

SPECIFICATION

Freight Vehicle for the transportation of radioactive packages

1. Scope

This specification describes the requirements for a Freight Vehicle (Vehicle) designed for the safe and secure transport of category 1 and below radioactive sources. The Vehicles will be used by the Izotop Company (“The End-User”). The construction of the Vehicle shall be such to be capable to carry radioactive material [specifically: special form of radioactive material, non-special form of radioactive material, limited quantity of radioactive material, low specific activity material, surface contaminated objects, fissile material] packed in their respective packages [excepted, industrial, type A, type B(U), type B(M)] and to be compatible with Ukrainian national safety and security transport requirements or IAEA Regulations for the Safe Transport of Radioactive Material SSR-6 Rev.1 and the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

2. Requirements

2.1. Functional and Performance Requirements

The Vehicle shall meet the following functional and performance requirements:

- 2.1.1. The Vehicle shall be new (not pre-owned) and fore fill Ukraine’s road and safety regulations (e.g.: selection of the driver side, seat belts, etc.) as well as the availability of a local service providers with spare parts stocks and maintenance services. The Vehicle shall consist of a tractor and a trailer (tautliner).
- 2.1.2. The Vehicle shall have the capability to move on streets and limited unimproved surfaced roads. The engine layout, tires, isolation of the chassis, heating and cooling systems shall be according to the climate conditions of Ukraine to guaranty the mobility of the Vehicle and to provide pleasant temperature in the driver compartment, independently on the season, weather conditions and location. The climatic operating temperatures for the Vehicle and equipment shall cover a temperature range from minus 25° C to plus 40° Celsius.
- 2.1.3. The Vehicle shall provide sufficient power autonomy for operating the physical protection systems during the loading and unloading operations for up to twelve (12) hours.
- 2.1.4. The vehicle shall comprise of a tractor and standard curtain sided flatbed trailer.

2.2. Technical Requirements of the tractor

The Tractor shall meet the following technical requirements:

2.2.1. Vehicle use:

- a) Road condition: Smooth with limited unimproved surface roads.

2.2.2. Core components:

- a) Maximum gross combination weight rating: 40 000 kg;
- b) Number of axles: 2-axle;
- c) Front axle design capacity ≥ 7.0 tonne;
- d) Rear axle design capacity ≥ 10 tonne;
- e) Cab - Sleeper (one bed)- all-steel safety cage design with roof-mounted emergency escape hatch;
- f) Fuel tank capacity ≥ 700 l;
- a) Engine power: ≥ 400 HP;
- b) Type of fuel: Diesel;
- c) Emission level - Euro VI is preferred (but Euro V could be acceptable in case Euro VI is not available);
- d) Gear box: automated mechanical.

2.2.3. Wheels and tyres:

- a) Set winter tires sets on steel rims and a set of summer tires;
- b) one (1) spare wheel with tyre, including supporting tools for replacing wheels (carjack, wheel wrench, etc.).

2.2.4. Driveline equipment:

- c) Transmission: four (4) x two (2)-wheel drive;
- d) Air compressor ≥ 500 l per minute;
- e) Tachograph;
- f) Cab Climate Unit - Manual air conditioning.

2.2.5 Cab exterior:

- a) Colour: white;
- b) Covering sheet for the windows in the cockpit to protect against sunshine and views from outside in accordance with the respective Ukraine legislation;
- c) Front fog lights.

2.2.6 Superstructure preparations:

- a) Fifth wheel mount - 50mm L profiles with 10mm ISO plate;
- b) Trailer detection.

2.3. Technical Requirements of the Trailer

The Trailer shall meet the following technical requirements:

- a) 2 axle/8-wheel;
- b) Tautliner;
- c) Load capacity: 24.5 tonne;
- d) length of 13600 mm;
- e) height of 27000 mm and a width of 2400 mm;
- f) Secured kingpin;
- g) Surface of the trailer shall be able to be decontaminated easily – no flammable surface;
- h) Tie-down points are required on the trailer cargo bed.

2.3.1 Vehicle Physical Protection System requirements:

- a) Navigation and GPS enabled tracking system of the vehicle with upgrade capability for the region of Ukraine. The tracking system shall include secure SDK and documentation files with secure API to be interfaced with the Operator's Transport Control Center.
- b) Crew compartment intrusion system that provides the status of the cab and trailer. The system shall be capable of sending alarm notifications that reports to a vehicle Transport Control Center in with activating an external siren and flashlight;
- c) Automatic locking system of the cab doors to include two (2) remote/electronic keys to lock/unlock and activate/deactivate the crew compartment security system;
- d) Secured kingpin;
- e) Remote engine immobilizer that can be initiated by the driver or the Operator's Transport Control Center.

2.3.2. Communication requirement:

- a) Driver duress system that the driver can activate in the event of an emergency – be integrated with the siren and flashlight and send signals to Transport Control Center in IZOTOP as a call for emergency response.
- b) Mobile communication based on GPRS/UMTS telecommunication system (frequencies according to end-user country) incl. 3G/UMTS/GSM mobile outdoor antenna for roof mounting.
- c) Voice interlink communication for the crew inside and outside the Vehicle,

- i. Radio frequencies according to Ukrainian regulations
- ii. Minimum range 3 km
- iii. Two radio units with docking station for charging
- iv. Two headsets (connection to radios by cables)

3. Safety Requirements

The Vehicle shall comply with Ukrainian national safety and security transport regulations or the IAEA Regulations for the Safe Transport of Radioactive Material SSR-6 Rev.1 and the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). The Vehicle shall be equipped with:

- a) Placards holders on the sides and rear of the Vehicle with Placards for radioactive material of Class 7 in required dimensions, configuration and language per ADR (2 sets of stainless steel and/or aluminium placards to be provided);
- b) At least 2 easily accessible extinguishers (dry powder), with minimum total capacity of 12 kg (at least one extinguisher suitable for engine or cabin fire with minimum capacity of 2 kg placed in the cabin, and additional extinguisher(s) - at least one with minimum capacity of 6 kg);
- c) Plate holders on the front and rear of the Vehicle for orange-coloured plate in required dimension and configuration per ADR.

4. Delivery

The shipment to the End-User's premises could be organized by the Contractor. The Contractor should submit as part of the financial proposal a separate line for the DAP delivery of the goods to Kiev, Ukraine. If not, the Contractor shall submit as part of the financial proposal a separate line for the FCA supplier's warehouse delivery.

5. Design Requirements

The contractor shall introduce his design based on the requirements listed in the SOW as well the guide annexure, IAEA-End-user and SNRIU shall approve the design before the implementation and the delivery of the project.

6. Quality Requirements

- a) The Vehicle shall be manufactured, shipped in accordance with the Contractor's (manufacturer's) ISO quality assurance system or an equivalent quality assurance system.
- b) The Contractor shall document the compliance with this quality assurance system.

7. Testing and Acceptance

Upon the Vehicle delivery by the Contractor to the End-User, Contractor shall nominate a technical representative(s) for a period of at least three (3) working days to participate in Acceptance Testing of Vehicle and equipment at the End-User's location.

The results of the testing of the Vehicle shall be documented by the Contractor in an acceptance protocol that shall be signed by the representative of the End-User.

8. Training

The Contractor shall arrange for the training of the End-User's personnel:

Technical personnel training to include one (1) vehicle mechanics and one (1) physical protection systems mechanic training for three (3) days as part of the 'testing and acceptance' process (mentioned in point 7) at the end-user's premises. The three-day training shall be covering repair /replacement of the various original components likely to fail, and also the up graded kit items like the brake, suspension and transparent armour, and complete hydraulic and electrical system (operable window, etc.).

9. Deliverable Data Items

The Contractor shall provide two complete sets of operation and servicing manuals and technical drawings in Ukrainian language.