

पत्रांक संख्या/आपूर्ति/92-1-6-2019)/.....893

बिहार पुलिस मुख्यालय,
(आधुनिकीकरण,अपराध अभिलेख एवं प्रोविजन प्रभाग)

पटना, दिनांक-31/12/20

सेवा में,

निदेशक,

सूचना एवं जनसम्पर्क विभाग,
बिहार, पटना।

विषय- निविदा आमंत्रण सूचना सं०-14/2020-21 के प्रकाशन के संबंध में।

निदेशानुसार उपर्युक्त विषय के संबंध में निविदा आमंत्रण सूचना सं०-14/2020-21 की प्रतियाँ भेजते हुए अनुरोध है कि इसे राज्य एवं राज्य से बाहर के प्रमुख समाचार पत्रों में (अंग्रेजी एवं हिन्दी) के अगले दो संस्करणों में प्रकाशित कराने की कृपा की जाय साथ ही पी०आर०डी० वेबसाइट पर भी प्रसारित करने की कृपा की जाय।

इस निविदा आमंत्रण सूचना का प्रकाशन किन-किन समाचार पत्रों में किया गया इसकी सूचना देने की कृपा की जाय।

अनु०-यथोपरि।

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पुलिस महानिरीक्षक के सहायक (क्यू०),
बिहार, पटना

प्रतिलिपि:-

1. आई०टी० मैनेजर, पुलिस महानिदेशक का कार्यालय, बिहार, पटना को कृपया सूचनार्थ। कृपया इसे आज ही वेबसाइट पर अपलोड किया जाय। साथ ही Indian Trade Journal, Kolkata के अंक में प्रकाशन हेतु Government of India, the Controller of Publications, Civil Lines, Delhi : 110 054,(Tel No. 011-23812527, FAX : 011-23817846), Email Id-sk.mondal.dgcis@nic.in के पतेपर भी अनिवार्य रूप से भेजा जाय।
2. Government of India, the Controller of Publications, Civil Lines, Delhi : 110 054,(Tel No. 011-23812527, FAX : 011-23817846), Email Id- sk.mondal.dgcis@nic.in को कृपया सूचनार्थ एवं आवश्यक क्रियार्थ प्रेषित। अनुरोध है कि उक्त निविदा का प्रकाशन Indian Trade Journal, Kolkata के अंक में करने की कृपा की जाय।

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पुलिस महानिरीक्षक के सहायक (क्यू०),
बिहार, पटना

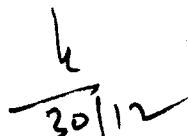
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Police Headquarters, Bihar, Patna
Notice Inviting Tender No.-14/2020-21

1. Name of the Department: Office of Director General of Police, Bihar, Patna.
2. Last date & time for the acceptance of the tender : 22/01/2021, Till 02:00 PM
3. Date & time fixed for the opening of the tender : 22/01/2021, At 04:00 PM
4. Place fixed for receiving & opening the tender : Office of Director General of Police, Bihar, Patna.
5. Details of Job:

S.N.	Item name	Quantity
1	Satellite personal tracker (These trackers are being used by COBRA, CRPF, Chattisgarh Police, NSG, BSF and Odisha Police)	10
2	Portal Mobile Tracker and Locator System <ul style="list-style-type: none">• It should retrieve and record IMSI, IMEI and TMSI data from and GSM MTLs.• It should Pinpoint the position of mobile phones by using the GSM MTLs version in connection with the Mobile Finder GSM- MF.• It should work on 900 Mhz, 1800Mhz and 2100 Mhz (2G, 3G & LTE)• Cellular identity catching.	1
3	Digital HF 25 Watt Manpack Set (Without battery and accessories wt. 2.5 kg. and with battery and accessories 7 kg.)	10
4	Digital HF 100 W Static Set	5
5	IMSI CATCHER Which should work on GSM, GPRS, EDGE, UMTS, HSPA, HSDPA, HSUPA, LTE networks	1
6	Multi Purpose Reppelling tower with a rock climbing face for training of jawans	1
7	Micro UAV	2
8	Light weight BP Type-IV	100

Specifications and other terms & conditions of the tender may be obtained in person from this office or may be downloaded from the website www.prdbihar.gov.in or www.biharpolice.bih.nic.in.


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Terms & Conditions of Tender No.-14/2020-21

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1. The tender should be submitted in two parts: (i) Technical Bid and (ii) Financial Bid, duly sealed in two separate envelopes super-scribed as "Technical Bid" and "Financial Bid".
2. All relevant papers/ E.M.D./certificates/specifications etc. of items should be enclosed in the Technical Bid.
3. The rates of the items shall be quoted in the Financial Bid only.
4. All charges like IGST/CGST/SGST etc. shall be clearly mentioned in the Financial Bid and the net rate (in figures and words) including all taxes and duties must also be quoted. Vague offers like indicating taxes "as applicable" will not be accepted.
5. The rates of the items shall be quoted in the Financial Bid in two parts :
(i) With AMC (Annual Maintenance Contract) and (ii) Without AMC
6. There should be no cutting, over writing or correction on the rates.
7. The technical and financial bids for each item should be submitted separately in separate envelopes. The technical and financial bids for more than one items submitted together in the same envelope shall not be accepted.
8. If the financial bid is submitted in the same envelope containing the technical bid then also it shall be summarily rejected.
9. The technical and financial bids should be put in two separate sealed envelopes and the envelopes should be marked Tender No-14/2020-21 (Technical Bid) and Tender No-14/2020-21 (Financial Bid) along with the name and address of the firm. The sealed envelopes containing the technical and the financial bids should be sent in another sealed envelope which should be marked as Tender No-14/2020-21. **This envelope should not bear the name and address of the firm.**
10. Income Tax Returns of last three years, a photocopy of GST registration number of the participating firm and turn-over of any two of the previous three financial years should be submitted with the technical bid. It should be specifically mentioned whether IT return has been filed manually or electronically.
11. The turnover of the firm for the last reported financial year should be at least equal to the amount of the supply order which is being issued. A copy of the profit and loss Account of the firm for any two of the previous three financial years, certified by a Chartered Accountant should be submitted along with the tender. If the tenderer is authorized dealer or authorized supplier of manufacturing firm, then the certified details of the turnover of authorizing firm may be accepted. Tender specific authorization from the OEM must be submitted, but in certain cases where authorization from OEM is not required, the Technical-cum-User committee (T.U.C.) shall decide about exemption (if any) on a case-by-case basis; citing appropriate reasons for the same.
12. If there is some discount in the price of any item, it should be deducted from price itself and such discounts should not be quoted separately.
13. If the product is available on DGS & D rate contract, then a copy of the contract must be attached and pricing be done including all taxes.
14. A copy of the test report for the product issued by any established and recognized private Laboratory or by agency accredited by the Government should be attached with the technical bid. However if required, the Technical-cum-User committee (T.U.C.) can take decision regarding exemptions/relaxations (if any), citing appropriate reasons.
15. In case of Bullet Proof/Bullet Resistant items, test report of TBRL or any Government Approved/Recognized Laboratory is compulsory.

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16. Firms participating in this tender shall also submit duly sworn affidavit to the effect that " this firm has not been black listed/debarred by any Government or Semi Government or Private Agency and no sister concern of this firm is participating in this tender."
 17. Firms participating in this tender shall also submit the self attested list of users of its equipments.
 18. All items shall be received at Central Clothing Store, Patna; therefore price should be quoted FOR Central Clothing Store, Phulwari Sharif, Patna.
 19. Firms will have to deposit a sum of Rs. 50,000/- (Fifty Thousand) only as an earnest money deposit in the form of Bank Draft duly pledged in favor of the undersigned along with the quotations. The small scale units located in Bihar shall not be liable to deposit earnest money. Exemption from submitting E.M.D. will also be available to those who are registered with the Central Purchase Organization/State Purchase Organization and National Small Industries Corporation (NSIC).
 20. Technical Bids will be opened on scheduled date and time in the office chamber of Police Headquarter. Representatives of the firms competing in the tender may remain present at the time of opening of the technical bid.
 21. The technical bids will be opened first and placed before the Technical Committee of the Police Headquarters, Bihar. If the technical bids are found satisfactory as per tender conditions, it will be put before Central Purchase Committee of the Police Headquarters, Bihar. The firms may be required to participate in the demonstrations of the quoted product and discussions with this committee.
 22. Any paper/document will not be accepted after opening the tender.
 23. Successful firm will have to enter into an agreement after depositing a sum of 5% of the total value of the order as security money in the form of Bank Guarantee duly pledged in favor of undersigned.
 24. The firm will be required to provide satisfactory after-sales service after the delivery of the product.
 25. The firm will be required to supply all the items within the stipulated time frame as mentioned in the purchase order.
 26. Payment for the delivered items will be made only after the acceptance report of the Inspection Committee of the Police Headquarters, Bihar.
 27. The firm whose quotation is approved by the Central Purchase Committee of the Police Headquarters, Bihar, shall be invited to enter into an agreement with the undersigned.
 28. It is expected to submit the duly filled chart attached herewith, along with the technical bid if not the tender shall be summarily rejected.
 29. Indexing of the requisite documents must be done and submitted along with the technical bid.
 30. Hands on training for 3 weeks of the equipment must be imparted to the user group by the firm after successful installation.
 31. Director General of Police Bihar, Patna reserves the right to reject any or all the quotations partially or fully, without assigning any reason thereof.
 32. The Quantity indicated may increase or decrease at the time of issuing purchase order.
 33. The bids must be include the data sheet of individual item.

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4	Accessories	i) Carrier with holder and strap. ii) Passive Antenna with 3 Meter cable for Vehicle Mounting (Optional)
5	Connectivity	During tendering the vendors will specify how they are going to provide Satellite communication service to the personnel Tracker System.

Ana
[SI/E Sohrab Ansari, CISF]

M S Yadav
[M S Yadav, AC, CRPF]

U.C. Joshi
[U.C. Joshi, AC, BSF]

P S Bist
[P S Bist, Asstt. Dir. DCPW]

Gurbachan Singh
[Gurbachan Singh, BPR&D]

Sunil Kumar
[Sunil Kumar, DC, ITBP]

Ravindra Kumar
[Ravindra Kumar, SC(Eqpt), NSG]

Virendra Agrawal
[Virendra Agrawal, DIG(Eqpt), CRPF]

Mahesh Kumar
[Mahesh Kumar, DG(Comn), CRPF]

Shailendra Kumar
[Shailendra Kumar, IG(Comn), CRPF]

Approved / Not Approved

Dilip Trivedi
(Dilip Trivedi, IPS)
DG, CRPF

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Revised draft QRS of HF Manpack Transceiver

1.1 General Specification

Parameter	Specification
1. Frequency Range	2.0 MHz to 29.9999 MHz with 100 channel spacing and 10 Hz resolution.
2. Modes	SSB(J3E) USB, LSB, AM, CW/MCW
3. Preset	100 Channels or more
4. Frequency Stability	± 1 PPM or better
5. Built-in-test	Front panel testing.
6. Input Power	+ 12 V DC Nominal (10.8V to 14.8V)
7. Battery life Duty Cycle:5/5/90	10 Ah (Li-Ion or Ni-Mh) or more or 20 Hrs or more
8. EMI / EMC	MIL-STD- 461/462C or ETSI or CISPR 22 or IEC 61000-4 Series (TEC/EMI/TEL-001/01 FEB-09) or latest standard.
9. Weight	Less than 6.5 Kg with battery
10. Antenna Impedance	50 Ω Unbalanced
11. Protection	(i) Reverse polarity protection (Without fuse) (ii) Protection against high VSWR.
12. Roles	Manpack
13. Headphone Impedance	Up to 600Ω
14. Cooling	Convection from case
15. VSWR	Better than 1.5
16. Visual display	Front panel LCD/LED display or latest technology
17. Interface	RS-232 / USB
18. Programming	PC programming software and front panel programming.

1.2 Transmitter Specification

1. RF Power	5W to 25W PEP (Low, Medium, High) (user programmable)
2. Spurious Emission	≤ 40 dB below PEP
3. Side Band Suppression	≥ 50 dB or better
4. Carrier Suppression	≥ 40 dB or better
5. Inter modulation distortion	30db minimum below PEP
6. Audio Response	Within ±6 dB from 350Hz to 2700Hz.
7. Side Tone Level	Better than 0.1 mW into 150Ω load for 5mV of audio input at 1 KHz.
8. Modulation Sensitivity	1 to 10 mV at 1 KHz for full power under SSB mode.

1.3 Receiver Specification

1. Receiver Sensitivity	-107 dBm for 10dB SINAD or better
2. Image Rejection	≥70 dB or better
3. IF Rejection	≥70 dB or better
4. In band Inter Modulation Distortion	35 dB minimum below PEP
5. Audio Response	Within ±6 dB from 350Hz to 2700Hz
6. Audio Output	1W or more across loudspeaker
7. Audio Frequency Harmonics Distortion.	≤ 25 dB or better

Revised draft OKs of HF Manpack Transceiver

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Parameter	Specification
Environmental Parameters:	
1. Operating Temperature	30°C to +55°C
2. Storage Temperature	-30°C to +60°C
3. Humidity	95% non-condensing @ 40°C.
4. Dust	MIL-STD-810F or better or JSS-55555 (As laid down in Class L3 of JSS-55555, revision No.2)
5. Vibration	
6. Shock	
7. Water Intrusion	
8. Altitude	
1.5 Features:-	
1. Selective calling	Digital FSK coding
2. Scanning	5 channels per second or better
3. Flash messages	Minimum 60 characters
4. Vocoder	MELP/CELP (1200/2400 bps) or better
5. GPS Interface	Inbuilt GPS with polling facility.
6. RS-232 control	The Radio set should have capability to operate at 4800 baud rate or better.
7. Inbuilt data Modem	MIL-STD-188 -110A/B/C single tone \geq 4800 bps
8. Tuneable receiver	Continuous tuneable.
9. Radio kill/un-kill	Should have kill/un-kill function.
10. Audio input sockets	Mic and external socket.
11. Squelch	Voice/Digital squelch
12. Push to talk.	Suitable Microphone to be provided.
13. Audio Socket	Suitable headgear should be provided.
1.6 Optional features	
1. Communication Security	Vocoder based 128/256 bit digital encryption or SAG approved encryption.
2. ALE 2G/ALE 3G	ALE 2G as per Appendix "A" and ALE 3G as per Appendix "C" of MIL-STD-188-141B
3. Frequency Hopping	Hop Rate: \geq 6 hops per second

Ombir Singh, N/Sub
Assam Rifle

Mahendra Singh, Insp/T
ITBP

S. P. Singh, Insp (Tele)
BSF

AC-III Tarsem Lal
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Piyush Anand, IG(Comm)
CRPF

Approved/Not-Approved

(Rajeev Rai Bhatnagar) IPS
DC, CRPF

QRs/Technical Specifications of the Digital HF Trans Receiver -100 Watt, Static.

GENERAL	
Frequency Range	1.6 to 29.999 MHz
Modulation	USB, LSB, AM, CW
Digital Signal Processing	A single DSP chip should provide digital modulation and demodulation of all on air signaling, including the one used in the ALE, selective call and syllabic mute processes and to provide noise reduction of received signal.
Pre-set Channels	100 or more
Frequency Stability	+/- 0.6 PPM or better
Built-in test	Front Panel Testing
Power input	12 VDC & 230 VAC
Operating Temperature	- 30 deg. C to 60 deg. C
Weight	Less than 6 kgs
TRANSMITTER	
RF Power Output	100 watt for the entire band
Microphone	5 mV nominal across 150 ohm
Tx Current at full power	Less than 20 Amps.
Harmonic Suppression	>= 45 dB with respect to single tone
Unwanted side band suppression	>= 45 dB w.r.t. single tone
Non Harmonic Spurious	>= 50 dB w.r.t. single tone
Inter modulation Distortion	31 dB min. below PEP
RECEIVER	
Receiver Sensitivity SINAD	>= 10 dB for -113 dBm (0.5uv) RF input level or better
Image & IF rejection	80 dB Min. or better
Audio Output	> 10 mw across 600 ohm, > 250 mw across 50 ohm or better
Squelch	Active , Digitally coded
Audio Distortion	< 5% or better
In band inter modulation	38 dB min. below PEP distortion
FEATURES	
Automatic Link Establishment	AS per MIL standard 188-141B
GPS Tracking	The Radio set should have inbuilt GPS facility for tracking
SMS Facility	SMS/page call should be available
Selective Call	4/6 digit selective call, which should be fully compatible with sets of various major manufactures
Tel call	The Radio should have capability to dial and operate on data
RS - 232 Control	The Radio should have capability to operate on data
Tunable Receiver	Should be available
Radio Kill/Unkill Function	Should be available
Encryption	DES or AES (optional)
Protections	i) Reverse polarity protection should be provided. ii) The final RF stage be protected against high VSWR
Environmental Specification	As per JSS 55555 or equivalent.

IMSI SPECIFICATION

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➤ Specification For Mobile Locator Device

1. It should be Backpack or Vehicle based solution.
2. It should support all frequency bands for GSM/CDMA/UMTS/LTE. It means the system should be capable to track and locate the mobile working on 2G/3G/4G technologies.
3. The system should be capable to locate/capture the mobile based on IMEI/IMSI.
4. It should have integrated GPS, enabling the use of Internet/Local MAPS application.
5. The related Database should be exported in varies formats. Report to be based on captured data.
6. It should Capture GPS co-ordinates for supported devices.
7. It should be abled for SIM swap indication in case handset is changed and highlights the previously added target.
8. It should consist comprehensive and used friendly GUI and in-built Auto configure feature with multiple search option.
9. Battery backup should be of minimum:- 90 minutes (vehicle mode) and 45 minutes in Portable Mode (Man Pack); Extra battery should be provided to meet exigency.
10. **Features of Control Laptop :**
Intel core-i7 CPU; 12GB RAM; 2 TB HDD; Windows OS
11. Software license should be provided with the product.
12. It should include the facilities according to future up gradation of technologies in this field.

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QRs/SPECIFICATION FOR HAND HELD SATELLITE PHONE

SI No.	Parameter's	Specification
1	General	
	Size	Should be Less than - Length :7 Inch, Width 2.5 Inch, Depth: 2.0 Inch
	Weight	Less than 300 Grams including battery
	Water and Dust ingress protection	IP54 or better
	Antenna characteristics	0° to 90° in elevation Omni- Directional in Azimuth.
	Operating temp range	-20°C to +55°C
	Storage temp range	-20°C to +70°C
	Charging temp range	0°C to +45°C
Humidity Tolerance	95% non-condensing @ 40°C	
2	Services	
	Voice capability	Voice - 2.4kbps or better
	Supplementary voice services	Call history, Caller ID, Call waiting, Call divert, Call holding, Conferencing, Call barring, Speed dialing, Fixed number dialing.
	Messaging Services	160 character text-to-text and text-to-email or better
	Operational Time	The satellite phone should be fully operational within 8- 10 minutes
	Area of operation	The satellite phone should be able to operate in entire Indian territory.
	Altitude	The Equipment should be able to operate satisfactorily in hilly, rough terrain, thick forest and high altitude area up to an altitude of 5000M
	Interfaces	i) Micro USB ii) Audio Socket iii) Antenna Port iv) Blue tooth
	Display	High visibility color screen
	GPS Features	Should view current position and able to send as text/email to others
3	Battery	
	Type • Talk Time • Stand By Time	<ul style="list-style-type: none"> • Lithium-Ion or other compatible brand • More than 6 Hours • More than 70 Hours
4	Others Features	
	Features	Facility of Calendar, Alarm, Calculator, Microphone Muting
	O/S compatibility	With MS Outlook 2007 (PC) or higher Windows XP ProSP3 & Windows Vista SP1 or higher
	Security	At the keypad, Phone, SIM and network level
5	Connectivity	During tendering the vendors will specify how they are going to provide Satellite communication service. They will also specify terms and condition and vendors will have to provide end to end connectivity.

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6	Accessories	<ul style="list-style-type: none"> • One spare Lithium-ion battery as operational reserve • Mains universal AC charger • Car charger 10-30 Volt • PC charger - micro USB cable • Wired hands free headset (Optional) • Quick start Guide, Support CD • Custom made Pelican Cases • Carry case, wrist strap • Bluetooth headset/mic (Optional) • Light Weight Solar charger of appropriate power output to charge the battery within 4 to 5 hours. (Optional) • Docking Unit (Optional)
7	Term & Conditions :- <ol style="list-style-type: none"> Firm should impart training to indenter technical personnel in maintenance, operation and repairing of the set at the supplier service center or consigned location free of cost after procurement. Vendor to indicate the service centers across India for repairing of equipment after sale warranty support. Supplier should provide after sales support, supply of spares for at least 7 years after warranty period. Supplier should provide a certificate from the manufacturer that the measurement of the equipment is made in accordance with regulatory authority. The firm should enclose DOT/ WPC license for supplying equipment in India. At least 2 no. sets for 15 days to be provided for field trial on 'No Cost No Commitments' basis to ascertain the user's satisfaction before the proposal is accepted. All the technical features will be shown during the trials. The supplier shall provide a comprehensive warranty for a period of 12 months. All equipment shall be supplied with their standard OEM battery packs & charger. 	

(Signature)
 (Sohrab Ansari)
 SI/E, CISF

(Signature)
 (D.P. Misra)
 P. S.O, BPR&D

(Signature)
 (Ravindra Kumar)
 SC (Eqpt), NSG

(Signature)
 (Virendra Agrawal)
 DIG (Eqpt), CRPF

(Signature)
 (R.K. Vishwakarma, IPS)
 IG (Comm), CRPF

(Signature)
 (M.S. Yadav)
 AC (Tech), CRPF

(Signature)
 (Anil Kumar Gupta)
 DC (T/OPS), ITBB

(Signature)
 (S.K. Singh)
 Comdt (Eqpt), BSF

(Signature)
 (Mahesh Kumar)
 DIG (Comm), CRPF

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 DG, CRPF

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**DRs/TECHNICAL SPECIFICATIONS OF MICRO UNMANNED AERIAL VEHICLE
(UAV) SYSTEM**

1. Micro UAV system should consist of the following sub-systems:-

- a) UAV Bird with battery pack
- b) Ground Control station with data link equipment
- c) Daylight Camera Payload
- d) Night Camera Payload
- e) Universal Battery Charger with Power Supply System

2. Micro UAV characteristics:-

Sl. No.	Parameter	Specifications
2.1	Role	Surveillance, reconnaissance and detection during day and night.
2.2	Launch and Recovery mode	i) Vertical Take Off and Landing (VTOL) from within an area of 25m X 25m clearing or less. ii) Payload should not damage during recovery of UAV
2.3	Aural Signature	<40dbs at 300 meters
2.4	Payloads carrying capability	Should have capable to carry electro Optic (EO) for day and Thermal Imager (TI) for night one at a time.
2.5	Flight Modes	a) Fully Autonomous Vertical Take Off b) Fully Autonomous Vertical Landing c) Hover at defined waypoint (position hold better than 25m) d) Autonomous waypoint navigation (pre-defined as well as dynamically adjustable waypoints during flight) e) Remote Piloted mode for video based user navigation. f) Vision based Autonomous Target Tracking of fixed and moving targets. g) Should be controllable in real time from the GCS up to recovery. h) Fully autonomous and stabilized.
2.6	Endurance	40 minutes or more with all payloads at Mean Sea Level.
2.7	Operating Altitude	400m AGL (Above Ground Level) or more.
2.8	Max Launch Altitude	2000m AMSL (Above Mean Sea Level)
2.9	Range of Operation	Minimum 4km line of sight
2.10	Cruise Speed	25 km/h or more
2.11	Operating Wind Conditions	a) Take off: 20 km/h or more b) Landing: 20 km/h or more c) Operate: 20 km/h or more
2.12	Failsafe features	a) Return to Home on communication failure b) Return to Home/Land on low battery c) Multiple GPS on-board for GPS failure redundancy
2.13	Propulsion system	Electrical with rechargeable batteries

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3. Payload characteristics:-

Sl. No.	Parameter	Specifications
3.1	Payloads required	a) Electro Optic (EO) for day (colour) b) Thermal Imager (TI) for night c) Combined in single payload or different payloads for day and night
3.2	Payload and Video Stabilization	a) All payloads should be gimbals stabilised on-board. b) Video output should be digitally stabilised at all zoom levels. c) Quality of video should not be affected by UAV vibrations.
3.3	Electro optic (EO) Daylight Payload	a) Colour Camera with 360° pan and 90° tilt control. b) Resolution: 640 x 480 pixels or better c) Optical Zoom: 10x zoom with minimum FOV 5° or less. Additionally, 4x digital zoom. Max. FOV: 45° (wide field). d) Should be able to detect Human size target at 600m or more
3.4	Thermal Imager (TI) Night Payload	a) Thermal Camera with 360° pan and 90° tilt control. b) Resolution: 320 x 240 pixels or better c) White/Black Hot modes d) Digital Zoom: 4X or more e) Should be able to detect human size target at 300m or more
3.5	Night Recovery Beacon	Switchable (from GCS) LED light when operating with Night Payload

4. Ground Control Station characteristics:-

Sl. No.	Parameter	Specifications
4.1	GCS should have a MIL-STD-810 and IP65 rugged, water and dust resistant design for the flexibility to work freely in nearly any environment, top with a multicolour, anti-glare, sunlight readable.	
4.2	Computing Hardware :-	
	CPU	Intel Core i5 v Pro Processor, 1.9 GHz or better
	Storage	At least 200GB
	Memory	2GB or more
	Display	10 inch – 1024 x 768 XGA sunlight viewable
	Audio	Integrated speaker
	Keyboard & input	Touch screen
4.3	Battery Operation	Minimum two hours at peak utilisation.
4.4	Battery Charging time	Should be less than 3.5 hours
4.5	Data portability	Ports for data transfer to external secondary storage devices
4.6	Interface	VGA, Headphone/speaker, Microphone/ Line-in Serial, USB, IEEE 1394a, 10/100/1000 Ethernet.
4.7	Capability	a) Transmit control commands to UAV. b) Receive UAV flight and propulsion parameters. c) Receive, display and record real time day and night video from UAV. d) Capability to control UAV while on the move.

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4.	GCS Application Software	<p>a) Geographic Map along with UAV location, UAV trajectory, camera view polygon, waypoints and flight plan</p> <p>b) Real-time video from the UAV with on-screen display of important parameters like UAV co-ordinates, target (payload) co-ordinates and range from UAV, true North indication etc.</p> <p>c) Geographic map and real-time video should be displayed at all times during the flight</p> <p>d) Geographic map and real-time video views should be resizable and/or switchable to allow user to switch between big map/small video and small map/big video views through a single click/button input</p> <p>e) Artificial Horizon indicating UAV attitude</p>
4.9	Map Formats	<p>a) Should have the capability to integrate geo-referenced raster maps provided in at least one of the commonly used digital map formats (gif, tiff etc.)</p> <p>b) Should be able to work with Google Maps, application should have the capability to download maps automatically after specifying location GPS co-ordinates</p>
4.10	Payload Controls	<p>a) Selection and switch on/off of payload</p> <p>b) Pan/Tilt/Zoom Controls</p> <p>c) Point payload to ground co-ordinate function</p> <p>d) Recording on/off</p> <p>e) Switch on/off Night Recovery Beacon</p>
4.11	Video	<p>a) Video should be recorded in any commonly portable video formats (AVI, MPEG, MP4 etc.)</p> <p>b) Video of the full flight should be recorded</p> <p>c) Should have capability to take image snapshots at any time during flight</p> <p>d) Software should be provided that will facilitate extraction of imagery from the recorded video post flight</p>
4.12	Pre-flight checks	Self-test of UAV system, Output: go/no go

5. Communication Link:-

Sl. No.	Parameter	Specifications
1.1	Communication link equipment capability	<p>i) Transmit control commands from GCS to UAV</p> <p>ii) Transmit parameter of UAV and payload to GCS</p> <p>iii) Transmit day and night video from UAV to GCS</p>
1.2	Type of link	Secured digital uplink & downlink with AES encryption.
1.3	Frequency Band	System should operate on UHF frequency Band uplink and down link, preferably on license free band i.e 2.4Ghz.

6. General System requirements:-

Sl. No.	Parameter	Specifications
1.1	Size	<p>i) Length & width (Maximum) :: 120 cm X 120 cm</p> <p>ii) Height (Maximum) :: 60 cm</p>
1.2	Weight	The weight of complete Micro UAV bird including battery pack & one payload should be less than 4kg.

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3	Assembly/ Disassembly time	Less than 10 minutes each.
4	Life of Micro UAV	The total technical life of micro UAV should not be less than 500 landings.
6.5	Environmental Conditions for Operation and Storage	The UAV and associated systems should be certified for operation and storage for following environment conditions. i) Damp Heat: 40 °C at RH not less than 95% ii) Operating temperature & Storage temp:- -10°C to +55°C iii) Ability to withstand dust, drizzle and humid conditions
6.6	Portability and Operation	The Micro UAV should be battery operated portable, light in weight, compact, for day and night surveillance, capable of being carried and operated by two men.
6.7	Battery	The intelligent standard lithium based battery pack should have the back up of minimum- 40 minutes.
6.8	Battery Charger	Suitable universal battery charger to charge the batteries within two to three hours.
6.9	Accessories	a) Ergonomic Water- proof Back Packs: 1 set b) Field Repair kit: 1 No's c) Lithium based Battery packs; 3No's d) Spare propeller Sets: 2 No's e) Spare Landing Gear sets: 1 No's f) Associated Cables & Mountings: 1set g) Ruggedized transportation boxes: 1set h) User, Technical & Maintenance Manual: 1set i) Log book : 1 set

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(Manoj Kumar Bali, Director LIC, DRDO)

Approved / Not approved

(Dilip Trivedi, IPS)
DG, CRPF

TECHNICAL SPECIFICATION FOR BULLET PROOF JACKETS Level IV (360° Protection)

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Design Parameters for BP Jackets

A. Shall conform to Trial Directive, "Ballistic Resistance of Body Armour" protection against all of the following ammunition fired from weapons mentioned against each:

Level IV

- (i) 9x19 mm cartridge fired through Sub Machine Gun (such as sten machine, MP-5, Carbine, anyother variant) from a distance of 5 meters to achieve a muzzle velocity 430 m/s \pm 15 m/s and theweight of the bullet between 7.4 gm to 8.2 gm.
- (ii) 7.62x51mm cartridge NATO ball ammunition fired through 7.62 mm SLR/Bolt action rifle from adistance of 10 meters to achieve a muzzle velocity 838 m/s \pm 15 m/s and the weight of the bullet 9.4gm to 9.6gm.
- (iii) 7.62 x 39mm (mild steel core bullet) cartridge fired through AK series rifles from a distance of 10meters to achieve a muzzle velocity 715m/s \pm 15m/s and the weight of the bullet 7.45 gm to 8.05 gm.
- (iv) 7.62 x 39mm (hard steel core bullet) cartridge fired through AK series rifles from a distance of 10meters to achieve a muzzle velocity 635m/s \pm 15m/s and the weight of the bullet 7.45 gm to 8.05 gm.
- (v) 5.56 x 45mm Ball MK M (Equivalent to 5.56 mm NATO (M 193) cartridge fired through INSASrifles from a distance of 10 meters to achieve a muzzle velocity 890m/s \pm 15m/s and the weight of the bullet3.5 gm to 4.0 gm.
- (VI) 10.8 g (166 gr) .30-06 Springfield M2 armor-piercing (AP) bullets at a velocity of 878 m/s \pm 9.1 m/s (2880 ft/s \pm 30 ft/s).

B. Vest: should have the components mentioned in Para D below. Each component should be made ofmulti layers of same material. Each layer will be in single piece and of equal shape and size to maintainuniform thickness all over area up to edge level.

C. Sizes of soft armour panel (SAP): Standard, Large and Extra Large.

SAP shall be covered with durable water repellent fabric that exhibits excellent sealing properties thusprotecting the ballistic material from moisture.

D. Areas of Components of soft armour Panel.

Coverage area of the soft armour panel as per the sizes will be as under:

(Table No. 1)

S.No.	PANEL	STANDARD SIZE(Sq.Mtr.)	LARGE SIZE(Sq.Mtr.)	EXTRA LARGESIZE (Sq.Mtr.)
1	FRONT	0.15	0.18	0.21
2	BACK (Inclusive of sides)	0.24	0.26	0.28
3	COLLAR (TOTAL)	0.06	0.06	0.06
4	SHOULDER (TOTAL)	0.04	0.04	0.04
5	GROIN	0.06	0.06	0.06
	TOTAL	0.55	0.60	0.65

(ii) Measurements will be made with the help of scaled drawing on graph paper and using planimeter.

E. Weight of the Jacket

Total weight of BP jacket including HAPs, SAPs, trauma pads and outer carrier should not exceed as mentioned below:-

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(Table No.2)

Sl.	Size	Weight of Jacket without side plates when 25 mm BFS is permissible (In kgs.)	Weight of Jacket without side plates when 44 mm BFS is permissible (In Kgs)	Weight of Jacket with side plates when 25 mm BFS is permissible (In Kgs)	Weight of Jacket with side plates when 44 mm BFS is permissible (In Kgs)
1	Standard	7.1	6.2	8.9	8.0
2	Large	7.5	6.6	9.4	8.5
3	Extra Large	7.8	6.9	9.8	9.0

F. Size of One Standard Hard Armour Panel—305mm X 254mm (0.0735 sqm). Negative tolerance indimensions of HAP is not permissible.

G. Shall consist of an outer carrier, removable Soft Armour Panels (S.A.P.) of suitable material and Two Hard Armour panel (HAP) made of High Performance Polyethylene Plates/Aramid Fibre/Composite material or any other superior quality material.

Note: - For 360° Protection, two additional side HAP if required by any user, the total area and weight of Jacket will increase as per below mentioned details:-

(Table No. 3)

Components	Min side HAP size (in cm ²) 24cm x 15cm	Weight (in kg)
STANDARD SIZE	359 x 2 = 718	.9x2=1.8

The threat level of side HAP shall be the same as front and rear HAP. The side HAP shall also be in conjunction with SAP as same is with rear and front HAP. Negative tolerance in dimensions of HAP is not permissible.

(Table No.4)

HAP	Surface Area of each HAP (In M ²)			Max. Weight of HAP (In Kgs.)		
	Standard	Large	Extra Large	Standard	Large	Extra Large
Front/Back	0.0735	0.0772	0.0810	1.90	2.00	2.1
Side Plate	0.0359	0.0377	0.0396	0.90	0.97	1.02

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Size, Area and weight of different size of BP Jacket

(Table No. 5)

S No	Components	Chest size (in-inch)	Min.SAP Area(sqm)	Min.HAP Area(Sqm) With 360° Protection	Min. HAP Area (Sqm) With out 360° Protection	Weight (In Kgs) with out side plates when 25 mm BFS is permissible	Weight (In Kgs) with out side plates when 44 mm BFS is Ermissible
a)	Standard size Jacket	38-40	0.5500	0.0735 + 0.0359 = 0.1094 X 2 = 0.2188	0.0735x2= 0.1470	7.1	6.2
b)	Large size Jacket	40-42	0.6000	0.0772 + 0.0377 = 0.1149 x 2 = 0.2298	0.0772x2= 0.1544	7.5	6.6
c)	Extra Large size Jacket	42-44	0.6500	0.0810 + 0.0396 = 0.1206 x 2 = 0.2412	0.0810 x 2 = 0.1620	7.8	6.9

Note: - The dimensions of standard size HAP (Front, Back and Side Plates) is specified above. The length and width of the HAP (Front, Back and Side Plates) for large and extra-large size to be increased as per the proportion increase in Area of these sizes.

H. BP Jacket-Construction:

- A.(i) It should be in the form of jacket to provide protection against 9mm bullet (Threat level IV of NIJ.) It should not restrict overall vertical movement of the neck of the wearer.
- (ii) It should have provision to accommodate two HAP plates in front and back and 360 degree protection provision to accommodate two additional side plates as per dimensions specified in tender documents. Shall be lightweight and comfortable, providing optimum mobility.
- (iii) Adjustable at the shoulders, waist, and groin with appropriate fasteners (HOOK and LOOP Fastener's). An adjustable nylon belt of minimum 10 cm width should be provided with double locking of jacket with HOOK and LOOP Fastener.
- (iv) The vendor has to declare the type of materials, number of layers, and their aerial density in technical bid of tender and they have to maintain the same in bulk supply.
- (v) The supplier should provide "Raw Material Assurance Certificate" in support of their SAP and HAP designs"
- (vi) Supplier must provide Certificate from the original anti-ballistic material supplier, confirming that the required, volume, material/grade is purchased for the commercial supply of BP Jacket and same is being used during bulk supply of BP Jacket. For that purpose, user should provide few samples out of bulk supplied of BP Jacket to the original anti-ballistic material supplier.
- (vii) SAP should be encased in such materials so as to make it water proof.

quality and report of HOOK and LOOP fastener including shears strength and peel strength should be as per Bureau of Indian Standards specification IS: 8156-2014. The IS: 8156-2014 may be available in the office of Bureau of Indian Standards. Vendor will submit test reports on HOOK and LOOP fastener from any NABL accredited lab or DMSRD (MoD), Kanpur.

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(c) Pocket with Flaps:-The Jacket should be provided with two external pockets in outer carrier to house two magazines of 5.56 mm LMG in each pocket. Two pockets should also be provided to accommodate one Grenade (HE 36) in each pocket. The size of each magazine is 19 cm x 7.6 cm x 3.5 cm and size of HE 36 grenade is 110 mm x 65 mm.

(d) Belt/kamarbandh:-An additional belt of nylon/polyester weaving with minimum width of 10 cm should be provided around the waist to properly secure the BP jackets with the body of the wearer around waist, so that weight of jacket is distributed on waist/shoulders. Kamarbandh should be of same materials as outer carrier with HOOK and LOOP Fastener.

➤ Two pouches (one each on front and rear of outer carrier) should be provided to accommodate two Hard Armour Plates as per sizes specified by the user. For 360 degree protection jacket, two additional pouches to be provided to accommodate the two side plates of HAP as per sizes specified by the user.

- Ballistic panels (SAPs and HAPs) shall be removable from outer carrier.
- Outer carrier shall be machine washable.

(e) Trauma pad for Trauma Attenuation:

- Trauma pad must be provided behind the SAPs so that it remains to body surface to provide proper cushioning.
- It must cover uniformly up to edge level of the SAPs.
- Back face signature (BFS) should not exceed 25mm in plasticize block at $30 \pm 2.9^\circ$ centigrade temperature of plasticine.
- Drop test will be carried out as per Trial Directive.

I. Materials

- The outer carrier shall be made of high tenacity, heavy duty, abrasion proof and 100 % vest integrity fabric having in built water resistant and fire retardant properties.
- The Fabric shall be treated for protection against water, fire (fire retardant) and ultra violet raysexposure.
- The Fabric must be suitable to wear in the Indian conditions of heat, rain and humidity. It mustbe light, breathable, soft and pliable.
- The inner side (body side) shall also be of a similar Fabric and shall be treated for moisture andwater repellency.
- The cloth of the carrier must be pre-shrunk before stitching.
- BP jacket should be UV Proof.

Note:

- ❖ Duration of flame after removal of burner-maximum 5 second (Test Method IS 11871).
- ❖ Duration of flame afterglow-maximum 5 second (Test method IS-11871).
- ❖ Hydrostatic Head-Minimum 100 cms of water for 24 hrs (Test Method IS 391-1975).
- ❖ Water penetration should be zero (Test Method IS 392-1989).

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Note : Vendor should supply 3 meters of each fabrics used both at the time of tender and from actual production for testing. The test specified will be conducted at a Government Institute, having required technical expertise. The Institute will be selected by Technical Evaluation Committee in consultation with experts. All tests will be in accordance with SOP. Any changes in the SOP will be decided by Technical Evaluation Committee.

J. Vest Fit:

- ❖ The overall length of the BP jacket shall be such that there is no "ride up" while sitting.
- ❖ The overlapping degree of front and rear panels shall be such as to provide for maximum freedom of movement.

K. Colour: Camouflage. The bidders will submit samples of BP Jackets of any camouflage color. However, before placement of bulk supply order, exact camouflage colour along with modification required, if any, in outer carrier will be intimated by the users.

L. Labelling: The outer carrier and the two soft Armour panels must be labeled as per NIJ standards giving the following details.

- 1- Name, Logo or other identification of the Manufacturer:
- 2- Name of the Product:
- 3- Date of Manufacturing:
- 4- Date of receipt:
- 5- Size:
- 6- Identification no.:
- 7- Reference:
- 8- Date:

Note:- 1- *Strike face of Jacket should be clearly marked.*
 2- *In case of non conformity with any of the parameters of the test mentioned above, the next sequence of test will not be conducted.*

M. Soft armour Panel (SAP)

- SAP shall be able to withstand NIJ threat level III A in respect of the caliber and the weapon selected for trial and other parameters such as weight & velocity of the bullet in ammunition selected for trials.
- Shall protect both front and back torsos.
- Shall be made of suitable material.
- The weight of the material shall be so balanced as to make the SAP lightweight, breathable, soft and pliable.

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- No tears, rips, worn spots, discolorations, loose or torn stitching and set wrinkles on the SAP shall be allowed.
 - The panel shall be treated with approved and durable water repellent.
 - The SAP shall be removable from outer carrier to allow for periodic cleaning.
 - The SAP shall be placed in tightly sealed, with such material so as to make it completely waterrepellant and waterproof.
 - (a)Hydrostatic Head-Minimum 100 cms of water (Test Method IS:391-1975)
 - (b)Water penetration should be zero (Test Method IS:392-1989)
 - The material layers shall be stitched in a suitable pattern in case SAP is made of Aramid.

N. Hard armour Plate (HAP)

- Shall be made of high performance polyethylene/Aramid fiber/composite of any other superior material.
- Shall provide protection against ammunition mentioned above at para A from a distance of 05 to 10 meters in conjunction with soft armour panel.
- Each HAP plate (front and back) should not weigh more than as specified in table no. 4.
- In case of 360° protection, each side plate of HAP should not weigh more than as specified in table no. 4.
- Each standard HAP plate (front and back) shall be minimum size 305mm×254mm to cover the vital parts of body.
- Curvature of the HAP shall be suitable to fit the body contour.
- HAP shall be shielded with some material so as to make it completely water repellent and water proof.

Note: Tenderers must declare number of layers and type of material (aerial density of material) used for fabricating Soft Armour Panel and Hard Armour Panel as per original manufacturer of the material. Raw Material Assurance Certificate (RMAC) must be given from original manufacturer in respect of material for SAP and HAP, valid for a period of six months from the closing date of tender. The vendor has to declare the numbers of layers used for fabricating SAP and HAP of tender samples and they have to maintain the same in bulk supplies as per above declaration.

O. Other Stipulations

JACKET STYLE :	BIHAR POLICE
SERVICEABILITY :	05 YEARS (HAP, SAP & trauma pad)
GUARANTEE :	The Outer Carrier along with trauma padding shall be guaranteed for a period of 2 years against all manufacturing defects.
HUMIDITY :	95% at 40°C
STORAGE :	Normal Room Temperature. Should withstand operating temperature during open storage in field situations.

Note:- All testing will be carried out as per Trial Directive.

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P. Immunity Level:

(a) Hard Armour Plates: The HAPs are to be tested in conjunction with SAPs.

- 06 bullets NATO ball fired from 7.62 mm SLR/bolt action rifle from a distance of 10 meters at normal to the surface on each plate (Front and Rear).
- 03 bullets NATO ball fired from 7.62 mm SLR/bolt action rifle from a distance of 10 meters at normal to the surface on each side plate.
- 06 bullets (mild steel core) fired from 7.62 mm of AK rifle from a distance of 10 Mts. at normal to the surface on each plate (Front and rear).
- 03 bullets (mild steel core) fired from 7.62 mm of AK rifle from a distance of 10 Mts. at normal to the surface on each side plate,
- 03 Bullets (hard steel core bullet) fired from 7.62 mm of AK rifles from a distance of 10 meters at normal to the surface on each side plate.
- 06 Bullets (hard steel core bullet) fired from 7.62 mm of AK rifles from a distance of 10 meters at normal to the surface on each plate(front and rear).
- 06 Bullets (hard steel core bullet) fired from 5.56 x 45mm Ball MK M (Equivalent to 5.56 mm NATO (M 193)) fired from 5.56 mm INSAS rifles from a distance of 10 meters at normal to the surface on each plate (Front and rear).
- 03 Bullets (hard steel core bullet) fired from 5.56 x 45mm Ball MK M (Equivalent to 5.56 mm NATO (M 193)) fired from 5.56 mm INSAS rifles from a distance of 10 meters at normal to the surface on each side plate.
- 03 Bullets .30-06 Springfield M2 armor-piercing (AP) bullets fired from rifles from a distance of 10 meters at normal to the surface on each side plate.

(b) Soft Armour Panels:As described in table below six shots (4+2) (1 each from 30° and 45° angle) fired through 9 mm Sub Machine Gun (Such as sten Machine, MP-5, Carbine any other variant) from a distance 5 meters, with a muzzle velocity 430 ± 15 m/s and the weight of the bullet 7.4 to 8.2gm as specified in standard.

The velocities of bullets fired through weapons are given as follows:

Class	Gun name	Ammo type	Ammo weight	Ammo velocity
I	38 SPECIAL	RN LEAD	158 GRAIN	259M/SEC(850FT/S)
	22 LRHV	LEAD	40 GRAIN	320M/SEC(1050FT/S)
II A	357 MAGNUM	JSP	158 GRAIN	384M/SEC(1250FT/S)
	9MM	FMJ	124 GRAIN	332M/SEC(1090FT/S)
II	357 MAGNUM	JSP	158 GRAIN	425M/SEC(1395FT/S)
	9MM	FMJ	124 GRAIN	358/SEC(1175FT/S)
III A	44 MAGNUM	JSP LEAD	240 GRAIN	426/SEC(1400FT/S)
	9MM	FMJ	124 GRAIN	426/SEC(1400FT/S)
III	7.62MM	FMJ	150 GRAIN	838M/SEC(2750FT/S)
IV	30-06	AP	166 GRAIN	868M/SEC(2850FT/S)

AP : Armour piercing

LRHV : Long rifle high velocity

RN : Round nose

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- BFS – Back Face Signature on Plasticine.
- Selected weapon and lot of ammunition, for which reference velocity has been once achieved, will remain the same throughout ballistic testing of all tender samples of various firms.
- All tests will be in accordance with the SOP. Any changes in the SOP will be decided by Technical Evaluation committee.

Q. Testing Criteria

- (i) Scientific inspection/ballistic trial of these BP jackets will be conducted as per Trial Directive "Ballistic Resistance of Body Armour".
- (ii) Groin Pad will be tested ballistically with 9 mm SMC/MP 5. Three evenly spaced fair hits at zero degree angle incidence shall be taken and BFS should not exceed the limit as specified by the user. BFS will be measured for first shot only.

R. Miscellaneous

- (i) The supplier/manufacturer shall provide complete 14 BP jackets. Out of which, 12 complete BP Jacket of particular size and two (one each) complete BP Jacket rest of two size, as and when required by technical committee for demonstration and testing.
- (ii) While submitting the samples for tender, the supplier shall mention the exact area of SAP and HAP and give the template of the jackets as per, so that import of raw materials of the BP Jackets will be allowed accordingly.
- (iii) Each model/brand of BP jackets should be submitted against a separate tender form.

S. Testing facilities

Ballistic trials as per the QRs will be held at TBRL/CFSL Chandigarh or any other facility as decided by Technical Evaluation Committee.

Note:

1. The QRs are dynamic/live and may be amended only on the approval of competent authority.
2. The level of protection is limited to the ammunitions mentioned in QRs.
3. All testing shall be carried out as per the protocols of Trial Directives.