

DEPARTMENT OF WAR SURFACE FREIGHT SECURITY ASSESSMENT

ADDENDUM: DIESEL EMISSIONS COMPLIANCE AS A CONTESTED-LOGISTICS VULNERABILITY

The Emissions Architecture, the Urea Supply Chain, and Their Bleed-Over Into the Department of War Surface Freight Movement

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XXXIX. PURPOSE

The base assessment documented a commercial motor vehicle network compromised in driver credentialing, carrier vetting, cargo integrity, financial responsibility, and identity. This addendum documents a distinct and less-examined vulnerability class that operates below all of those: the diesel emissions architecture itself, and the single foreign-sourced consumable on which that architecture depends.

The finding is direct. Department of War tactical and combat vehicles are lawfully exempt from EPA emissions standards under the national security exemption. The 400-plus commercial carriers and the hundreds of subcontractors and owner-operators that move between 300,000 and 4,000,000 military and government loads a year are not. Every tractor that hauls a JLTV to the seaport, every fuel tanker that services a depot, every flatbed that carries a Family of Medium Tactical Vehicles chassis to a railhead runs an EPA-mandated aftertreatment system that can, by design, reduce that truck to five miles per hour on an interstate shoulder for a fault the driver did not cause and cannot clear. That is a self-inflicted mobility kill switch installed on the civilian fleet the Department depends on for force projection, and it is fed by a diesel exhaust fluid supply chain that runs back to the same adversary nations already documented in this assessment.

The emissions system is not a fraud vector like the chameleon carrier or the hacked FMCSA profile. It is a structural defect. The fraud vectors are parasites on the freight network. The emissions architecture is a designed-in failure mode that the network cannot opt out of, and the urea that keeps it from triggering is a strategic import chokepoint hiding in plain sight in every DEF tank in the DFTS carrier pool.

XL. THE EXEMPTION ASYMMETRY: WHY THE TRUCK IS MORE VULNERABLE THAN THE TANK

The Department of War does not run its combat power through the EPA emissions regime. Tactical military vehicles can be granted a national security exemption from EPA emission standards under 40 CFR 1068.225 and the related fuel and engine provisions. A JLTV, an M1 Abrams transporter, a HEMTT, an MRAP: none of these is required to carry a selective catalytic reduction system that will derate the vehicle if a diesel exhaust fluid quality sensor throws a code. The Department deliberately exempted its own fleet from this failure mode because a fighting vehicle that immobilizes itself on a broken wire in its exhaust plumbing is militarily unacceptable.

The commercial tractor hauling that exempt vehicle to the port of embarkation has no such exemption. It is a Model Year 2010-or-later on-highway diesel, and it carries the full EPA aftertreatment stack: exhaust gas recirculation, a diesel particulate filter, a selective catalytic reduction system, diesel exhaust fluid, and an onboard diagnostic computer whose job is not merely to report faults but to enforce compliance by progressively derating the engine. When that system faults, the truck does not care that the load on the trailer is exempt. It does not care that the load is a Strategic Seaport movement on a fixed sail date. It reduces power, then reduces speed, then, on the next restart, immobilizes the vehicle at approximately five miles per hour until a technician clears the fault.

This is the asymmetry in one sentence: the Department protected its tanks from the emissions kill switch and left it installed on the trucks that carry the tanks. The exemption stops at the trailer hitch.

The derate is not a warning. It is an immobilization sequence.

The inducement strategy built into every compliant on-highway diesel is staged and deliberate. Initial warnings appear as DEF capacity drops. Speed is then capped at 55 miles per hour. As the fault persists or the fluid empties, the engine control module cuts torque output, typically by 25 to 40 percent, so the truck can no longer pull a grade or reach highway speed. On the next engine shutdown and restart in the final stage, the vehicle is limited to roughly five miles per hour and will not restart until the fault is corrected and cleared by a technician with a scan tool. A manageable sensor issue becomes a tow, a repair event, and a load that does not move.

The trigger does not have to be an empty tank. The leading cause of these events is not operator neglect. It is the emissions hardware itself: failed NOx sensors returning false readings, DEF-quality sensors reacting to contamination, crystallized fluid clogging injectors, a failed tank heater in cold weather, or a software state that the OBD reads as tampering. Industry technical guidance is consistent in identifying poor fluid quality and sensor faults, not mechanical breakdown, as the leading causes of preventable SCR malfunctions across all diesel vehicle types. A single penny dropped into a storage tank contaminates 10,000 gallons of DEF. A half-tablespoon of dirt ruins hundreds of gallons. The system that enforces clean-air standards on the DFTS carrier fleet is exquisitely sensitive to conditions unrelated to whether the truck is actually polluting, and it responds to all of them the same way: by parking the truck.

For a force-projection movement, this is not a nuance of environmental compliance. It is an availability problem. The base assessment established that DFTS surface freight already moves through a fragmented subcontracting chain with no carrier continuity and no relationship-based oversight. Layer onto that a fleet-wide, EPA-mandated immobilization mechanism that can trigger on a five-dollar sensor, and the Department has a mobility risk it does not control, cannot exempt away at the load level, and in most cases does not even see until a truck fails to arrive.

XLI. THE GOVERNMENT HAS ALREADY CONCEDED THE DEFECT

This addendum does not have to argue that the derate strategy is a problem. The EPA has already said so, in writing, on its own website. The evidence that the emissions architecture is a readiness liability comes from the regulator that built it.

Beginning in August 2025, the EPA directed manufacturers to stop forcing trucks into immediate limp mode due to low DEF levels. In February 2026, the agency demanded that engine manufacturers turn over DEF system

failure data for independent evaluation; eleven of fourteen manufacturers complied. In March 2026, the EPA announced it would no longer require DEF urea quality sensors on any diesel-powered equipment, and paired that action with savings figures the agency and the Small Business Administration put in the billions. On July 8, 2026, the EPA signed a proposed rule for Model Year 2027 and later heavy-duty highway engines that would replace the SCR derate with an audible and visible notification. The docket is EPA-HQ-OAR-2026-0728. A public hearing was scheduled for July 29 and 30, 2026, with the written comment period running in parallel.

The agency's own language is the finding. On its Diesel Exhaust Fluid page, the EPA states that although the derate strategy was intended to ensure compliance with Tier 4 emissions standards, it "has caused needless frustration, operational delays, and real economic hardship" for farmers, truckers, and equipment operators, and it describes the derate as limiting a vehicle's performance "to nearly inoperable levels (as low as five miles per hour)." Sixteen years after the agency required manufacturers to develop a strategy to slow a loaded truck to five miles per hour on an interstate shoulder, the agency now concedes that the strategy is a defect. Every one of those words applies with more force to a military freight movement than to a farm.

The emergency-vehicle carve-out proves the point.

The EPA already exempted one category of on-highway diesel from the worst of the derate: emergency vehicles. Ambulances and fire apparatus were freed from the immediate-derate regime because a fire truck losing power at a structure fire, or an ambulance derating with a patient aboard, was correctly judged intolerable. The agency has never explained why the same reasoning stops at the ambulance bay door. A commercial tractor carrying munitions from an Army ammunition plant, or hauling a tactical vehicle to a Strategic Seaport on a fixed sail date, is operating in a mission-critical posture that is materially indistinguishable from the emergency-vehicle case the EPA already recognized. The carve-out exists. It simply was not drawn to include the trucks that move national defense freight.

XLII. THE DELETE UNDERGROUND AND THE INTEGRITY OF THE CARRIER POOL

The emissions architecture has produced a second-order effect that maps directly onto the fraud and identity findings in the base assessment: a large, semi-visible population of tampered trucks. When the mandated system is unreliable enough to strand a truck for a sensor fault, a predictable share of operators respond by defeating it. The EPA's Air Enforcement Division has counted on the order of 550,000 deleted diesel pickups. Facebook and Telegram markets advertise emissions-defeat and log-manipulation services, in some documented cases run by the same fleets already flagged in this assessment for ELD tampering.

This creates a compliance fork with no clean branch for DFTS freight. A truck that runs the mandated system faces the readiness risk of an in-transit derate. A truck that deletes the system carries a different risk: it is now operating in known violation of the Clean Air Act, and the civil penalty structure, on the order of \$45,000 per tampered engine and \$4,500 per defeat device, remains fully on the books even under the current administration's decriminalization posture. The deletion is decriminalized at the federal prosecutorial level, not legalized. Every consent decree still binds. California still regulates and enforces independently. A carrier that deletes to keep a military load moving has traded a mobility fault for a legal and financial exposure that, under the post-Montgomery broker-liability regime documented in the base assessment, now reaches up the chain to whoever selected that carrier.

The Department therefore inherits the emissions problem from both directions. Compliant carriers can be immobilized by the system. Non-compliant carriers have defeated the system and are hauling defense freight in open regulatory violation with the attendant litigation exposure. There is no third population. This is the same structural pattern the base assessment identified everywhere else in the network: a mandate that the honest operator cannot reliably satisfy and the dishonest operator simply ignores, with the cost falling on the legitimate carrier and, ultimately, on the mission.

XLIII. THE UREA CHOKEPOINT: A STRATEGIC IMPORT DEPENDENCY IN EVERY DEF TANK

Diesel exhaust fluid is 32.5 percent high-purity urea and 67.5 percent deionized water. The water is domestic. The urea is not, or not reliably. Urea is manufactured from ammonia, which is manufactured from natural gas, and the global export market for it is concentrated in a small number of producer states, several of which are the same nations this assessment has already identified as strategic competitors or adversaries: Russia, Qatar, Saudi Arabia, Algeria, Egypt, and China. In 2023, the single largest source of United States urea imports by value and volume was the Russian Federation, followed by Qatar. China is the world's largest producer.

The United States imports a substantial share of the urea it consumes. The precise on-road DEF fraction moves with fertilizer demand and energy prices because agricultural urea and DEF-grade urea draw from the same global pool. That coupling is the vulnerability. When fertilizer demand spikes or a producer state restricts exports to protect its own farms, the DEF supply tightens at the same time, and there is no separate strategic reserve of DEF-grade urea insulating the trucking fleet from an agricultural or geopolitical shock. The base assessment documented Chinese penetration of ports, cranes, farmland, and logistics-visibility platforms. The urea dependency is the same story told through a different molecule: a consumable that the entire post-2010 diesel fleet requires to move, sourced predominantly from abroad, with no domestic buffer sized to withstand a disruption.

This has already stopped national fleets.

The precedent is documented and recent. In October 2021, China restricted urea exports to protect its domestic fertilizer market. Within weeks, South Korea, which at the time imported nearly all of its DEF-grade urea from China, entered a national crisis. Approximately two million diesel cargo trucks, the backbone of Korean logistics, faced immobilization because, without urea, their SCR systems would cap them at roughly twenty kilometers per hour and eventually prevent them from starting. Truck drivers queued for hours to panic-buy the fluid. Prices jumped more than eighty percent. The Korean government rationed supply, banned resale, and, critically for this assessment, ordered the release of roughly half of the military's stockpile of urea solution to civilians as a loan. A urea shortage forced the Korean defense ministry to draw down a military reserve to keep civilian freight moving. That is the exact bleed-over mechanism this addendum is describing, and it happened to a close United States ally inside a single quarter.

Australia experienced a parallel event in the same window. In December 2021, the same Chinese export restriction triggered an AdBlue crisis that the national road transport association warned could bring the diesel trucking industry to a halt within weeks, with one operator of 250 prime movers projected to run out of AdBlue within a week. The Australian government stood up a national AdBlue Taskforce, mobilized a fleet of liquid tankers, and pushed a domestic manufacturer to ramp DEF production by roughly 800 percent to avert the

shortfall. The warning from that episode was explicit and came from the industry itself: without AdBlue, supermarkets do not receive deliveries, generators do not run, and harvests do not move. The chemical is a single point of failure for a diesel-dependent logistics system.

The United States brushed against the same edge in 2022. The war in Ukraine constrained Russian urea, Gulf Coast chemical plants were still recovering from hurricane damage, and a rail dispute between Union Pacific and a major fuel distributor threatened to impose an embargo on DEF deliveries, which S&P Global estimated could sideline as much as 10% of the national commercial trucking fleet. The crisis was ultimately averted and partly overstated in viral form, but the underlying exposure that made the panic credible was real and has not been remediated. The lesson the domestic market took away, in the words of one fuel-logistics analysis, was that DEF is not just another consumable.

Why does this matter specifically to Department of War freight?

The Department's own combat vehicles are largely insulated because the tactical fleet is exempt and in many cases, does not run SCR at all. But the assessment has already established that the Department does not move its freight on its own trucks. It moves it on the commercial carrier pool, and that pool is 100 percent dependent on DEF for every post-2010 tractor in it. A urea disruption need not touch a single military vehicle to halt military freight. It only has to touch the civilian trucks that carry it. In the contested-logistics framing of the base assessment, urea is a non-kinetic chokepoint that an adversary already controls a meaningful share of, requires no infiltration to exploit, and has already demonstrated the willingness to weaponize against United States allies through ordinary export policy. A country that manufactures the cranes at ten Strategic Seaports and tracks military cargo through LOGINK also sits atop a large share of the global supply of the one fluid without which the DFTS carrier fleet cannot roll.

XLIV. SIGNAL CONVERGENCE: EMISSIONS AS A THREAT SURFACE

Applying the signal-convergence framework from the base assessment, the emissions architecture is not one risk. It is a cluster of convergent risks that share a single root: an EPA-mandated system, installed on the entire civilian fleet the Department depends on, that the Department cannot exempt at the load level and that is fed by an adversary-concentrated import.

Convergent Signal	Bleed-Over Into DOW Freight
In-transit derate	A five-dollar sensor or contaminated DEF can immobilize a loaded tractor to 5 mph on a fixed-sail-date movement. The exempt tactical load on the trailer does not exempt the truck.
Delete underground	~550,000 deleted diesels create a carrier pool split between mobility-risk (compliant) and legal-risk (tampered). Post-Montgomery, the tampered branch now carries broker-selection liability up the chain to Crowley.
Urea import chokepoint	DEF imports the majority of urea from Russia, Qatar, China, and Gulf producers. A fertilizer or geopolitical shock tightens DEF and the truck fleet simultaneously, with no DEF-grade strategic reserve.
Cold-weather / storage failure	DEF freezes at 12 F and degrades above 86 F. Depot and staging-yard storage conditions can crystallize fluid and induce derates on trucks that were compliant at dispatch.

Convergent Signal	Bleed-Over Into DOW Freight
Allied precedent	South Korea drew down a military urea stockpile to keep civilian freight moving (2021). Australia stood up a national taskforce (2021). The bleed-over is documented, not theoretical.

Source: Tea Technologies, emissions and urea supply-chain analysis; EPA Docket EPA-HQ-OAR-2026-0728; open-source reporting 2021-2026.

No single one of these signals would justify treating the emissions system as a security concern. Together, they describe a designed-in, adversary-fed, fleet-wide mobility dependency that sits underneath every finding in the base assessment. The chameleon carrier can be screened out. The hacked profile can be locked down. The derate and the empty DEF tank cannot be vetted away, because they are not fraud. They are the mandated baseline of the fleet the Department hired.

XLV. RECOMMENDATIONS: EMISSIONS AND UREA RESILIENCE FOR DOW FREIGHT

These recommendations extend the base assessment's action list. They are written to accompany recommendations 1 through 10 as items 11 through 15, and are designed for implementation within existing DOD acquisition and USTRANSCOM frameworks.

11. Extend the emergency-vehicle SCR flexibility to DOW mission-critical freight.

The EPA already recognized that mission-critical movement justifies relief from the immediate derate for emergency vehicles. The Department should formally request, through the EPA-HQ-OAR-2026-0728 rulemaking and by direct interagency coordination, that DFTS-tendered defense freight movements on fixed sail dates or carrying Transportation Protective Service loads receive equivalent inducement flexibility. The comment period is open now. The Department is a stakeholder with a documented interest in readiness and should be on the record.

12. Treat DEF as a class of supply and pre-position it at force-projection nodes.

DEF-grade urea solution should be treated as a consumable of strategic interest, not a truck-stop retail item, for freight moving through Strategic Seaports and major depots. Pre-positioned, quality-controlled, ISO 22241-compliant DEF at Charleston, at Red River, at the ammunition plants, and at the major staging yards removes one failure mode entirely for the trucks that matter most, and insulates those specific movements from a national supply shock. The South Korean and Australian precedents show that the alternative is an ad hoc scramble during the disruption, which is precisely when it is hardest.

13. Establish a DEF-grade urea supply-chain assessment as a defense-industrial-base question.

The Remaking American Security framework, cited in the base assessment, documented DOD's lack of visibility into raw materials below the prime contractor. Urea belongs on that list. The Department should commission a supply-chain assessment of DEF-grade urea specifically: import concentration by country of origin, domestic production capacity, the coupling between agricultural and on-road demand, and the size of any buffer relative to a plausible disruption. The finding that the largest single source of U.S. urea imports in 2023 was the Russian Federation is, by itself, sufficient to justify the study.

14. Screen carrier emissions posture in the DOW Approved Carrier Registry.

The registry proposed in base recommendation 1 should capture emissions posture as a data field: whether a carrier's equipment runs compliant aftertreatment, its aftertreatment maintenance discipline, and any history of emissions-related OOS or Clean Air Act enforcement. A tampered fleet is a post-Montgomery liability that flows to the prime, and a fleet with chronic aftertreatment neglect is a mobility risk. Both are now scorable inputs, not blind spots. LoadVerifi's carrier-screening stage can carry this field without new infrastructure.

15. Require aftertreatment-readiness attestation for TPS and hazmat DOW loads.

For the highest-consequence movements, munitions, fuel, and Transportation Protective Service loads, the tendered carrier is required to attest that dispatched equipment carries functioning, maintained emissions systems and adequate onboard DEF for the planned route, with cold-weather provisions where applicable. This is a low-cost paperwork control that closes the specific gap between "the truck was compliant when it left" and "the truck was derated forty miles from the port." It is the emissions analog to the DD Form 626 vehicle inspection that the DTR already requires.

XLVI. CONCLUSION: THE KILL SWITCH THE DEPARTMENT LEFT INSTALLED

The base assessment concluded that the stagecoach robber and the chameleon carrier are the same person, separated by 150 years of technology and nothing else. The emissions finding is of a different kind. It is not a criminal exploiting a gap. It is a defect the government designed, installed on the civilian fleet the Department depends on, exempted its own combat vehicles from, and has now publicly conceded is broken.

The Department of War protected its tanks from the emissions derate and left the switch installed on the trucks that carry the tanks. It fed those trucks a fluid that is mostly imported urea sourced from Russia, Qatar, and China, with no strategic reserve, in a global market that has already stopped two allied national trucking fleets within a single quarter. It did this without ever deciding to, because the exemption was drawn at the vehicle and the dependency lives in the supply chain, and no one assembled the two facts into a single picture.

That assembly is the point of this addendum. An adversary need not breach a single military system to slow a force-projection movement. It needs only to touch the civilian trucks that carry the movement, and it already holds a share of the one consumable without which those trucks cannot roll. The EPA has conceded the derate is a defect. The Korean defense ministry has already drawn down a military stockpile to address a urea shortage. The evidence is not speculative. It is on the record and recent.

The fix requires will, and the window is open. The rulemaking that could extend mission-critical relief to defense freight is now open for comment under docket EPA-HQ-OAR-2026-0728 through the end of July 2026. The Department is a stakeholder in that record whether or not it chooses to appear. The threats documented in the base assessment are not waiting for committees. Neither is the derate, nor is the next urea shock.

APPENDIX D: ADDENDUM SOURCES AND SUPPORTING MATERIAL

- U.S. EPA. Diesel Exhaust Fluid landing page and DEF action timeline (August 2025–March 2026 actions; derate "needless frustration, operational delays, and real economic hardship" language; "as low as five miles per hour"). [epa.gov/regulations-emissions-vehicles-and-engines/diesel-exhaust-fluid](https://www.epa.gov/regulations-emissions-vehicles-and-engines/diesel-exhaust-fluid).
- U.S. EPA. Proposed Rule: Amendments and Nonconformance Penalties for MY2027 and Later Heavy-Duty Highway Engines and Amendments to Inducement Provisions for SCR-Equipped Diesel Engines (signed July 8, 2026). Docket EPA-HQ-OAR-2026-0728. Public hearing July 29–30, 2026.
- 40 CFR 1068.225 and related provisions — national security exemption for military tactical vehicles from EPA emission standards.
- Fleet Maintenance / John Hitch. "EPA digs into DEF derate campaign; demands OEM data." February 2026. (EPA demand for OEM DEF failure data; 11 of 14 manufacturers; fleet-manager survey support for widening derate window.)
- The Autopian. "The U.S. Proposes Deleting Limp Mode Entirely For Running A Diesel Truck With A Broken DEF System." July 2026. (August 2025 limp-mode direction; March 2026 quality-sensor removal; pardons context; ~550,000 deleted pickups.)
- FreightWaves / Jim Allen. "Will This EPA DEF Update Finally End Your Derate Nightmares?" August 2025. (Driver-level derate accounts; sensor and contamination failure modes.)
- Heavy Duty Journal. "SCR System Malfunction: Complete Troubleshooting Guide for DEF Systems." November 2025. (Staged inducement: 55 mph cap to 5 mph limp mode; DEF quality as leading cause of preventable SCR failures; DEF degradation above 86 F.)
- APL Cargo. "My DEF System Light Is On." October 2025. (25–40 percent torque cut in derate progression; 5 mph final inducement; restart lockout until cleared.)
- Rislone. "Diesel Exhaust Fluid Contamination." May 2025. (A single penny contaminates 10,000 gallons of DEF; a half-tablespoon of dirt ruins hundreds of gallons; ISO 22241 sensitivity.)
- TMC / FleetNet America Vertical Benchmarking Program (ATA Technology & Maintenance Council). Aftertreatment systems as a leading and high-cost category of unscheduled roadside repair; wide variance in miles-to-failure across fleets.
- Asia Society Korea. "From 'Clean Diesel' to 'No Diesel': South Korea's Urea Crisis Explained." November 2021.
- Taipei Times. "S Korea's transport, energy industries face urea shortage." November 2021. (Approx. 2 million diesel trucks affected; ~97% of Korean urea imports from China Jan–Sept 2021; defense ministry release of ~half of a 445-tonne military urea stockpile to civilians as a loan.)
- East Asia Forum. "Urea crisis sparks South Korean supply chain revamp." August 2024. (China dependence 71.7% in 2022, rising to 90% in 2023; September 2023 re-disruption; Framework Act supply-chain legislation.)
- CleanTechnica / ABC News Australia. "AdBlue Chemical Shortage Strands Diesel Trucks." December 2021. (National Road Transport Association warning; ~80% of Australian urea from China; operator of 250 prime movers running out within a week.)
- McLardy McShane. "AdBlue shortage highlights the need to protect Australia's supply chain." (December 9, 2021 AdBlue Taskforce; Incitec Pivot ~800% production ramp; SCF 60-tanker mobilization.)
- Newsweek. "Is There a Diesel Exhaust Fuel Shortage in The U.S.?" June 2022. (Russia–Ukraine urea impact; U.S. 2020 urea imports of 4.5 million metric tons, third-largest importer.)
- RVBusiness / S&P Global. May 2022. (Union Pacific–Pilot DEF delivery dispute; S&P Global estimate that rail disruptions could sideline ~10% of the U.S. commercial trucking fleet.)

- Mansfield Energy. "DEF Shortages: What We Learned from 2022, And What's Ahead in 2027." 2025. (China and Russia urea export restrictions; Australia near-stall contrast; "DEF isn't just another consumable.")
- World Bank WITS / UN Comtrade. United States urea imports by partner, 2023 (Russian Federation largest by value and volume, followed by Qatar, Canada, Algeria, Saudi Arabia).
- The Fertilizer Institute. "Fertilizer and the Middle East Conflict." March 2026. (U.S. urea import share of domestic supply ~35%; global export concentration and chokepoint exposure.)