



## SPECIFICATION

### Physical Protection systems upgrade for a Specialized Cargo Vehicle

## 1 Scope

- 1.1. This specification describes the requirements for the supply and installation of a Physical Security System (PSS) for a cargo vehicle designed for the secure transport of category 1-5 radioactive material sources.
- 1.2. The PSS shall be installed in an existing cargo vehicle, as specified in Section 3 of the Specification.

## 2 Applicable documents and Abbreviations

### 2.1. Applicable documents

The documents that are applicable for work specified herein are available to the Contractor:

The IAEA transport security guidance Nuclear Security Series # 9-G.

[[https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1348\\_web.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1348_web.pdf)]

Standard: ASTM A413 & NACM

[<https://www.astm.org/DATABASE.CART/WORKITEMS/WK68282.htm>]

### 2.2. List of Abbreviations

The following definitions, acronyms, and abbreviations shall apply throughout this document unless defined otherwise hereinafter:

PSS	Physical Security System
IANP/End-user	Institute for Applied Nuclear Physics, University of Tirana, Albania.
GPS	Global Positioning System
UMTS	Universal Mobile Telecommunications System
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communication
UN	United Nation
ISO	International Organization for Standardization
SPEC	Specification
Vehicle	VW Crafter vehicle belonging to IANP
[installation]	Means supply and installation of the supplied equipment
[upgrade]	Means the upgrade of an existing items with added functionalities or technical capabilities



### 3 Details of the End-User Vehicle

The PSS shall be installed in a VW Crafter (see Annex 1) vehicle belonging to the Institute of Applied Nuclear Physics University (INAP) of Tirana in Albania (the end-User) with the following specifics:

- 3.1. Driver cabin – shall host the driver and co-driver for all transport operations.
- 3.2. Rear/Cargo compartment – shall function as the primary cargo areas.
- 3.3. Enough electrical power shall be provided for the operation of all additional equipment at the same time, e.g. PSS, communications systems and for loading and unloading activities. Any electrical upgrades shall be included in the quotation, if required.

### 4 Technical Requirements

The Contractor shall install the PSS into the Vehicle as a full-fledged solution with the following components and functionalities:

#### 4.1 Driver Cabin requirements

- 4.1.1 The Contractor shall install navigation and GPS enabled tracking system of the vehicle with upgrade capability for the region of the End-User, to be connected to the Central Alarm Station at IANP for real time tracking of the vehicle [installation].
- 4.1.2 The Contractor shall install a crew compartment intrusion system that monitors the status of the driver compartment with alarm notification capability to report to the Central Alarm Station at the IANP [installation].
- 4.1.3 Air conditioning & climate control: the Contractor shall ensure that the existing climate control system has sufficient capacity to dissipate the heat generated by the new equipment [upgrade].
- 4.1.4 The Contractor shall install removable covering sheets for the windows in the cockpit to protect against sunshine and views from outside [installation].
- 4.1.5 The Contractor shall install an automatic locking system of the doors to include (2) remote operated FOBs to lock/unlock and activate/deactivate crew compartment security system [installation].
- 4.1.6 The Contractor shall install a remote engine immobilizer that can be initiated by the driver and/or the Operator's transport control center and/or other monitoring location [installation].
- 4.1.7 The Contractor shall install a control panel at Driver Cabin to activate and deactivate rear cargo compartment security system [installation].
- 4.1.8 The Contractor shall install an outward facing (Dash-cam) digital camera located in the dashboard area or another to be agreed upon location (by End-User) [installation].
- 4.1.9 The Contractor shall install removable wooden floor coverings for the bottom, side and rear doors of the vehicle like in the picture in Annex 1 [installation].



## 4.2 Cargo Compartment Requirements

The Contractor shall remodel the Cargo Compartment with the following installations and fixtures providing the following functionalities:

### 4.2.1 Interior:

- 4.2.1.1 The Cargo restraint system shall include at least 8 tie-down points for the cargo on the floor of the cargo compartment. Each tie down point shall have a working load limit of 800kg [installation].
- 4.2.1.2 Eight (8) adjustable Cargo restraint chains (Grade 43 High Test Chain<sup>1</sup> or equivalent – 5/16 inches) with heavy duty locks for each chain [installation].
- 4.2.1.3 One (1) fire extinguisher with fixation near the entrance of the cargo area [installation].
- 4.2.1.4 A four (4) mm thick lead panel to be secured along the separation wall between the crew compartment and cargo area. This panel shall be able to be removed as necessary [installation].
- 4.2.1.5 There shall be a heat and smoke sensor that can alarm locally to the crew compartment [installation].
- 4.2.1.6 An interior compartment light [installation].
- 4.2.1.7 Surface material of the cargo space shall be easily decontaminated [installation].

### 4.2.2 Exterior:

- 4.2.1.8 Placard holders for appropriate dangerous goods (class 7 Radioactive material). shall be installed on each side and rear cargo door [installation].
- 4.2.1.9 UN number plate holders shall be installed on the front and rear of the vehicle [installation].

## 4.3 Physical Protection System Technical requirements:

The Contractor shall provide the PSS in the cargo compartment with the following technical capabilities:

- 4.3.1 Cargo Compartment Intrusion system that provides the status of the doors, both when they are open and unsecure and when the doors are closed and secure with an alarm notification capability to report to the Central Alarm Station at the IANP [installation].
- 4.3.2 Motion Detection Sensors inside the backside of the vehicle (for detecting every intrusion and external entry inside the vehicle expect

<sup>1</sup> Standard: ASTM A413 & NACM



the authorized personnel connected with the alarm system) [installation].

- 4.3.3 Camera system inside and outside of the vehicle (for image recording during transport of radioactive materials). The number of cameras installed shall be dependent on the presented solution [installation].
- 4.3.4 Heavy duty locking mechanism for the cargo compartment (with shackles at least 8mm, made with boron steel and shrouded shackles) [installation].
- 4.3.5 Reinforced door (heavy duty) hinges) [installation].
- 4.3.6 Heavy duty locking mechanisms, (with shackles at least 8mm, made with boron steel and shrouded shackles) for the doors [installation].

#### **4.4 Communication requirement:**

The Contractor shall provide the communication system in the cargo compartment with the following technical capabilities:

- 4.4.1 Driver duress system (emergency button) that the operator can activate in the event of an emergency - signals a call for emergency response, from the Central Alarm Station at IANP [installation].
- 4.4.2 Mobile communication based on GPRS/UMTS telecommunication system (frequencies according to end-user country) incl. 3G/UMTS/GSM mobile outdoor antenna for roof mounting [installation].
- 4.4.3 Voice interlink communication for the crew inside and outside the vehicle [installation]:
  - 4.4.3.1 radio frequencies according to countries regulations;
  - 4.4.3.2 minimum range shall be 3 km;
  - 4.4.3.3 two radio units with docking station for charging;
  - 4.4.3.4 two headsets (connection to radios by cables).

#### **4.5 Vehicle Crane**

The Contractor shall provide a vehicle crane with the maximum of 600 KG for handling, lifting and loading pallets [installation].

## **5 Marking**

The Contractor shall supply and install for the vehicle:

- 5.1 All safety markings (2 sets of stainless steel and/or aluminium).
  - 5.1.1 Class 7 placards (see Annex 2) on the sides and rear of the vehicle in required language per local law.
  - 5.1.2 Orange UN number plates on the front and rear of the vehicle.
- 5.2 All instruments shall be clearly marked with designation of the type, model, manufacturer and serial number.



## 6 Quality Requirements

6.1 The PSS equipment and System shall be configured, shipped and installed in accordance with the Contractor's ISO quality assurance system (ISO 9000) or an equivalent quality assurance system.

6.2 The Contractor shall document the compliance with this quality assurance system.

## 7 Testing and Acceptance

7.1 The PSS, prior to shipment, shall be tested for conformance with manufacturer's performance specifications and the minimum requirements specified herein.

7.2 The PSS, before delivery, shall be tested by the Contractor together with representatives from the IAEA and the End-User to demonstrate that the performance meets the manufacturer's performance specifications and the minimum requirements specified herein as determined by the IAEA and the End-User.

7.3 The 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.

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

## 8 Installation and Training

8.1 The Contractor shall arrange for training of maximum 5 End User personnel:

8.2 The technical personnel training shall include the PSS, communications system and crane for five (5) days, covering operation, maintenance, repair and replacement of the provided components.

## 9 Warranty

The warranty period shall commence from the date of the final acceptance for completion of work by the Republic of Albania as specified below.

9.1 Security systems: The Contractor shall provide standard two (2) years of full warranty, including parts service, labor cost and maintenance, for installed equipment.

## 10 Deliverable Data Items

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





**1. Annex 1 (This is the actual vehicle that shall be customized)**

Vehicle Model: Volkswagen Crafter. Build year: 2016. Engine 2.0 L Diesel.  
Single tyre at the back side. Total weight: 3500 kg, 2 Passenger seats, 2 Axles,  
Transmission: Manual transmission.





## 2. Annex 2



END