jul 2026.
The order terminates routine waivers from 1 Jan 2027.	Partly	It stops § 4872(c)(1) waivers unless a mitigation plan is accepted, and limits national security waivers the same way.
Contractors must prove global nonavailability.	Wrong	"Global" is not in the order. It says failure to qualify a domestic source is not nonavailability.
15-day notice and 45-day corrective action plan.	Partly	Both exist as required content for future regulations. Not yet binding.
Indentured BOMs to raw mineral origin.	Partly	Required content for future regulations under § 3(b).
Exposure to FAR 9.4 debarment and False Claims Act treble damages.	Not in text	Neither appears in the order. Remedies are contractual plus referral to the Attorney General.
Supplier vetting for financial distress, FOCl and manufacturing concentration.	Verified	Paraphrase of § 3; the order says "manufacturing and supply" risk.

Sources: Pub. L. 115-232, 116-283, 118-31, 119-60 (govinfo.gov); 89 FR 46816; 91 FR 46693; 48 CFR 225.7018 and 252.225-7052 (eCFR, Sep 2026). Clause 252.225-7961 and Class Deviation 2026-O0041 Rev. 1 are confirmed through law-firm alerts; the deviation memo itself could not be retrieved.

IV • THE DRAFT, CHECKED • PART TWO: INDUSTRY AND MONEY

Companies, plants and backlogs

CLAIM IN THE DRAFT	VERDICT	WHAT THE RECORD SAYS
Global NdFeB output is 200,000 to 220,000 t a year.	Too low	About 251,600 t were sold in 2025, 91% by Chinese firms. China alone made about 246,500 t in 2024.
Magnet-grade oxide is "five nines", 99.5% pure.	Partly	The 99.5% is right; "five nines" would be 99.999%.
Only SRC in North America can crack monazite, remove uranium and thorium, and separate oxides.	Wrong	Energy Fuels' White Mesa mill cracks monazite, recovers uranium and has made separated NdPr since 2024. Thorium goes to licensed tailings.
Lynas "commissioning at Hondo remains paused".	Wrong	Hondo, Texas was the 2021 site, superseded by Seadrift. Nothing was commissioned there.
Lynas heavy rare earth capex rose 63% to A\$294M; Malaysia licence renewed for ten years.	Verified	ASX disclosures, Jul and Aug 2026; licence renewed 2 Mar 2026.
GM terminated its 90% offtake with eVAC, effective 1 July, having consolidated around MP.	Partly	Filings date it 1 July; eVAC took it to arbitration. The MP motive is inference.
Energy Fuels is buying VAC for \$1.79B to \$1.9B, closing by 31 December.	Partly	\$1.9B equity value, guided to close in early 2027.
USA Rare Earth: Q2 operating loss of \$90.7M.	Wrong	\$46.3M for the quarter; \$83.0M for the half. Cash of \$1.53B is verified.
Rare Element demo plant cost rose from \$44M to \$66M.	Wrong	Budget of about \$43.8M, now estimated at about \$82M.
MP's Fort Worth magnet plant employs about 350.	Unverified	The 10-K reports a magnetics team of more than 180, with several hundred hires planned.
RTX backlog \$340B; AMRAAM \$20.7B; SM-3 \$6.3B.	Verified	Q3 2026 backlog. Both contracts are "up to" ceilings.
L3Harris is spending over \$1B to quadruple THAAD propulsion.	Partly	The \$1.265B motor expansion and the THAAD framework are separate items.

Sources: CIC via HKEX, Jun 2026; SMM, May 2025; MP Materials NdPr specification; Energy Fuels, Jun 2024 and Jun 2026; Lynas ASX, 2021 to 2026; Reuters and electrive, Oct 2026; USA Rare Earth, 10 Aug 2026; Rare Element Resources 10-Q, Q2 2026; MP Materials 10-K, 2025; RTX, 20 Oct 2026; Defense News and Naval News, Sep to Oct 2026; L3Harris, Apr and Jul 2026.

IV · THE DRAFT, CHECKED · PART THREE: ENERGY, PEOPLE, CHORUS

Megawatts, engineers and quotes

CLAIM IN THE DRAFT	VERDICT	WHAT THE RECORD SAYS
Electricity of 35 to 55 MWh a tonne; 96 to 470 MW to reshore 48,000 t of magnets.	Wrong method	Carbon cannot be converted to energy. A defensible range is 15 to 50 kWh per kg of magnet: about 80 to 275 MW.
Molten-salt electrolysis uses 3.34 kWh per kg of Nd.	Partly	An idealised figure from a 2024 study. Industrial cells use about 9.5 to 13.
Solvent extraction circuits use 1,800 to 2,200 kWh a tonne.	Wrong	That is the standard figure for copper SX-EW, not rare earths.
A power cut "freezes the pot" and halts output for months.	Unsupported	Documented for aluminium potlines. No case found for rare earth cells.
Wind turbines need 500 to 667 kg of magnets per MW.	Partly	Direct-drive needs about 800 to 1,200 kg; geared designs far less, some none.
A third of mining workers are baby boomers.	Wrong	The one-third referred to the whole US workforce, in 2015 testimony.
The National Academies project half the mining workforce will retire by 2029.	Misattributed	The figure is SME's, from 2014: about 221,000 workers.
78,000 retirements against 50,000 workers needed.	Partly	SME, 2014. The numbers add rather than compete, and the window closed in 2019.
Mining graduates fell 40%, from 350 in 2015 to under 330 in 2020.	Partly	CSIS: 327 in 2020, down 39% from 2016. The 350 start is wrong.
Heritage: stockpiles exhausted in under 90 days.	Wrong	The 90 days refers to Mk 48 torpedo inventories, not minerals.
AIA says many platforms need until 2028.	Unverified	No AIA statement found.
160 deals worth \$40B since January 2025 (REEx).	Unverified	Not found in visible text.
Project Vault loans of up to \$1B.	Partly	A first loan tranche inside a \$12B facility.

Sources: ACS Sustainable Chem. Eng. 12(10), Mar 2024; JOM, 2025; Metall. Mater. Trans. B 48B, 2017; NETL, 2014; Hydro, Aug 2010; UK NEPC, May 2026; National Academies testimony, Dec 2015; SME technical briefing, Feb 2014; CSIS, May 2023; Heritage Foundation TIDALWAVE ch. 6, Jan 2026; Bloomberg via MINING.COM, 15 Oct 2026.

V • THE PROMOTER'S READ

"One company is ready." Its filings disagree.

On 25 October Oilprice.com asked whether anyone was ready for the deadline and answered that, for heavy rare earths in North America, "thus far appears to be one company: REalloys." [Source: Oilprice.com, 25 Oct 2026] The disclosure at the foot says the site's owner "owns shares and/or stock options of the featured company", may sell them at any time, and that this "should be viewed as a major conflict with our ability to be unbiased." It also says no one was paid to publish. The piece is one of a run of REalloys articles on the site, including a write-up of a Buy rating from Clear Street, the placement agent for the company's June raise. [Source: Oilprice.com, Jul to Oct 2026; REalloys 10-Q, Q2 2026]

REalloys reached Nasdaq in February through a reverse merger with Blackboxstocks. In the second quarter it reported \$0.8 million of revenue and a \$36.8 million net loss, most of it share-based pay, and closed June with \$122.4 million in cash after a \$100 million placement. [Source: REalloys 8-K and 10-Q, 13 Aug 2026]

Its own filings set the dates; only samples are due before 1 January. [Source: REalloys 10-Q, Q2 2026; releases, 11 Mar and 29 Sep 2026]

THE NARRATIVE	WHAT THE FILINGS SAY	ON 1 JANUARY
Ready for 1 January	Qualification samples in Q4 2026, from recycled mixed oxide	Samples only
Saskatoon supply	150 t NdPr metallization from Q1 2027; monazite to metal from Q3 2027	Not yet
Heavy metal plant	About 50 t a year of Dy and Tb oxide feed; commissioning Q1 2028, slipped from early to mid 2027	12 to 15 months out
Magnets	JS Link letter of intent and Tooel lease, both non-binding	None
Feedstock	Tanbreez "is not in production"; other deals provide for no purchase of material	None contracted from a producing mine

The company has real assets, including a metals business in Euclid, Ohio that sells to the Defense Logistics Agency. What it does not have is compliant heavy rare earth metal at scale on 1 January. Nor does anyone else in North America. [NPSI assessment]

THREE QUESTIONS FOR ANY "READY FOR 2027" CLAIM

Where was the feed mined and separated? From 1 January that is the test, not where the metal was made. **Is the offtake binding?** A letter of intent is not supply. **Is the product qualified?** Defence qualification takes years, and a sample is not a delivery.

VI • THE CHAIN

The grip is past the mine

The draft framed the cliff as a mining problem. The numbers put it further down the line.

China mined about 270,000 of the world's 390,000 tonnes of rare earth oxide in 2025, or 69%. The United States mined 51,000. [Source: USGS, Feb 2026] But China separates and refines about 91% of magnet rare earths, makes about 94% of sintered magnets, and refines more than 99% of dysprosium and terbium.

[Source: IEA, 23 Oct 2025; Adamas Intelligence, Dec 2025] The United States relied on imports for all of its heavy rare earths in 2021 to 2025, and USGS attributes 100% of its terbium imports in 2021 to 2024 to China. [Source: USGS, Feb 2026]

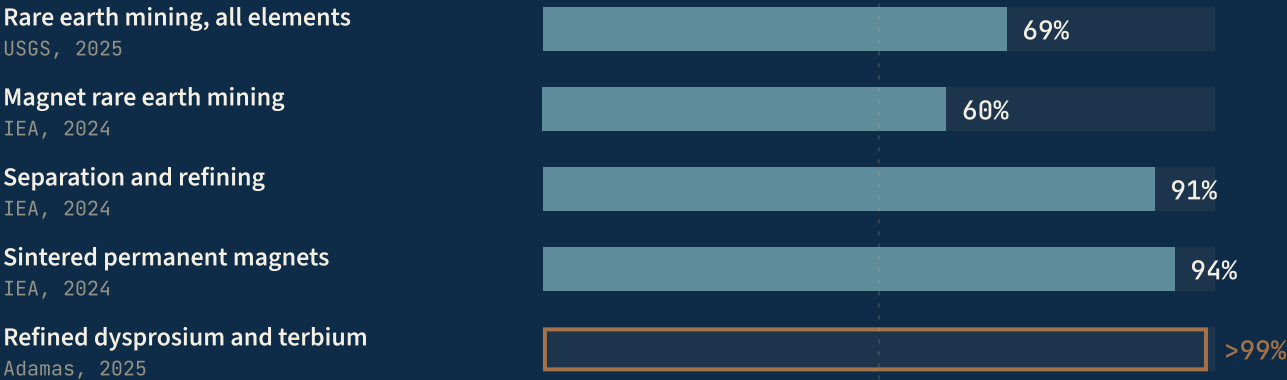
That is why the new verbs matter. "Melted or produced" caught the magnet maker. "Refined or separated" catches the chemistry in between, which is where the chain runs through China. [NPSI assessment]

FIG. 02

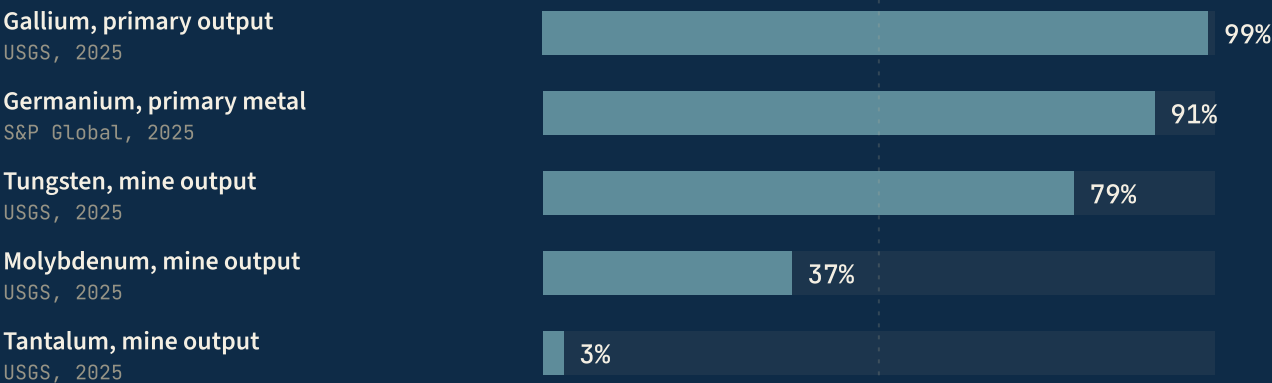
The further from the mine, the tighter the grip

China's share of world output by stage, percent. Latest year available.

THE RARE EARTH CHAIN



THE OTHER COVERED METALS



Source: USGS Mineral Commodity Summaries 2026; IEA, Oct 2025; Adamas Intelligence, Dec 2025; S&P Global, Aug 2026.

VII • THE TONNES

Defence is a sliver

The Pentagon has never published how many magnets it buys. The GAO puts its demand below 0.1% of world consumption. [Source: GAO-24-107176] One analyst estimates 200 to 300 tonnes of NdFeB and 200 to 400 tonnes of samarium-cobalt a year. [Source: InvestorNews, 7 Oct 2026] The stockpile plan for FY2025 listed 450 tonnes of NdFeB block as a potential purchase. [Source: USGS, Feb 2026]

American capacity already exceeds that. MP Materials began making magnets in Fort Worth in December 2025. eVAC's plant in Sumter, South Carolina is rated near 2,000 tonnes, Noveon about 2,000, and USA Rare Earth targets a 600-tonne run rate in Oklahoma this quarter. [Source: MP Materials 10-K, 2025; eVAC; Noveon, 19 Jan 2026; USA Rare Earth, 10 Aug 2026]

The problem is who buys the rest. General Motors terminated its supply agreement with the Sumter plant on 1 July, which was to take about 90% of the output. eVAC is contesting the termination in arbitration. [Source: Reuters, 22 Oct 2026] Outside China, NdPr oxide traded at \$95 a kilogram in August, under the \$110 floor the Pentagon guarantees MP. [Source: Benchmark, 21 Aug 2026; MP Materials 8-K, Jul 2025]

The draft calls GM's exit a relief valve: up to 1,800 tonnes a year freed for defence. The tonnes are real, and they exceed the whole estimated defence need. The feed is the catch. Sumter's NdPr comes from Mountain Pass; its dysprosium and terbium must come from somewhere, and outside China that mostly means Lynas. A customer this small cannot fill the plants it depends on. [NPSI assessment]

FIG. 03

Defence needs a sliver. The plants need everyone else.

Tonnes per year. Demand and supply, 2025; capacity, end of 2026.

US NdFeB magnet demand

all uses, 2025

48,000 t

US magnet capacity

on track, end of 2026

~5,000 t

Defence magnet need

analyst estimate, NdFeB + SmCo

400 to 700 t

Domestic supply

actually delivered, 2025

300 t

Scale is linear. The defence bar is drawn at its upper estimate.

Source: Arthur D. Little via Reuters, 27 Jul 2026; InvestorNews (J. Lifton), 7 Oct 2026, an estimate. No official Pentagon figure is public.

VIII • THE HEAVY END

The cheap part got built

A neodymium magnet loses strength as it heats. Dysprosium and terbium hold it in place, which is why they go into high-temperature grades for motors, actuators and guidance. Samarium-cobalt does the same job where heat is worse still.

China's April 2025 controls on seven medium and heavy rare earths, samarium, gadolinium, terbium, dysprosium, lutetium, scandium and yttrium, were never suspended. Exports need licences; some are now general. [Source: USGS, Feb 2026; China Countermeasures, 2026] In June, Beijing put MP Materials and USA Rare Earth on its export control list. [Source: Morgan Lewis, Jul 2026; Benchmark, Jun 2026]

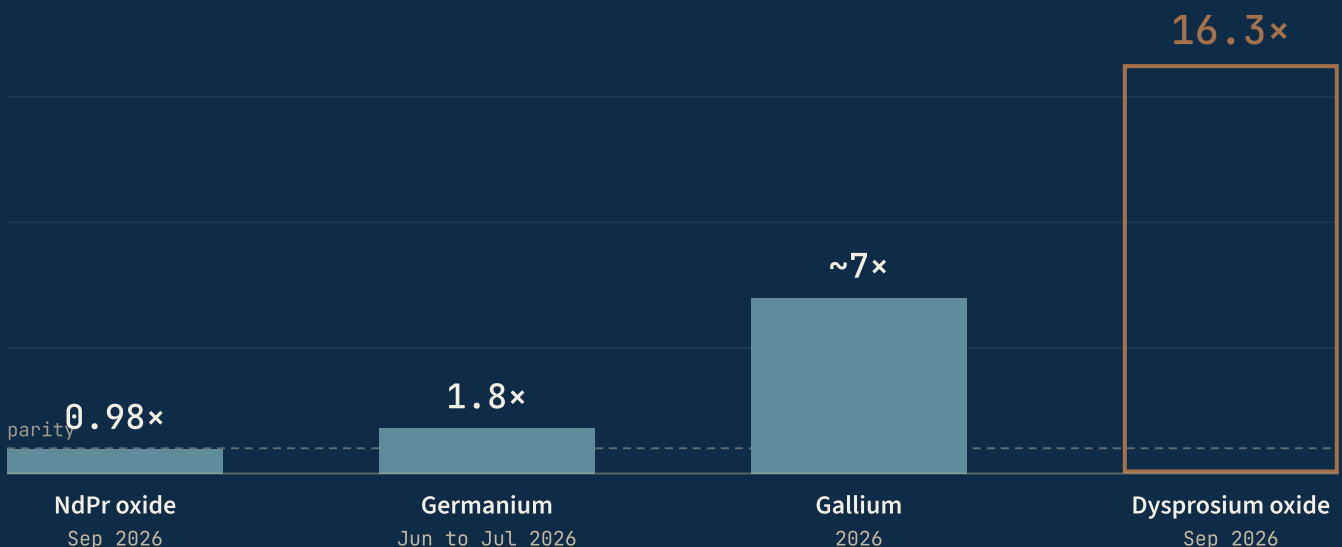
The prices tell the rest. In September, NdPr oxide outside China cost \$106.50 a kilogram against \$108.70 inside it. Dysprosium oxide outside China averaged \$3,500, and by late September stood at about 16.3 times the Chinese price, up from 6.8 times at the end of June. Terbium oxide outside China averaged \$6,745. [Source: Benchmark, 25 Sep 2026] The Western build went after the volume element. The scarce ones are still priced in Beijing. [NPSI assessment]

FIG. 04

A light kilogram outside China is cheap. A heavy one is not.

Price outside China divided by price inside China. Dashed line marks parity.

Price outside China divided by price inside China



Source: Benchmark Mineral Intelligence, 25 Sep 2026 (NdPr, Dy); Payne Institute, 29 Jul 2026 (Ge); S&P Global, Aug 2026 (Ga, approximate).

VIII • THE HEAVY END, CONTINUED

Nameplate is not output

Outside China, Lynas is the one commercial heavy rare earth separator on record. Lynas produced the first separated dysprosium outside China in Malaysia in May 2025, and terbium in June, and cites capacity of 240 tonnes of dysprosium and 50 of terbium a year, limited by feed. [Source: Lynas, Jul 2026] MP Materials is commissioning a 200-tonne circuit at Mountain Pass, with first output targeted for the end of 2026, for its own magnets. Energy Fuels plans 120 tonnes of dysprosium and 20 of terbium in Utah from late 2027, rising in a 2029 second phase. Aclara expects to finish building in Louisiana in late 2028, for an average of 200 and 35 over the project's life. [Source: MP Materials, Nov 2025 and Sep 2026; Energy Fuels, 29 Jul 2026; Aclara, 13 Oct 2026]

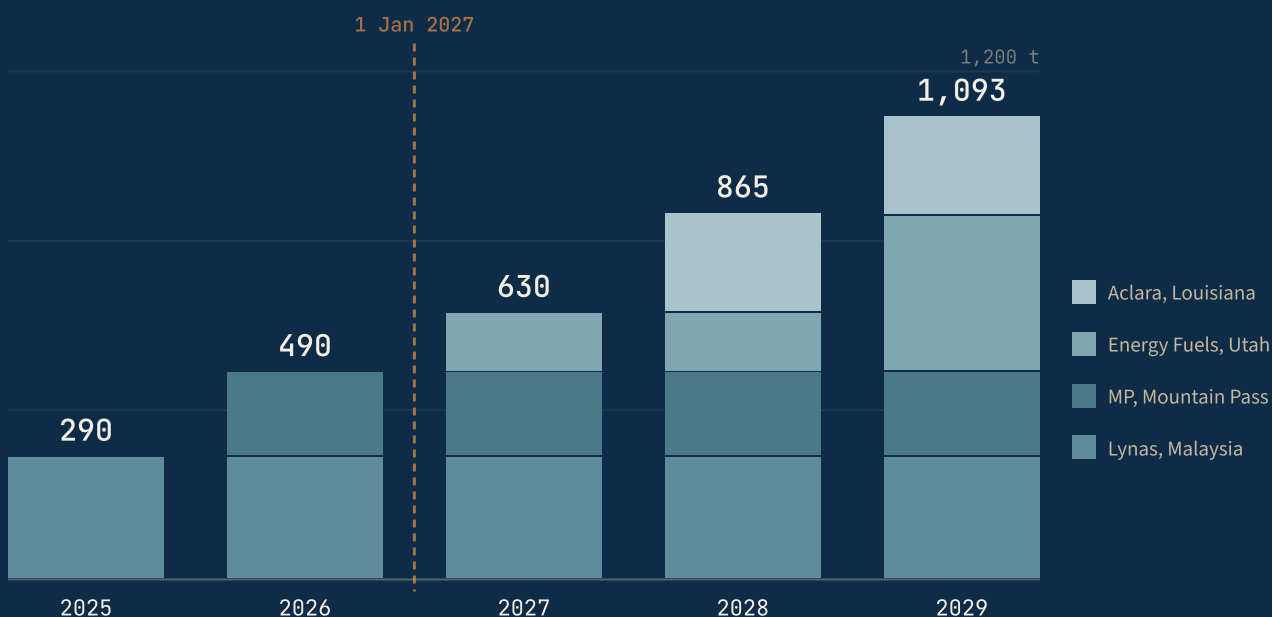
Samarium is a step behind. Lynas made its first samarium oxide in March 2026; Energy Fuels plans 140 tonnes by the end of 2028. [Source: Critical Strategic Metals, 2026]

The industry has been here before. In September 2022 the Pentagon paused F-35 deliveries after finding Chinese-origin alloy in a Honeywell pump magnet, and resumed them in October under a national security waiver. [Source: Breaking Defense, Oct 2022] The widely quoted figure of 417 kilograms of rare earths per F-35 traces to an unreleased 2012 Pentagon study whose method has never been published. [Source: CRS R41744, 2013; Adamas Intelligence, 22 Apr 2026]

FIG. 05

Heavy rare earth capacity outside China

Nameplate at year end, tonnes of dysprosium and terbium oxide. Bars stack by facility; Energy Fuels rises to 368 t in its 2029 second phase.



Year-end nameplate, tonnes of Dy and Tb oxide combined. Lynas figure is a management statement, limited by feed.

Source: Lynas, Jul 2026; MP Materials, Nov 2025; Energy Fuels, 29 Jul 2026; Aclara, 13 Oct 2026. Company targets after 2025.

IX · BEYOND MAGNETS

Tungsten is the sharper edge

For tungsten, the mine-stage test arrives with nothing domestic behind it. China produced about 67,000 of the world's 85,000 tonnes in 2025, and Beijing has licensed exports since February 2025. [Source: USGS, Feb 2026] Tungsten in a penetrator is spent when fired and is not recovered. Rotterdam APT passed \$3,000 a unit in April, against a 2025 low of \$331. [Source: Reuters, 23 Mar and 29 Apr 2026] In August, Commerce ordered all US tungsten scrap sold to US buyers for a year. [Source: Federal Register, 6 Aug 2026] In September the Department of War agreed to invest \$450 million in Elmet through preferred equity and warrants, alongside a stockpile contract with a \$2 billion ceiling and \$150 million guaranteed. [Source: Elmet, 14 Sep 2026]

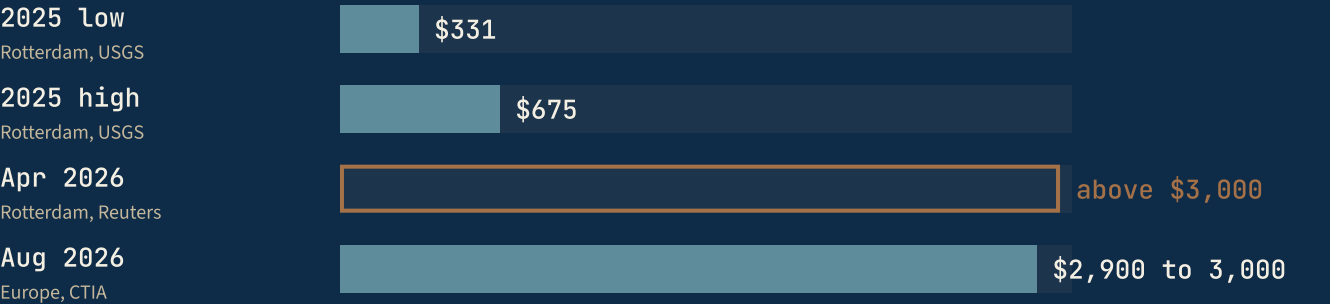
Tantalum's risk is processing and conflict ore, not China's mines. Molybdenum is the one covered metal the United States exports. Gallium and germanium have until December 2027, and S&P still sees a germanium gap of about 150 tonnes in 2028. [Source: USGS, Feb 2026; S&P Global, Aug 2026]

METAL	CHINA SHARE	US POSITION	PRICE	NON-COVERED SUPPLY
Tungsten	79% of mine output	No commercial mine since 2015	APT about 9× its 2025 low	Sangdong, Korea, since Sep 2026; Nevada from late 2027 and 2028
Tantalum	3% of mine output; 47% of US metal imports	100% import reliant	Ore about 3× the 2025 average	DRC, Rwanda, Brazil, Australia; DLA ingot contract
Molybdenum	37% of mine output	40,000 t; net exporter	Flat	Ample; in statute, not yet in DFARS
Gallium	99% of primary output	No primary since 1987	About \$2,100/kg outside China	Alcoa 100 t; Atalco 50 t; Korea Zinc from 2029
Germanium	91% of primary metal	Imports; Red Dog ore refined in Canada	About 1.8× the Chinese price	Umicore, Teck, 5N Plus; gap of ~150 t in 2028

FIG. 06

Tungsten, priced in the year of export licences

APT, US dollars per metric tonne unit (10 kg of WO3).



Source: USGS Mineral Commodity Summaries 2026; Reuters, 29 Apr 2026; China Tungsten Industry Association, 31 Aug 2026. Table: USGS 2026; SMM, 20 Oct 2026; S&P Global and Payne Institute, 2026; company releases.

X • READINESS

Where the gaps are

The matrix below sets each covered material against the four stages the rule now reaches. A full mark means supply from outside the covered nations exists at a scale a defence buyer can contract for today. A half mark means it is thin, single-source or still ramping. An open bronze ring means it is effectively absent. *[NPSI assessment]*

Two rows carry the risk. Heavy rare earths have one commercial separator outside China and almost no metal-making. Gallium has almost no primary supply outside China at all, and its deadline falls almost a year after the others. Every half mark in the tungsten row is held up by a price that has risen ninefold.

[NPSI assessment]

FIG. 07

Readiness by material and stage, October 2026

NPSI assessment of supply available from outside China, Russia, Iran and North Korea.

	MINE	SEPARATE, REFINES	METAL, ALLOY	FINISHED
NdFeB, light (Nd, Pr)	● Mountain Pass; Mt Weld	● MP and Lynas	◐ MP, LCM, USAR	◐ ~5,000 t US, end-2026
NdFeB, heavy (Dy, Tb)	◐ Mt Weld feed	◐ Lynas; MP late 2026	○ little outside China	n/a
SmCo (samarium)	◐ in Lynas, MP ore	◐ Lynas from Mar 2026	◐ LCM, UK	◐ Arnold; Electron Energy
Tungsten	◐ no US mine since 2015	◐ APT ~9× 2025 low	◐ GTP, Kennametal, Elmet	◐ penetrators, armour
Tantalum	● DRC, Rwanda, Brazil	◐ China 47% of US metal	● Global Adv. Metals	● capacitors, alloys
Molybdenum statute only	● US is a net exporter	● Americas	● Americas	● armour, superalloys
Gallium from 18 Dec 2027	○ China 99% of primary	○ Alcoa, Atalco ramping	◐ Canada, Japan, Germany	◐ GaN radar, EW
Germanium from 18 Dec 2027	◐ Red Dog to Teck Trail	◐ Umicore; China 91%	◐ 5N Plus, Umicore US	◐ infrared optics
● Non-covered supply at scale ◐ Thin, single-source or ramping ○ Effectively absent outside covered nations				

Source: NPSI assessment drawing on USGS 2026, IEA 2025, Adamas 2025, Benchmark 2026, S&P Global 2026 and company filings cited in this briefing.

XI • THE GRID

Time to power, not power

A magnet plant is not a smelter. Process data put NdFeB manufacturing at about 8.2 kWh of electricity per kilogram. [Source: NETL, 2014] A 10,000-tonne plant would draw about 9 megawatts on average; all 48,000 tonnes of US demand, refined from oxide up, roughly 80 to 275. [NPSI assessment] Its problem is the queue it joins. ERCOT, home to MP's Fort Worth plant and its planned Northlake campus, had 474 GW of large loads asking to connect by June, 90% of them data centres. [Source: ERCOT, 29 Jul 2026] Power transformers averaged 128 weeks to deliver in 2025, and cost 77% more than in 2019. [Source: Wood Mackenzie via POWER, 2 Jan 2026]

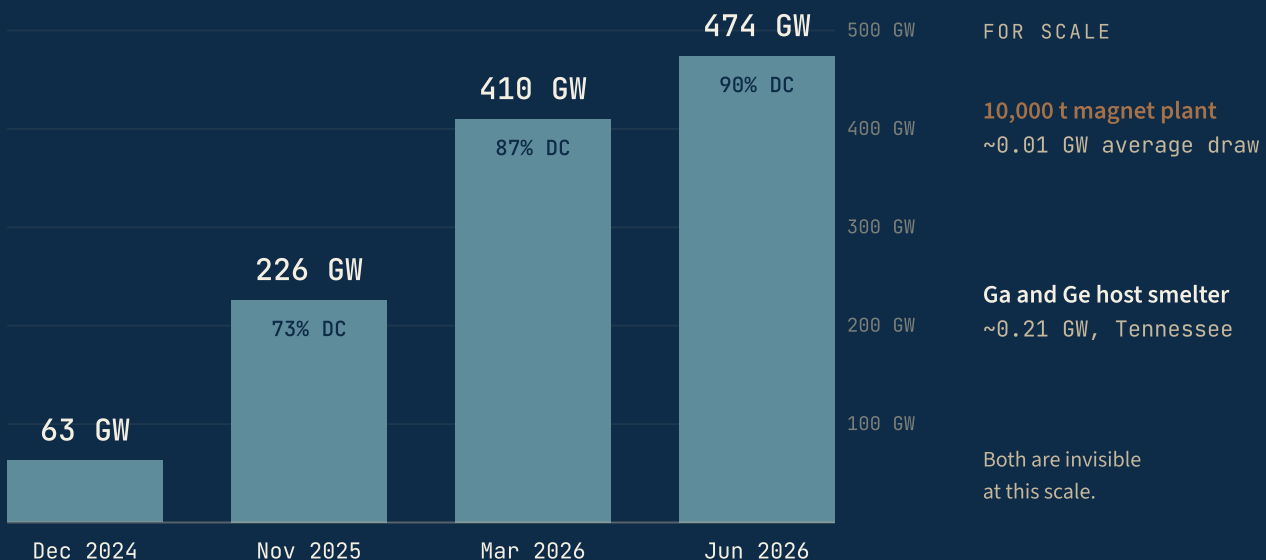
Reliability bites first. Outages at Lynas's Kalgoorlie plant were expected to cost about a month of production in the December 2025 quarter. [Source: Mining Weekly, 25 Nov 2025] USA Rare Earth's filings warn that each of its sites depends on a single utility. [Source: USA Rare Earth 8-K, 2026]

Gallium and germanium are different. They are by-products of zinc smelters and alumina refineries. Korea Zinc's Tennessee smelter assumes 1,849 GWh a year, about 211 MW. Century's planned Oklahoma aluminium smelter still had no power contract after a year of talks. [Source: Korea Zinc, Jan 2026; Canary Media, 30 Apr 2026]

FIG. 08

The queue a magnet plant joins

ERCOT large-load interconnection requests, gigawatts.



DC: data-centre share of the queue. Magnet draw is an NPSI estimate from NETL process data.

Source: ERCOT board and Senate testimony, Dec 2025 to Jul 2026; NETL, 2014; Korea Zinc, Jan 2026.

XII • THE PEOPLE

Plants are being built faster than engineers

The United States granted about 285 mining and mineral engineering degrees at all levels in 2024. The Department of Energy estimates about 6,000 new mining engineers are needed over the next decade, roughly 600 a year. Fourteen accredited programmes remain, from 25 in the early 1980s. [Source: MINING.COM, 25 Sep 2026] Reuters found at least 11 Chinese universities offering rare earth degrees, enrolling more than 500 students a year, and no undergraduate rare earth degree outside China. [Source: Reuters, 1 Jun 2026] "Anywhere else I need to train them for three years," said Constantine Karayannopoulos, a veteran rare earth executive. [Source: Reuters, 1 Jun 2026]

Know-how is now litigated. MP Materials sued USA Rare Earth in May, alleging a former employee carried magnet process secrets across. [Source: Rare Earth Exchanges, 7 Jun 2026] The trades are contested too. Builders need 349,000 more workers this year and 456,000 in 2027, and the data centres in the same queue hire the same electricians. [Source: ABC, 15 Jan 2026; Fortune, 2 Mar 2026]

A new magnet plant takes two to four years to build and two to three more to qualify for defence.

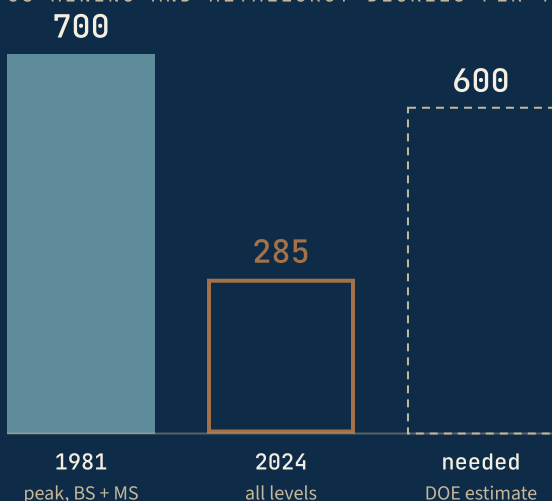
[Source: US Critical Materials, 14 May 2026, quoting an executive] The rule gives contractors 66 days. [NPSI assessment]

FIG. 09

The pipeline that does not show up in a filing

Degrees per year and programme counts.

US MINING AND METALLURGY DEGREES PER YEAR



DEGREE PROGRAMMES

US accredited mining engineering, early 1980s: 25



US accredited mining engineering, 2026: 14



Rare earth degree programmes in China: at least 11



Undergraduate rare earth degrees outside China: none found



Source: Data USA and DOE via MINING.COM, 25 Sep 2026; Reuters, 1 Jun 2026. The 1981 peak counts bachelor's and master's degrees; 2024 counts all levels.

XIII • SCENARIOS

Three ways January goes

None of these is a forecast. Each names the signal that would show it is under way. *[NPSI assessment]*

A • Base case

The waiver becomes a plan

The rule takes effect. Programme offices accept mitigation plans for heavy-rare-earth magnets, samarium-cobalt and tungsten heavy alloy, each with a phase-out date. Deliveries slip at the margin, not wholesale. The paperwork moves from waiver to plan, and the material moves more slowly.

Most exposed: primes holding contracts with clause 7052 and deliveries due in early 2027.

Signal: national security determinations under § 4872(e), which must reach the defence committees before they are made, or within seven days in urgent cases.

B • Congress moves the floor

The lame duck rewrites § 4872

The FY2027 act adopts the House's tiered regime or the Senate's delay. The upstream bar is repealed before it bites, or reshaped. Contractors who spent on mapping keep the map; those who waited save the cost.

Most exposed: the domestic suppliers whose business case rests on the rule, from separators to magnet makers.

Signal: conference text of § 1803 or § 816 before 31 December.

C • Beijing moves first

The truce lapses on 10 January

The October 2025 measures return, including the rule reaching foreign-made goods with 0.1% Chinese rare earth content by value and the denial of licences for foreign military users. Compliant magnets made outside China with Chinese dysprosium become the next exposure.

Most exposed: allied magnet makers in Japan, Korea and Europe who still buy Chinese heavy rare earths.

Signal: a MOFCOM announcement on the suspension, or none, before 10 January.

Sources: 10 U.S.C. § 4872(e); H.R. 8800; S. 4784; MOFCOM Announcements 61, 70 and 72 of 2025 via CSET and Fastmarkets; MOFCOM, 28 Sep 2026.

XIV • WATCHLIST

What to watch

10 Nov	Expiry date in the text of China's suspension notice; watch for an amending announcement.
27 Nov	Whether Beijing extends its pause on the US gallium and germanium ban.
Dec	FY2027 defence bill: § 1803 of the House text and § 816 of the Senate text in conference.
1 Jan	Upstream bar and waiver cut-off. First mitigation plans accepted, and by whom.
10 Jan	End of the US-China arrangement; status of the October 2025 controls.
~16 Jan	EO 14415 guidance and remedies list; the bill-of-materials clock.
Q4 2026	MP's first heavy rare earth output; the eVAC arbitration with General Motors.

I read the draft that started this the way I read anything that arrives fully formed. It had the right instinct and the wrong text. It credited the order with a "global" test it does not contain and a False Claims Act it never mentions, and it cited a statute that Congress rewrote ten months ago. The real rule is narrower, and that is not the comfort it sounds like.

Here is what I take from it. The West built the cheap part. Neodymium outside China now sells below the Chinese price. The expensive parts, dysprosium at sixteen times, tungsten at nine times its 2025 low, samarium barely started, are still Beijing's to license. And the anchor customer of the Sumter magnet plant walked away in July.

Defence is a sliver of the market. It cannot carry these plants by itself, and it cannot buy around them any more without writing a plan that says when it will stop. On 2 January, somebody in a programme office will have to write that date down.

The rule sets a date. Supply chains do not read the Federal Register.

J.J. • Victoria, British Columbia

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