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Government of India
Ministry of Home Affairs

26, Man Singh Road, Jaisalmer House,
New Delhi, 18.1.2010

To

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

Subject: - QRs/Technical Specifications for the security related equipments -regarding

The QRs/Technical Specifications for the following security related equipments have been accepted and approved by the Competent Authority in MHA;-

(i) Shot Gun/Spas Gun
(ii) Armour Plates fir Snipers
(iii) Laser Grip for Glock Pistols
(iv) UBGL
(v) Lay Tuning (Road Blocker)
(vi) Slithering Rope
(vii) Commander Torch
(viii) Sonic Defenders-Hearing Protection Device
(ix) Robot
(x) Bullet Proff Jacket Full Body Protection(360 degree)
(xi) Non Magnetic Tool Kit
(xii)Gas Mask

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

3. The trial directives for the following items have also been approved by the Competent Authority in MHA

(a) Mini Remotely operated vehicle-F/X
(b) Electro Stun Gun
(c) Light Support Weapon

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(R.S.Sharma)
Director (Prov)

Copy to:-

DD(Procurement),MHA

Copy for information to:-

PS to JS(PM),MHA

QR'S/SPECIFICATION FOR BULLET PROOF JACKET FULL BODY PROTECTION(360^0)/BULLET PROOF JACKET (360^0 PROTECTION)

1. **Ballistic Protection**. The basic Bullet proof jacket should meet NIJ Level III & IIIA according to NIJ STD 0101.06. The basic Jacket should defeat following ammunition from 10 m distance.

(a) 7.62 x 51 mm FMJ Nato M-80 or Indian ball Fired from Indian SLR Rifle

(b) 7.62 x 39 mm MSC ammunition fired from AK 47 / 56 Rifle.

(c) 9mm Para FMJ RN bullet 8.2g at V = 436 m/s fired from Pistols and sub machine guns such as MP-5.

(d) 5.56x45mm NATO SS109 / INSAS.

(e) Protection against Russian/Chinese Tokerev(7.62x25 mm ammunition) gun,

(f) 44 Magnum SJHP bullet 15.6 g at V = 436 m/sec.

2. **Construction**. The bullet proof jacket **should provide 360 degree all round upper torso body protection**. The system should be flexible and allow complete freedom of movement without compromising the ability to acquire and neutralize threats from any firing position including when wearing a ballistic helmet. The full body armor should have throat protector & upper arm protector as add on.

3. **Flexibility**. BPJ should ensure snug fit that exactly fits the body contour. It should have hard armor panel flexible enough to follow the body contour thus ensuring that it does not hinder body movement and use of arms.

4. **Emergency Release**. In case of emergency situation the jacket should have a special provision for instantaneous discard in one swift pull. It should be easy to open the vest in a sitting position and the jacket must split in two parts to get fast access to wounds.

5. **Emergency Evacuation:** The jacket must have minimum two pull out/buddy straps.

6. **Wearer Comfort**. The design and fitment of the BPJ should provide weight distribution over the waistline and shoulders instead of only shoulders, to enhance the wearer's comfort. Self suspending Ballistic system to keep ballistic panels in place, prevent sagging and/or bunching that can expose vulnerable areas.

7. **FHAH Design**. The BPJ should have Flexible Harness Attachment System (FHAH) that facilitates attachment of various pouches. Multipurpose side wings to secure the vest around the waist, to provide adjustment and allow quick break away, Offers load attaching point's for the sides of the vest and to hold the side plate pouches which should be adjustable both vertically and horizontally.

8. **Field Up-Gradable Add-ons**. The BPJ should have the provision to attach / detach protection armour at the Throat area, Upper Arms and these should not hinder normal movement..

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9. **Ventilation and Heating/Cooling Pack**. The BPJ should have provision of ventilation system for enhanced wearer comfort through use of **3-D** fabric in the inner part for sweat absorption and breathability with good air circulation. The BPJ should have one cooling / heating pack located at the back for use in very cold or very hot ambient conditions.

10. **Height Adjustment system**. BPJ should be designed to ensure proper height adjustment for the wearer. The Jacket should stay in position even when shoulder straps are off and wearer is jumping.

11. **Outer Carrier**. The outer carrier of BPJ should be made of heavy duty, long lasting and high abrasion resistant CORDURA or equivalent fabric that is water resistant.

12. **Weight and Threat**.

S/No	Component	No of Panel	Weight +/- 2%	Remarks
	BASIC BULLET PROOF JACKET			
1	Front Panel	1 set	Maximum 10.0 kg	Total weight of Basic BPJ
2	Rear Panel	1 set		
	ADD ON FEATURES			
1	Upper Arm	2 Nos	Maximum 1 kg	
2	Throat	1 No	Maximum 0.5 kg	
3	Collar and shoulder system	1 set	Maximum 0.5 kg	
	Total weight of the BPJ		Maximum 12.0 kg	
	ULTRA LIGHT WEIGHT INSERT PLATES			
1	Insert plate	2 Nos	1.25 X 2 = 2.5 kg Maximum	
	TOTAL BPJ SYSTEM WEIGHT		14.5 kg Maximum	
1	COOL PACK	1 No.	Maximum 0.4 kg	

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13. **Area of Coverage**

S/No	Component	Area of coverage in Square meter [sqm]		
1	Basic BPJ	Minimum 0.550 sqm	Hard Armour Panel	
2	Upper Arm [area of 2nos]	Not less than 0.035 sqm	Hard Armour Panel	
3	Throat	Not less than 0.027 sqm	Hard Armour Panel	
4	Collar with shoulder pads	Not less than 0.050 sqm	Soft armour panel	

*Note. Negative tolerance in terms of area measurement is not permissible. Measurements will be made with the help of scaled drawings on graph paper using plain meter.

14. **BP JACKET – CONSTRUCTION**

(a) It should be in the form of jacket to provide protection as per per level III of NIJ 0101.06). It should not restrict overall movement of the wearer.

(b) It should have provision to accommodate two HAP plates in front and back as per dimensions specified in tender documents. It should be comfortable to the wearer during operations.

(c) Adjustable at the shoulders, waist and groin with appropriate fasteners (Velcro's). An adjustable nylon belt of minimum 10cm width should be provided with double locking of Jacket with Velcro.

(d) The vendor has to declare the type of materials, number of layers and their Areal density in the technical bid of tender and the equipment supplied later on should conform to same standards.

(e) SAP should be encased in polyurethane coated materials so as to make it water proof.

15. **VELCRO FASTENERS**. All the clothing flaps of the jackets should have high quality velcro fasteners, so that it can be worn and taken off easily/quickly. The quality and report of Velcro including shears strength and peel strength should be as per Bureau of Indian Standards specification IS:8156-1994 (may be available in the office of Bureau of Indian Standards). Vendors will submit test reports on Velcro from any NABL accredited lab or DMSRD (MoD), Kanpur.

16. **POCKET WITH FLAPS**. The jacket should be provided with two external pockets in outer carrier to house two magazines of Assault Rifle/SMG in each pocket. Two pockets should also be provided to accommodate one grenade (HE 36) in each pocket. The size of each magazine is 19cm X 7.6cmX3.5cm and size of HE 36 grenade is 110 mm X 65 mm.

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17. **BELT/KAMARBANDH**

(a) An additional belt of nylon/polyester weaving with minimum width of 10cm should be provided around the waist to properly secure the B.P. jackets with the body of the wearer around waist, so that weight of jacket is distributed on waist/shoulders. Kamarbandh should be of same material as outer carrier with velcro.

(b) Two pouches (one each on front and rear of outer carrier) should be provided to accommodate two 305 mm x 254mm Hard Armour Plates so that jacket protects vital organs of body.

(c) Ballistic panels (SAPs & HAPs) should be removable from outer carrier.

(d) Outer carrier shall be machine washable.

18. **TRAUMA PAD FOR TRAUMA ATTENUATION**.

(a) Trauma pad must be provided behind the SAPs, to provide proper cushioning.

(b) It must cover uniformly up to the edges of the SAPs.

(c) Back face signature (BFS) should not exceed 25mm in plasticine block at 30$\pm$2.9 degree centigrade temperature of plasticine.

(d) Drop test will be carried out as per NIJ standard 0101.06..

19. **MATERIALS**.

(a) The outer carrier shall be made of high tenacity, heavy duty, abrasion Proof and 100% vest integrity fabric PU coated Nylon.

(b) The fabric weight should not be less than 95 gm/m2.

(c) The fabric shall be treated for protection against water, fire and ultra violet rays exposure.

(d) The fabric must be suitable to wear in the Indian conditions of heat, rain and humidity.

(e) The inner side (body side) shall also be of a similar fabric and shall be treated for moisture and water repellency.

(f) The cloth of the carrier must be pre-shrunk before stitching.

Note:-

The methods of testing criteria for measuring the properties of outer carrier shall be as per IS: 11871-1986, IS:3417-1979 (reaffirmed 1997), IS:392-1989 and IS 391-1975).

(i) Duration of flame after removal of burner maximum 5 seconds (Test Method ISI 1871).

(ii) Duration of flame afterglow-maximum 5 seconds (Test method ISI 1871).

(iii) Hydrostatic Head-Minimum 100 cms of water (Test Method IS 391-1975).

(iv) Water penetration should be zero (Test Method IS392-1989).

(v) Mean Ultra Violet Penetration Factor-Minimum 100 (Test Method IS 3417).

The tests reports specified will be submitted by the manufacturer from a accredited Lab.

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20. VEST FIT:

(a) The overall length of the BP jacket shall be such that there is no "ride up" while sitting.

(b) The overlapping degree of front and rear panels shall be such as to provide for maximum freedom of movement.

21. **COLOUR: BLACK**. The bidders will submit samples of BP Jackets of Black colour. However, before placement of bulk supply order, exact colour alongwith modifications required, if any, in outer carrier will be intimated.

22. **LABELLING**. The outer carrier and the two soft Armour panels must be labeled as per NIJ standards giving the following details.

Name of the Manufacturer:
Name of the Product:
Date of Manufacturing:
Date of Issue:
Threat level:
Size:
Serial No:
NIJ Standard:
Strike face of jacket should be clearly marked.

23. **SOFT ARMOUR PANEL (SAP)**.

(a) SAP shall be able to withstand NIJ threat level III A In respect of the caliber & the weapon selected for trial and other parameters such as weight & velocity of the bullet in ammunition selected for trials.

(b) Shall protect both front and back torsos.

(c) Shall be made of Aramid/suitable material or better.

(d) The weight of the Aramid/suitable material, denier and type of weave shall be so balanced as to make the SAP lightweight, soft and pliable.

(e) The Areal density (minimum 5.1kg/m2) of the panels shall be such as to provide the rated ballistic and trauma protection.

(f) No tears, rips, worn spots, discolorations, loose or torn stitching and set wrinkles on the SAP shall be allowed.

(g) The panel shall be treated with approved and durable water repellant.

(h) The SAP shall be removable from outer carrier to allow for periodic cleaning.

(J) The SAP shall be placed in tightly sealed, water repellant and PU coated heavy-duty fabric so as to make it completely waterproof.

(i) Hydrostatic Head-Minimum 100 cms of water (Test Method IS391-1975).

(ii) Water penetration should be zero (Test Method IS 392-1989).

(k) It should include Soft Armour Panel (SAP) along with Trauma Pad in Front, Sides and Rear including detachable Groin Pads, Neck & Collar Pads and Upper Arm Pads as under :-

(i) **Groin Pad** : It should protect the groin in continuation with Front SAP, not impede the movement of a running soldier and be conveniently foldable when not in use. It should cover minimum 500 sq cms protected area.

(ii) **Neck & Collar Pads**: It should be specially contoured for better fit and ballistic coverage, covering minimum 500 sq cms protected area to provide all round neck protection. It should allow unrestricted neck movement.

(iii) **Upper Arm Pads** : It should protect the shoulder and upper arm and not impede the movement of shoulder seriously. It should cover area not less than 350 sq cms each.

Note:- Tenderers must declare number of layers and type of material (Areal density of material) used for fabricating Soft Armour Panel and Hard Armor Panel as per original manufacturer of the material. Raw Material Assurance Certificate (RAMC) 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 vender 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.

24. **HARD ARMOUR PLATE (HAP)**.

(a) Shall be made of high performance polyethylene fiber.

(b) Shall provide protection against cartridge 7.62x51mm ammunition and 7.62x39mm ammunition (mild steel core bullet) and 5.56 x 45mm NATO SS 109/INSAS @ 920m/s from a distance of 10 meters in conjunction with Soft Armour Panel.

(c) Each plate should not weight more than 1.5 kg.

(d) Shall be of minimum size 305mm x 254mm to cover the vital parts of the body.

(e) Curvature of the HAP should be suitable to fit the body contour and cover the sides and rib cage.

(f) HAP shall be shielded water repellant and PU coated heavy duty fabric so as to make it completely water proof.

25. **OTHER STIPULATIONS**.

(a)	Serviceability	: 10 years (HAP, SAP & trauma pad).
(b)	Guarantee	; The outer carrier along with trauma padding shall be guaranteed for a period of 2 years against all manufacturing defects.
(c)	Temperature	: -30^0 C to $+50^0$ C (operating temperature).
(d)	Humidity	: 95% at 40^0 C
(c)	Storage	: Normal Room Temp.

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26. **Immunity Level**:

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

(i) Six bullets NATO ball (9.4g to 9.6gms) fired from 7.62mm SLR/bolt action rifle from a distance of 10 meters at zero angle of incidence.

(ii) Six bullets (mild steel core), from 7.62mm of AK rifle from a distance of 10 Mts at zero angle of incidence on separate plates.

(b) **Soft Armour Panels**: Six shots fired through 9mm 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 between 7.4 gm to 8.2 gm as specified in standard.

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

Armour Type	Test Bullet	Reference Velocity m/s	Hits per Armor part at 0^0 angle of incidence	BFS* Depth Maximum	Shots per Panel
IIIA	9mm FMJ RN	430± 15	4+2 at 30^0 angle	25mm	6
III	7.62mm NATO FMJ	838± 15	6	25mm	6
	7.62mm mild steel core	715± 15	6	25mm	6
	5.56 x 45 NATO SS 109/INSAS	920± 15	6	25mm	6

* 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).

27. **Testing Criteria**.

(a) Scientific inspections/ballistic trial of these BP jackets will be conducted as NIJ standard 0101.06.

(b) Groin Pad will be tested ballistically with 9mm SMG. Three evenly spaced fair hits at zero degree angle incidences shall be taken and BFS should not exceed 28mm.

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28. **Miscellaneous**.

(a) The supplier/manufacturer shall provide one number of BP jackets of the order size along with HAP at their cost from the lot of every <u>500 numbers</u> but minimum <u>four numbers per</u> lot of jacket for the purpose of the ballistic test/evaluation of the tendered specifications at the time of materializing the supply. These will be selected prior to dispatch at random in the factory premises.

(b) 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 the area, so that import of raw materials of the BP jackets will be allowed accordingly.

(c) Five tender samples are required for technical evaluation from a firm.

(d) Each model of BP jacket offered by vendor should be submitted against a separate tender form.

29. **Testing facilities**.

Ballistic trials as per the QRs will be held at TBPL, Chandigarh or any other facility as decided by Technical Evaluation Com

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