Response Package: SS Dual-View NII Mobile X-ray Inspection Van

Prepared for: U.S. Customs and Border Protection (CBP) - Request for Information (RFI)

Prepared by: VectorScan Mobility Solutions, LLC (VectorScan)

Date: 2026-02-19

1. Company Profile

Legal name	VectorScan Mobility Solutions, LLC
Primary address	1450 Innovation Drive, Suite 300, Arlington, VA 22202, USA
Point of contact	Jordan Reyes, Director of Programs
Phone / Email	+1 (571) 555-0182 / jordan.reyes@vectorscanmobility.com
Business size	Small Business (self-certified for simulation purposes); 48 (full-time equivalent)
DUNS	118374650

2. Vendor Specifications/Capabilities to Fulfill Dual-View NII into a Mobile Platform

VectorScan provides a Commercial-off-the-Shelf (COTS) small-scale dual-view NII module integrated into a road-legal mobile van platform. The proposed configuration is designed to meet the size, weight, tunnel, imaging, and radiation safety performance requirements described in the RFI.

2.1 Key Performance Compliance (Summary)

Requirement (RFI)	VectorScan proposed capability (VS-SSDV)
GVWR not to exceed 11,500 lb	GVWR 11,000 lb; estimated as-delivered weight 10,650 lb
Max vehicle dimensions (over-the-road): L 250 in, W 96 in (no mirrors), H 98 in	L 248 in; W 96 in; H 97.5 in
Max dimensions deployed: L 250 in, W 176 in, H 98 in	L 248 in; W 172 in; H 97.5 in

Tunnel capable of scanning objects up to 1 m wide x 1 m high	Tunnel aperture 1016 mm (W) x 1016 mm (H)
Dual-view imaging (side + top view)	Dual view (top + side) in one pass
Image resolution minimum 36 AWG	>= 36 AWG (meets requirement); typical 38 AWG
Minimum penetration equivalent to 24 mm steel	>= 24 mm steel equivalent (meets requirement); typical 28-30 mm
Radiation dose rate < 0.5 mR/hr at 2 in from cabinet surface	< 0.5 mR/hr at 2 in from cabinet surface (verified by survey during acceptance)

2.2 System Overview

- Mobile platform: low-profile van chassis with integrated scanner bay and fold-down infeed/outfeed conveyors.
- Dual-view NII: synchronized top-view and side-view imaging in a single pass; software provides fused viewing and standard material discrimination palettes.
- Operator station: dual-monitor workstation, ruggedized HMI, local storage, and optional secure network connectivity for reporting.
- Power: shore-power capable with onboard generator option; conditioning and ride-through via online UPS for controlled shutdown.
- Safety: interlocked access panels, emergency stop circuit, warning beacons, and radiation survey verification during acceptance.

2.3 Approach to Incorporating Dual-View NII into a Vehicle (Tasks, Milestones, Deliverables)

VectorScan's integration approach is structured to preserve scanner footprint and serviceability while meeting vehicle constraints:

Phase 0 - Kickoff + requirements confirmation

- Confirm mission profile (duty cycle, locations, storage, staffing).
- Confirm site constraints (parking, access, power, comms) and finalize interface control document (ICD).

Phase 1 - Vehicle + scanner bay design

- Mechanical layout and center-of-gravity plan; vibration isolation concept; maintain service clearances.
- Electrical one-line diagram; generator/shore power integration; grounding/bonding plan.
- Thermal plan for scanner bay and electronics (HVAC sizing, ducting, filtration).

Phase 2 - Build + integration

- Vehicle upfit, scanner installation, harnessing, interlocks, and safety signage.
- Software configuration, image chain verification, and baseline calibration.

Phase 3 - Verification + acceptance

- Factory Acceptance Test (FAT): functional tests, image quality checks, and safety interlock verification.
- Site Acceptance Test / Acceptance Test Procedure (SAT/ATP): deployed set-up, throughput checks, radiation survey, and documentation handover.

Phase 4 - Training + warranty

- Operator and maintainer training delivery (including Train-the-Trainer option).
- Warranty activation and transition to support/SLA operations with ticketing and reporting.

Key deliverables include: mechanical/electrical drawings, ICD, safety plan, FAT report, SAT/ATP package, radiation survey record, operator/maintainer manuals, and training materials.

3. Any Other Pertinent Information Related to the Requirement

- Warranty: 1-year failure-free warranty for the delivered van system (scanner + mobile platform) with defined exclusions (misuse, accidents, unauthorized modifications).
- Training: operator and maintainer training packages, including Train-the-Trainer option and refresher training.
- Serviceability: major LRUs (detectors, conveyor drive, power supplies) are accessible via service panels and designed for field replacement without removing the full scanner assembly.
- Documentation: configuration-controlled manuals, PM checklists, and acceptance test templates; electronic maintenance logs supported.
- Safety and compliance: radiation safety program templates, interlock verification, signage, and survey documentation aligned to applicable federal safety expectations referenced in the RFI.

4. Responses to Integrated Dual-View NII Questions (Q1-Q11)

Q1: In general, what are the technical risks for incorporating dual-view NII into a mobile platform?

Key technical risks include: (a) weight/center-of-gravity growth leading to handling issues or GVWR exceedance; (b) vibration and road shock driving alignment drift, connector fretting, or detector damage; (c) thermal management for X-ray sources, detectors, and compute in high ambient temperatures; (d) power quality (generator transients, brownouts) impacting high-voltage stability and image quality; (e) electromagnetic interference (EMI) from vehicle and generator affecting sensitive detector electronics; (f) maintaining radiation shielding integrity across service panels and seams; (g) maintaining serviceability in a constrained footprint; and (h) regulatory/safety documentation and verification (interlocks, signage, surveys).

Q2: How would the vendor manage and mitigate those risks?

VectorScan mitigates risk through a combination of design controls and verification testing: (a) weight budget management with early weigh-in and center-of-gravity tracking; (b) vibration isolation mounts for the scanner frame and shock-rated connectors/harness routing; (c) bay thermal modeling and HVAC sizing, with temperature

monitoring and alarms; (d) generator/shore-power integration with online UPS conditioning and surge protection; (e) grounding/bonding plan plus EMI shielding practices for HV and detector signal paths; (f) shielding seam design with controlled fastener torque and periodic leakage verification; (g) service access panels and LRU-based maintenance to avoid major disassembly; and (h) FAT + SAT/ATP procedures including radiation survey and interlock functional verification.

Q3: What size vehicle is required for dual view NII integration, and what are the over-the-road dimensions (Length, Height, Width)?

The VS-SSDV configuration uses a low-profile van platform sized to stay within the RFI maximum over-the-road envelope.

Over-the-road dimensions (nominal): Length 248 in; Width 96 in (without mirrors); Height 97.5 in (including low-profile climate system).

Q4: What are the dimensions of the proposed vehicle in deployed configuration (Length, Height, Width)?

In deployed configuration the infeed and outfeed conveyor sections fold down and extend laterally while maintaining the RFI deployed envelope.

Deployed dimensions (nominal): Length 248 in; Width 172 in; Height 97.5 in.

Q5: What is the gross vehicular weight of the proposed vehicle?

Gross Vehicle Weight Rating (GVWR): 11,000 lb.

Estimated as-delivered weight (scanner installed, fuel, typical kit): 10,650 lb (subject to final configuration and options).

Q6: What are the tunnel dimensions of the dual-view NII to be integrated in your vehicle?

Tunnel aperture (nominal): 1016 mm (W) x 1016 mm (H).

The system is designed to scan objects up to 1,000 mm wide x 1,000 mm high while maintaining image quality and shielding performance.

Q7: What are the power requirements for the dual-view x-ray inspection vehicle?

Shore power: 208 VAC, 1-phase, 60 Hz, 40 A (max) or 120/240 VAC split-phase, 50 A.

Onboard power option: 12 kW diesel generator with automatic transfer switch (ATS).

Electrical load: 6-8 kW (typical, including HVAC) average during typical operation; 10-12 kW (short duration) peak for short durations (start-up/transients).

Power conditioning: online UPS for workstation and controlled shutdown; surge protection and grounding/bonding per electrical design.

Q8: What are the conveyor belt dimensions (width, length, height from ground) for the proposed dual-view NII?

Belt width: 1000 mm.

Total belt length (infeed + tunnel + outfeed): 3600 mm.

Belt height from ground: 850-950 (adjustable; nominal 900) mm.

Q9: What is the maximum width of baggage and parcels to be inspected?

Maximum object width: 1000 mm (nominal), consistent with the 1 m tunnel aperture.

Operational note: objects should be centered on the belt; guide rails may be adjusted to control presentation for consistent imaging.

Q10: What is the maximum weight of baggage and parcels to be inspected by the proposed dual-view NII?

Maximum inspected object weight: up to 200 kg distributed load on the conveyor (nominal).

Operational note: extremely dense items may reduce effective penetration and may require re-scan at lower belt speed per SOP.

Q11: What are the minimum and maximum operating temperatures of the proposed system?

Operating ambient temperature range (scanner functional): 0 to 40 C (32 to 104 F).

Storage (non-operating): -20 to 55 C (-4 to 131 F).

Mobile platform note: the van includes climate control to maintain the scanner bay within its operating range during duty cycles.

Appendix A: Technical Specification Summary (One-Page)

Parameter	Proposed VS-SSDV configuration
Vehicle (over-the-road)	L 248 in; W 96 in; H 97.5 in

Vehicle (deployed)	L 248 in; W 172 in; H 97.5 in
GVWR / est. delivered	11,000 lb / 10,650 lb
Tunnel aperture	1016 mm (W) x 1016 mm (H)
Conveyor	W 1000 mm; L 3600 mm; Height 850-950 (adjustable; nominal 900) mm
Power	208 VAC, 1-phase, 60 Hz, 40 A (max) or 120/240 VAC split-phase, 50 A; generator option: 12 kW diesel generator with automatic transfer switch (ATS)
Image performance	Dual view; >= 36 AWG (meets requirement); typical 38 AWG; >= 24 mm steel equivalent (meets requirement); typical 28-30 mm
Radiation safety	< 0.5 mR/hr at 2 in from cabinet surface (verified by survey during acceptance)
Operating temperature	0 to 40 C
Max object size/weight	Up to 1000 mm width; up to 200 kg on conveyor