

No. IV-20011/23/2009-Prov.I  
Government of India  
Ministry of Home Affairs

26, Man Singh Road, Jaisalmer House,  
New Delhi, 10.7.2009


To

The DGs: Assam Rifles/BSF/CISF/CRPF/ITBP/NSG/SSB/BPR&D

Subject:- QRs/Technical Specifications of the Mobile Surveillance Vehicle (MSV)

The QRs/ Technical Specifications of the Mobile Surveillance Vehicle (MSV) as per Annexure, has been accepted by the Competent Authority in MHA.

2. Henceforth, all the CPMFs should procure the above items required by them strictly as per the laid down Technical Specifications/QRs.

  
10/7/09.

(R.S.Sharma)  
Director (Prov)

Copy to:-

DD(Procurement),MHA

Copy for information to:-

PS to JS(PM),MHA

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**QRs/specifications of Mobile Surveillance Vehicle (MSV)**

The system should have the following features/capabilities: -	
1	Real time capability to detect, recognize, and Reticule based pin-pointing of multiple target locations simultaneously during scanning of selected Sensors/Panoramas in the Intruder Alarm System.
2	24-hour reconnaissance and surveillance capability
3	Digital display and control panel along with PC based video recording capability of minimum 200 hours on a variable recording rate from 15 frames per second to 01 frame per 5 seconds with date & time on screen display, and a facility to further make soft copies of user-selected durations of video recording. Manual Start & Stop facility for recording during surveillance other than scanning mode should be provided.
4	Dewar Detector Cooler (DDC) system with Starring Array detector configuration of minimum 320 x 240 elements matrix.
5	The day & night camera and control & display unit should be ruggedised as per mil specification to withstand vehicle-based movement. Control Unit should have provision of external video output (PAL-625 lines).
6	Stabilization of picture quality is required when the vehicle is steady
7	The system should work at wind velocity up to 80 km ph from all directions.
8	The system should work in temperature range of -20°C to +50°C.
9	The system should be able to operate up to relative humidity of 95%.
10	The surveillance E/O payloads including mast should be less than 150 Kg and should comply with IP-65 or MIL-STD-810E environmental standards.
11	The system should be able to work on commercial mains supply and generator through on line redundant UPS with battery back up of 2 hours.
12	The surveillance payload should be deployable on a tripod up to 100 mtr away from the vehicle.
13	Engineering support package for 08 years should be provided. This needs to be listed out by the vendor. Also warranty of system should be min 02 years.
14	The MTBF of the integrated system should be 2,000 hrs minimum.
15	The integrated MSV should be made available for field trials along with firm's technical Rep for a period of not less than three months to test the following aspects: - i) System integration ii) Reliability - 95% successful running of system and satisfactory performance when run 10 hours daily for 3 months. iii) Effect of shock, vibration and movement. iv) Effect of environment like dust, temperature and rain. <b>All of the above in compliance with IP-65 or MIL-STD-810E</b>
16	Colour CCD Day Camera should have: - i) Stabilization of image. ii) High resolution colour CCD, 1/4" (min) sensor iii) 7, 40,000 pixels clarity or better: - iv) Auto Exposure with - Automatic gain control (AGC) - Automatic White Balance (AWB) - Automatic Electronic Shutter v) Field of view: - a) Wide FoV (WFoV) 25 X 18 (min) b) Narrow FoV (NFoV) 2.0 X 1.5 (max) vi) Zoom: - a) Optical Zoom 24 x (Min) b) Digital Zoom 8 x (Min) vii) Range for human target: - a) Detection Range - 6 Km (Min) b) Recognition Range - 3 Km (Min) viii) Manual & Auto Focus throughout the entire zoom ix) Graphics over Video.

17	<p>Night Camera should have</p> <ul style="list-style-type: none"> <li>i) Video Format CCIR/PAL</li> <li>ii) Sensor Sensitivity of 3-5 or 8-12 <math>\mu\text{m}</math> wavelength</li> <li>iii) Range for human target: -             <ul style="list-style-type: none"> <li>a) Detection Range - 6 Km (Min)</li> <li>b) Recognition Range - 3 Km (Min)</li> </ul> </li> <li>iv) Optical parameters with             <ul style="list-style-type: none"> <li>a) Zooming facility of minimum X 8 from 20 to 250 mm FI (Min )</li> <li>b) Electronic Zoom of 2x (Min)</li> <li>c) Wide FoV 12.5° x 10° (Min)</li> <li>d) Narrow FoV 1.25° x 1.5° (Max)</li> <li>v) Image enhancement feature.</li> <li>vi) Automatic Gain Control (AGC).</li> <li>vii) Manual &amp; Auto Focus throughout the entire zoom.</li> <li>viii) Initialization time should be less than 8 minutes. Ready time from Standby mode to on mode should be less than 1 minute.</li> </ul> </li> </ul>
18	<p>Eye Safe Laser Range Finder (LRF) should have</p> <p>Laser Classification - Class-1. Should be eye safe under all conditions.</p> <p>Range - 80 mtr (Min) to not less than 20 km-(Vehicle size 4 x 2.3m; reflectivity 30% ; visibility 23 Kms ; Measured Range 6 Km (minimum))</p>
19	<p>Pan &amp; Tilt Sensor Platform should have</p> <p>Vertical movement plus + 60° to - 25°</p> <p>Horizontal movement - Should cover 360°</p>
20	<p>Intruder Detection System (Video Management Software):-</p> <p>Video Management Software (VMS) should have the following features:-</p> <ul style="list-style-type: none"> <li>i) VMS should automatically get activated when the EO System is in scanning mode or the camera is in scanning mode with a provision for Manual selection of either Day or night camera or both for scanning in user-defined positions, user-defined Sectors (up to 180°) and the panorama (360°). There should be an additional provision to view the day and night camera videos simultaneously on the same screen during Surveillance as well as Scanning mode.</li> <li>ii) For the E/O payload, there should be a provision to adjust the selectable rate of scanning in a continuous way, from slow through medium to fast.</li> <li>iii) The system should give audio Alarm and simultaneously reticule based pin pointing of multiple targets at the recognition ranges, which are separately specified for day and night cameras during scanning. False alarm rate for Day as well as Night camera detection should not be more than 5%.</li> <li>iv) Auto tracking of detected target should be provided when required manually by simply selecting the potential target for auto tracking among the multiple targets. Recording of the detection should be activated immediately with the detection of target during scanning mode and the system should be capable to display history of the area in sequences of last few frames for better orientation of the intruder's motion, his direction and typical behavior.</li> <li>v) Auto Northing of the system should be activated during initialization process with the help of In-built WAAS enabled Global Positioning System and Digital Magnetic Compass. The position of the detected target should be shown in user-defined co-ordinate system by the software either in Latitude/Longitude or in Indian Grid Reference System.</li> <li>vi) There should be a provision of Storing, retrieval and deletion of parts of the recorded video as per the user-requirement.</li> </ul>
21	<p>Pneumatic/Electrically/Hydraulic Operated Sensor Mast System: -</p> <ul style="list-style-type: none"> <li>i) The mast system should be fitted on to the vehicle for providing elevation to the day and night cameras fitted on Pan &amp; Tilt based platform. The mast should be either Pneumatic or electrically or hydraulic operated. The mast should provide a minimum elevation of 5½ mtr from the ground and should be unguided. Height of the mast in retracted position should not be more than 2.5 mtr from the ground. Mast should be external to the vehicle body.</li> <li>ii) The control unit should consist of a Keyboard and a joystick. It should be able to control all functionalities of the integrated system. The LCD display panel should be of 17" size for the workstation.</li> </ul>

22	<p>Radio Communication System: - Appropriate VHF Radio communication equipment held in the Forces could be installed/carried depending on the tasking of MSV. (Motorola GM-300 &amp; GM-338 up to 25 Watt in case of 13 SF)</p>
23	<p>Vehicle requirement: -</p> <ul style="list-style-type: none"><li>i) A medium vehicle with cross-country mobility with 4-wheel drive.</li><li>ii) Vehicle and mounted equipments should be of camouflage colour.</li><li>iii) Should have cabin of comfortable size.</li><li>iv) Fuel tank capacity of minimum 90 liter (diesel).</li><li>v) Power – minimum 52.5 KW at range of 2500 to 3000 RPM.</li><li>vi) Gradability : Minimum 30°</li><li>vii) Gear box : Minimum 4 forward 1 reverse- in 4x4 mode</li><li>viii) Steering : Power steering</li><li>ix) Ground Clearance-minimum 210 mm.</li><li>x) Control panel and workstation should be just behind the driver's seat.</li><li>xi) Should have provision for sitting of minimum 8 persons including the driver. Two revolving chairs in front of control panel/work station should be provided.</li><li>xii) Two foldable berths of size 6.5 x 2 feet should be provided for rest of troops.</li><li>xiii) Two doors one each on the side of the driver and co-driver's side should be provided.</li><li>xiv) Industrial tinted glass panel windows of size 1' x 1' sliding type three on each side and one in back should be provided.</li><li>xv) Maximum boot space is to be provided in the under belly and cabin of the vehicle.</li><li>xvi) Should have drinking water tank of min 100 liters capacity.</li><li>xvii) A silent Diesel Gen Set of minimum 7.5 KVA for running of equipment through UPS and Air Conditioner, mounted on rail platform in rear end of vehicle should be provided with facility of easy mounting and dismounting with fuel tank capacity of min 50 liter.</li><li>xviii) An additional fuel tank of 50-liter capacity for Gen set should be provided for storage.</li><li>xix) Minimum four cupboards of size 2' x 1' with lock and key should be provided to keep personal belongings.</li><li>xx) Industrial type of ladder in the back of the vehicle should be provided to facilitate repair and maintenance of mounted equipments.</li><li>xxi) Interior of the cabin should be aesthetic looking and comfortable.</li><li>xxii) The vehicle should be air-conditioned with uniform cooling and heating mechanism through ducting system with temperature ranges of 20°C to 25°C. An air exhaust facility while air conditioner is switched-off should be provided.</li><li>xxiii) 4 hydraulic jacks to be provided for stabilization and to reduce disturbance to the surveillance system when vehicle is steady.</li><li>xxiv) Carrier should be provided on the roof of the vehicle.</li><li>xxv) Lightening protection should be provided.</li><li>xxvi) Suspension System should be suitable for sophisticated on-board equipment.</li><li>xxvii) Stability to drive with full payload on a gradient of minimum 30° and slide slope of minimum 15°.</li><li>xxviii) CMVR/approval in case for registration with civil RTO/ in case of foreign vehicle registration of the concerned country.</li></ul>