

**DIRECTOR GENERAL BORDER SECURITY FORCE**  
**(PROVISIONING DIRECTORATE (MOD CELL))**

**Expression of Interest**

Commandant (Ord)  
 HQ DG BSF, Prov Dte (Ord Sec)  
 Block No. 10, CGO Complex  
 Lodhi Road, New Delhi  
 (Tele/Fax No. 011-24367683)  
 Mail id: [comdtord@bsf.nic.in](mailto:comdtord@bsf.nic.in)

The Sub-group of Technical Experts on Surveillance Equipment's constituted by MHA vide their letter No. IV-1017/18/2001-Prov-I dated 05 Jul 2002 held its meeting at BSF Headquarters on 15<sup>th</sup> May 2017 to formulate the QRs of '**Vehicle Mounted Surveillance System**'.

After detailed deliberations the referred Sub-group has formulated the QRs of '**Vehicle Mounted Surveillance System**' which are as under:-

**Qualitative Requirements/specification of Vehicle Mounted Surveillance System**

| S.No | Specification   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
|------|---|---|--|------------------|------------------------------------|--|---------------------------------|---|---------------------------------------|---|--------------------------------|---|----------------------------------|---|--|----|---------------------------------|----------|---|---|------------|--|---|--|--|----|------------------|
| 01.  | Vehicle mounted Surveillance system consists of Day and Night cameras, inbuilt DMC & GPS , LRF, control & Display unit and telescopic mast, mounted on the vehicle offered by the firm.   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| 02.  | <p><b>Colour Camera</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">a</td> <td>CMOS/CCD Colour camera</td> </tr> <tr> <td style="text-align: center;">b</td> <td>Resolution-640 x 480 or better</td> </tr> <tr> <td style="text-align: center;">c</td> <td>Auto and manual focus mechanism</td> </tr> <tr> <td style="text-align: center;">d</td> <td>Optical magnification: 20x or better.</td> </tr> <tr> <td style="text-align: center;">e</td> <td>Digital magnification : 2x,4x.</td> </tr> <tr> <td style="text-align: center;">f</td> <td>Inbuilt electronic stabilization</td> </tr> <tr> <td style="text-align: center;">h</td> <td> <p><b>Range</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">i)</td> <td>Detection of human target : 5km</td> </tr> <tr> <td style="text-align: center;">ii)</td> <td>Recognition of human target- 2.5km</td> </tr> </table> </td> </tr> </table>  | a   | CMOS/CCD Colour camera                 | b                | Resolution-640 x 480 or better     | c  | Auto and manual focus mechanism | d | Optical magnification: 20x or better. | e | Digital magnification : 2x,4x. | f   | Inbuilt electronic stabilization | h | <p><b>Range</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">i)</td> <td>Detection of human target : 5km</td> </tr> <tr> <td style="text-align: center;">ii)</td> <td>Recognition of human target- 2.5km</td> </tr> </table> | i) | Detection of human target : 5km | ii)      | Recognition of human target- 2.5km        |   |            |  |   |  |  |    |                  |
| a    | CMOS/CCD Colour camera  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| b    | Resolution-640 x 480 or better  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| c    | Auto and manual focus mechanism   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| d    | Optical magnification: 20x or better.   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| e    | Digital magnification : 2x,4x.  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| f    | Inbuilt electronic stabilization  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| h    | <p><b>Range</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">i)</td> <td>Detection of human target : 5km</td> </tr> <tr> <td style="text-align: center;">ii)</td> <td>Recognition of human target- 2.5km</td> </tr> </table>  | i)  | Detection of human target : 5km        | ii)              | Recognition of human target- 2.5km |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| i)   | Detection of human target : 5km   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| ii)  | Recognition of human target- 2.5km  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| 3.   | <p><b>Night (Thermal) Camera :</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">a</td> <td colspan="2">Spectral response : LWIR/MWIR and both</td> </tr> <tr> <td style="text-align: center;">b</td> <td colspan="2">FPA Resolution : 640 x 512 (min )at pixel pitch of 15 µm or better</td> </tr> <tr> <td style="text-align: center;">c</td> <td colspan="2">Auto and manual focus mechanism</td> </tr> <tr> <td style="text-align: center;">d</td> <td colspan="2">Optical magnification -5x (min) continuous.</td> </tr> <tr> <td style="text-align: center;">e</td> <td colspan="2">Electronic magnification- 2x,4x .</td> </tr> <tr> <td style="text-align: center;">f</td> <td>Wide FOV</td> <td>12.5<sup>0</sup> x 10<sup>0</sup> (min)</td> </tr> <tr> <td style="text-align: center;">g</td> <td>Narrow FOV</td> <td>2.5<sup>0</sup> x 2.<sup>0</sup> (max)</td> </tr> <tr> <td style="text-align: center;">h</td> <td colspan="2"> <p><b>Range :</b></p> <p><b>For Human Target</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">i)</td> <td>Detection – 3 km</td> </tr> </table> </td> </tr> </table> | a   | Spectral response : LWIR/MWIR and both |                  | b                                  | FPA Resolution : 640 x 512 (min )at pixel pitch of 15 µm or better |                                 | c | Auto and manual focus mechanism       |   | d                              | Optical magnification -5x (min) continuous. |                                  | e | Electronic magnification- 2x,4x .  |    | f                               | Wide FOV | 12.5 <sup>0</sup> x 10 <sup>0</sup> (min) | g | Narrow FOV | 2.5 <sup>0</sup> x 2. <sup>0</sup> (max) | h | <p><b>Range :</b></p> <p><b>For Human Target</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">i)</td> <td>Detection – 3 km</td> </tr> </table> |  | i) | Detection – 3 km |
| a    | Spectral response : LWIR/MWIR and both  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| b    | FPA Resolution : 640 x 512 (min )at pixel pitch of 15 µm or better  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| c    | Auto and manual focus mechanism   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| d    | Optical magnification -5x (min) continuous.   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| e    | Electronic magnification- 2x,4x .   |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| f    | Wide FOV  | 12.5 <sup>0</sup> x 10 <sup>0</sup> (min) |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| g    | Narrow FOV  | 2.5 <sup>0</sup> x 2. <sup>0</sup> (max)  |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| h    | <p><b>Range :</b></p> <p><b>For Human Target</b></p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">i)</td> <td>Detection – 3 km</td> </tr> </table>  |   | i)                                     | Detection – 3 km |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |
| i)   | Detection – 3 km  |   |  |                  |                                    |  |                                 |   |                                       |   |                                |   |                                  |   |  |    |                                 |          |   |   |            |  |   |  |  |    |                  |

|     |   |  |
|-----|---|--|
|     |   | ii) Recognition – 1.5 km   |
|     |   | <b>For Vehicle</b>   |
|     |   | i) Detection – 5 km  |
|     |   | ii) Recognition – 2.5km  |
| 4.  | <b>Start up time; NMT 8 MINTS</b>   |  |
| 5.  | <b>Non uniformity calibration(NUC)</b>  |  |
| 6.  | <b>The EO system should be immune to glare of searchlights. It should not get damaged if faced towards Sun accidentally.</b>  |  |
| 7.  | <b>It Should have the facility to stream imagery over wireless link(500 meters minimum NLOS and 2000 meters minimum LOS with coding. (Wireless link range for imagery transmission to be specified by the user at the time of indent)</b> |  |
| 8.  | <b>Pan &amp; Tilt :</b>   |  |
|     | a   | Pan movement : n x 360°  |
|     | b   | Tilt movement + 15° to -30° or better  |
| 9.  | <b>Laser Range Finder (LRF) :</b>   |  |
|     | a   | Should be class1 eye-safe  |
|     | b   | Range :Up to 5 km.   |
|     | c   | Range accuracy ± 5 meter minimum   |
| 10. | <b>Global Positioning System</b> It should be inbuilt and give co-ordinates in Lat/Lon and Indian Military Grid Reference system. The accuracy should be less than 10 meters.   |  |
| 11. | <b>Digital Magnetic Compass</b> :Inbuilt DMC should be provided for auto Northing. In accuracy should be ≤ 10 and resolution 10 or better   |  |
| 12. | <b>Control Unit should have :</b>   |  |
|     | a   | Ruggedized LED display having size 15" (min) to be mounted in the cabin. It should also be removable for remote use.   |
|     | b   | Command & Control (C2) software.   |
|     | c   | Command control real time alerts .   |
|     | d   | Have provision for video output.   |
|     | e   | Out-put ports for video (digital), Ethernet and for data retrieving.   |
|     | f   | Should have Multi-screen facility to view day camera image, Night camera image, map view individually and simultaneously (selectable) as per the user requirement.                 |
|     | g   | Should have facility to display observation system location on map view with real time FOV marking lines.  |
|     | h   | Should have facility to display panoramic view.  |
|     | i   | Should have facility to get image shot whenever required   |
|     | j   | Should have facility to scan user defined sector automatically.  |
|     | k   | Should have facility to control all the functions of day, night pan & tilt mechanism via wired link from EO from the control unit  |
|     | l   | Should have spatial data format used are friendly formats (Kml, shp, dgn, csv ) support with other GIS system and provision to data export and import. OGC compliant (WMS/WFS/WCS) |
|     | m   | Should have floating windows and multi-screen viewing  |
|     | n   | Should have the provision to mount existing 25 W VHF/UHF sets in BSF in the vehicle cabin.   |

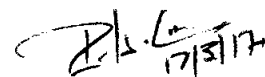
|     |  |   |
|-----|--|---|
|     | o  | Should have facility video recording capability: Advanced inbuilt storage memory of 1 TB (min) exclusively to store the video should be provided in the console. The system should have facility to retrieve the stored data. |
| 13. | <b>Telescopic Mast:</b>  |   |
|     | a  | The mast should be either pneumatic, electric or Hydraulic operated.  |
|     | b  | The height of the Mast should be 15 feet (min) from the platform.   |
|     | c.   | The mast should be mounted on the offered vehicle.  |
|     | d.   | The mast should be strong enough to carry the payload in stand hole positions in rough weather conditions with wind speed of min 40 knots per hour at its maximum extended position.  |
|     | e  | The system must be able to provide a clear video while moving at a speed of 20 Km/per hours.  |
| 14. | <b>Power Source :</b>  |   |
|     | a.   | 2KV or better (as per load) silent Gen Set to be provided as power source of equipment/ console and Pan & Tilt.   |
| 15. | <b>Online UPS:</b>   |   |
|     | a  | In Put voltage range 90 to 270 V, 46 to 54 Hz AC mains supply   |
|     | b  | Back up of 04 hrs minimum   |
|     | c  | It should be provided with an all-weather enclosure for keeping the UPS and its batteries safe in rain and snow   |
| 16. | <b>Batteries:</b>  |   |
|     | a  | Should have Lithium ion rechargeable battery to operate TI and Day Camera, for an entire temperature area.  |
|     | b  | The battery should have battery status indication showing the charge status of the battery  |
|     | c  | System should be able to run 4 hrs or more in operational mode on single charge   |
| 17. | <b>Battery Charger :</b>   |   |
|     | a  | 90 V to 250 V, 46 to 50 Hz AC main supply along with DC charging facilities from 12 V to 48 V.  |
|     | b  | It should have charge ON and full charge indication during battery charging   |
| 18. | <b>Environmental Specification :</b>   |   |
|     | a  | The system should comply with Mil Std 810F or JSS 55555 or better in respect of low & high temperature, humidity, shock, Bump & vibration . It should also comply with IP-65 or better.                                       |
| 19. | <b>Vehicle: Suitable vehicle having following specification to be provided by the firm :</b> |   |
|     | a  | Should be a light diesel vehicle.   |
|     | b  | Should be a 4x4 vehicle with cross country mobility.  |
|     | c  | Number of doors -04.  |
|     | d  | Number of cylinder -04.   |
|     | e  | Engine Torque (Min) 200 Nm.   |
|     | f  | Capacity – 2000 CC (min).   |
|     | g  | Should have a crew cabin and an open platform for mounting mast and EO system.  |
|     | h  | Should be BS4   |

|   |  |
|---|--|
| i | Gradability -30 <sup>0</sup> (min)                 |
| j | Gearbox – 05 forward 01 reverse                    |
| k | Staring – Power starting.                          |
| l | Ground clearance –Min 180 mm.                      |
| m | Air condition for safety of command control system |
| n | Number of cylinder in engine -04 Nos.              |
| o | Seating Capacity of cabin-05 Members.              |
| p | Drive axle- front and rear.                        |
| q | ABS-Yes.   |
| r | Front vehicle break- Disc Break                    |
| s | Rear Vehicle brake- Drum Brake                     |
| t | Air Bgs – Driver and Co Driver                     |
| u | Vehicle air intake system – Turbo charged          |

The Sub-group has decided to upload the QRs on MHA and BSF website for 15 days to invite the views/ comments/ suggestions of prospective bidders to make the QRs more broad based.

**Note-** All firms are requested to provide the following.

1. Original Brochure of product by OEM.
2. Detail literature about the product.
3. Comprehensive comments for incorporation in the specifications.



( **RISHIPAL SINGH** )  
Second-In-Command (Mod)