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RESEARCH REPORT | OCTOBER 2026

Beyond Tier 1 Traceability

Illustrating the Tungsten Bottleneck

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Executive Summary

The Department of Defense requires prime contractors to track their supply chains beyond Tier 1. Relying on direct supplier attestations is no longer sufficient to meet legal and geopolitical compliance standards. Using tungsten as a model, this report outlines the sub-tier risks and demonstrates why manual compliance tracking is ineffective. Contractors must adopt automated supply chain mapping to prevent contract delays and legal penalties.

01 Strategic Context: Upstream Market Constraints

The global raw material market faces defined physical bottlenecks:

Market Control: China produced 67,000 metric tons of the 85,000-metric-ton global tungsten supply in 2025 and holds 2.5 million metric tons of reserves.

Domestic Deficit: The United States has not mined commercial tungsten since 2015 and relies on imports for more than half of its consumption.

Export Restrictions: In February 2025, China placed export controls on tungsten items, raising ammonium paratungstate (APT) prices to $675 per metric ton unit.

Contractors cannot build new physical supply chains quickly enough to meet upcoming deadlines. They must rely on software to map and secure their existing networks.

02 The Vulnerability Map: Tier-by-Tier Liability

Regulations and material shortages create compliance risks across the entire supply chain:

EXHIBIT 1

The sub-tier vulnerability map

Supply-chain layer	Exposure identified in the report
Prime contractor	Full legal liability
Tier 1: System integrator	Current manual tracking stops here
Tier 2: Component fabricator	FOCI expansion and NISS eligibility required
Tier 3: Chemical processing	Squeezed by Chinese APT export controls
Tier N: Raw extraction	DFARS 2027 strict prohibition zone

Tier 1 (Prime Contractors): Executive Order 14415 and 10 U.S.C. § 4872 require contractors to submit indentured bills of materials to trace component origins.

Tier 2 (Component Fabricators): Proposed DFARS Part 240 and NDAA provisions require unclassified subcontractors to undergo Foreign Ownership, Control, or Influence (FOCI) disclosures and maintain National Industrial Security System (NISS) eligibility.

Tier 3 (Chemical Processing): Chinese export controls limit access to critical intermediate precursors like APT and tungsten oxides, straining Western manufacturers.

Tier N (Raw Extraction): DFARS 252.225-7052 bans the purchase of covered tungsten from adversarial nations starting January 1, 2027.

03 Regulatory Deadlines vs. Physical Supply

Domestic and allied mining cannot meet this deadline. The U.S. Pilot Mountain project targets first production in Q4 2028. The Canadian Mactung project expects its Final Investment Decision in 2028–2029. Both miss the 2027 statutory cutoff.

EXHIBIT 2

Timeline collision: regulatory deadlines vs. physical supply

Milestone	Date	Report context
China export controls	February 2025	Restrictions on tungsten precursor exports cause global prices to spike.
Expanded oversight	Mid-2026	Proposed DFARS rules address unclassified subcontractors and NISS eligibility.
Tungsten restriction	January 1, 2027	The report’s statutory cutoff for covered tungsten; deeper-tier bills of materials are highlighted.
Pilot Mountain	Q4 2028	U.S. project target for first tungsten production.
Mactung	2028–2029	Canadian project target for a Final Investment Decision.

The report identifies a gap between the regulatory deadline and the development milestones for new domestic and allied supply.

04 The XTRIUM Solution: Automated Supply Chain Mapping

To meet the 2027 deadline and fulfill Tier 2 FOCI requirements, contractors must automate their compliance processes.

EXHIBIT 3

From manual tracking to continuous illumination

Compliance vector	Status quo	XTRIUM
Sub-tier visibility	Manual tracking stops at Tier 1.	Automates mapping down to the raw material.
Foreign ownership (FOCI) checks	Leaves adversarial ownership hidden.	Continuously validates ownership records.
2027 DFARS tungsten ban	Risks legal penalties and delayed contracts.	Instantly verifies bills of materials (BOMs).

Mandated Analytics: Emerging regulations require AI and data analytics to process commercial records and identify hidden ownership structures.

Deep-Tier Visibility: XTRIUM automates mapping from Tier 1 down to the raw material source, replacing manual checks with continuous data validation.

Risk Mitigation: By linking public records, XTRIUM helps contractors identify adversarial funding, clear NISS requirements, and verify their supply chains before regulatory deadlines.

Selected References

I. Statutory Mandates & Regulatory Directives

U.S. Department of Defense. (May 2024). 252.225-7052 Restriction on the Acquisition of Certain Magnets, Tantalum, and Tungsten.

Sahar J. Hafeez, Meghan D. Doherty, Benjamin J. Cote, & Aaron S. Ralph. (August 14, 2026). White House Issues Sweeping Executive Order Targeting Defense Supply Chains and Critical Materials.

Farhad Jalinous, Laura Black, Ryan Brady, David Jividen, Timothy Sensenig, Wes Hutson, Grace Hochstatter, & Norman E. Pashoian III. (May 13, 2026). New DoD proposed rule would impose FOCI disclosure and mitigation obligations on unclassified contracts.

II. Geopolitical Risk & Macroeconomic Data

U.S. Geological Survey. (February 2026). Mineral Commodity Summaries: Tungsten.

III. Allied Supply Chain Timelines

Guardian Metal Resources PLC. (June 2026). Pilot Mountain Project.

U.S. Department of Defense. (July 22, 2025). Department of Defense Awards $6.2 Million to Sustain Critical Production of Tungsten.

Fireweed Metals Corp. (May 26, 2026). Management's Discussion and Analysis For the Three Months Ended March 31, 2026 and 2025.

Fireweed Metals Corp. (2024). Mactung Project.



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