

DRAFT QR/TDs FOR BULLET RESISTANCE PATKA

SL. No.	Existing QRs/ Specifications	Trial Procedure to be adopted by STEC during trial evaluation cum physical demonstration of B.P Patka
1.	<u>Service Employment.</u> Bullet Proof Patkas (LWBPP) has been in use as an individual protection gear with Armed Forces. It offers protection around the forehead and sides of the head from BALLISTICS (bullets). There is a requirement to procure Light Weight Bullet Proof Patkas to facilitate Safety to the most vital portion of a Jawan i.e head.	Certificate to this effect should be provided by the OEM .
2.	<u>General Characteristics</u> (a) Bullet Proof Patka should be convenient and comfortable to wear/handle. (b) It should not impede the movement of the wearer in carrying out his functions. (c) It should not have any ill effect on the head of a soldier. (d) The material encasing the steel protection should be breathable.	(a) to (c) Jawans should be made to wear the B.P. Patka for 1 to 2 hours with their weapons, rears & other equipment. Whether the Patka is causing any ill effect or not, shall be ensured by the feedback from the Jawan during the fitment trial & same should be recorded by a doctor/physician. The Patka should not cause inconvenience to him. (d) To be checked by the board of officers.
3.	<u>Physical Characteristics</u> Should be in four components viz : (fourth part i.e., skull protection is optional) (a) Steel band to be covered with Expandable Poly ethylene Sheet/EVA foam sheet. (b) Suitable disruptive cover with strapping harness, having suitable arrangement for air circulation. (c) High density foam trauma pad, with water resistant cover. (d) Top plating of Para Aramid or other suitable B.R. Material (Ballistic resistance) affording protection from injuries to skull portion. Conical/spherical metallic cover at the top to cater for low velocity bullet (The protection for skull is optional and user may decide to keep it or otherwise).	For (a), Firm to produce OEM certificate. For (b,c,d), To be checked by the board of officers. For only (d) one 9x19 mm bullet will be fired on the Para Aramid from 10 m. There should be no penetration with BFS 13 mm.

Mandish Kaur Thakur,
DC, CRPF

Rajni NR, DC
CISF

NP Sub Ishwari Singh
Jawan Refs

Inspr Babu Ram, SSB

Maj Suraj Bisho
SI, SAG, NSG

Col. Sunil Kumar Mahale
SC (WC), HQ NSG

(Through VC)
Ankit Kumar, DC
BSF

(Through VC)
Ajmal Siddiqui, DC
ITBP

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4.	Compatible Trauma pad to absorb shock.	To be physically checked by the Board of officers by making soldiers wear it.																													
5.	The steel band should cover the entire circumference of the head above the eyes and ears	To be physically checked by Board of officers																													
6.	Should have balance strapping/adjustable system using Hook and Loop fastener.	To be physically checked by Board of officers																													
7.	The harness of Patka should not be affected by moisture/rain. It should meet the requirement as mentioned below. Requirement of Harness (Table-1)	Firm to provide 3 meter of sample of harness for testing as per the standards mentioned at Para (9) of the QRs at any National and International Accredited lab. Testing charges will be borne by the vendor.																													
	<table border="1"> <thead> <tr> <th>SI No</th><th>Test Parameter</th><th>Requirement</th><th>Method of Test, Ref to</th></tr> </thead> <tbody> <tr> <td>(a)</td><td>Mass, g/m² Max</td><td>160</td><td>IS 7016 (Part - I)</td></tr> <tr> <td>(b)</td><td>Tensile strength N, Min (a) Warp wise (b) Weft wise</td><td>1150 900</td><td>IS 7016 (Part- 2)</td></tr> <tr> <td>(c)</td><td>Tear strength, N, Min: (a) Warp wise (b) Weft wise</td><td>160 140</td><td>IS-7016 (Part3), Method A2, Trouser Shaped test piece, single tear method.</td></tr> <tr> <td>(d)</td><td>Flame resistance test: (a) Duration of flame (After flame time), s, Max (b) Duration of afterglow, s, Max</td><td>5 5</td><td>IS 11871, Method A</td></tr> <tr> <td>(e)</td><td>Water Repellency, Rating, Minimum</td><td>50</td><td>IS 390</td></tr> <tr> <td>(f)</td><td>Color fastness rating to light (Change in color on blue wool), Min</td><td>4</td><td>IS 2454</td></tr> </tbody> </table>	SI No	Test Parameter	Requirement	Method of Test, Ref to	(a)	Mass, g/m ² Max	160	IS 7016 (Part - I)	(b)	Tensile strength N, Min (a) Warp wise (b) Weft wise	1150 900	IS 7016 (Part- 2)	(c)	Tear strength, N, Min: (a) Warp wise (b) Weft wise	160 140	IS-7016 (Part3), Method A2, Trouser Shaped test piece, single tear method.	(d)	Flame resistance test: (a) Duration of flame (After flame time), s, Max (b) Duration of afterglow, s, Max	5 5	IS 11871, Method A	(e)	Water Repellency, Rating, Minimum	50	IS 390	(f)	Color fastness rating to light (Change in color on blue wool), Min	4	IS 2454		
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[Signature]
 Manish Kumar Thakur
 DC, CRAP

[Signature]
 Rajni MR, DC
 C/SF

[Signature]
 Ab Sub Ishwar Singh
 Asstt Rfls

[Signature]
 Jaspal Singh Rani
 SS

[Signature]
 Maj Suraj Bisht
 61, SOB, NSG

[Signature]
 Lt Col Sumit Kumar Mahalan
 SC (WE), 4th NSG

(Through VC)
 Junit Kumar, DC
 BSF

(Through VC)
 Fazal Siddiqui, DC
 ITBP

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8.	Firm Hologram along with serial number and batch number should be there on the steel band during lot supply.	To be checked by BOOs
9.	Operational Characteristics (a) Ring material should be anti-Rust/Corrosion & Moisture proof Steel. It should pass Salt Spray (Fog) Test as per MIL STD-810G, Method-509.5/ASTM B117 ISO9227 BIS 9844. (b) It should be able to provide following protection levels: (i) AK 47 (7.62x39 mm, HSC) - From 10 meters (Forehead only) (ii) 9 mm x19 mm parabellum- From 05 meters (remaining area) (7.62x39 mm, HSC Ordnance Factory bullet fired through A.K. Series rifles to achieve a muzzle velocity of 700±15 m/s and weight of the bullet 7.45 gm to 8.05 gm) (9 mmx19 mm Ordnance factory bullet fired through Pistol Carbine to achieve a muzzle velocity of 430±15 m/s and weight of the bullet 7.4 to 8.2gm).	(i) Certificate to be provided by the firm from any national/international accredited lab. No severe localized corrosion should be observed during the lab test. (ii) To be checked at TBRL, CFSL, NFSU or any other laboratory mandated to carry out such tests by Govt. of India/concerned States/UTs as per instructions issued by MHA vide letter No. IV-24011/43/2010-Prov-I dated 03/11/2010. The distance was decided on the basis of threat perception of such ammunition in field conditions.
10.	Physical Parameters: (a) Weight with skull protection should not be more than 1.65 kg with an upper tolerance limit of 10% (1.65Kg+10%) (b) Weight without skull protection should not be more than 1.4 kg with an upper tolerance limit of 10% (1.4Kg+10%) Outer Circumference (a) 680 mm±10 mm (Small) (b) 700 mm±10 mm (Medium) (c) 720 mm± 10 mm (Large) Width of Steel - 76.2 mm ± 2 mm Thickness X Length (a) Front Portion- 4.8 mm ± 0.2 mm x 225mm ± 5 mm (b) Rear Portion:- Small – 2.4 mm ± 0.2 mm x 460 mm ± 5 mm Medium – 2.4 mm ± 0.2 mm x 480 mm ± 5 mm Large – 2.4 mm ± 0.2 mm x 500 mm ± 5 mm Density - 0.00785 g/cubic mm	To be measured by the board of officers

Yashwanth Kumar Thakur
DC, CRPF

Colonel M.R. DC
BSF

Nb Sub Ishwar Singh
Assam Rifles

Jeep Babu Rao, SSB

Maj Swraj Bhat
SI SOG, NSS

Col Surjit Kumar Mahale
SC (WE), HONSG

(Through VC)
Anil Kumar, DC
BSF

(Through VC)
Rajesh Singh, DC
ITBP

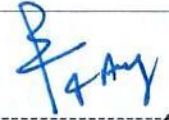
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11.	Miscellaneous The Patka should also incorporate the following:- (a) Suitable Cup shaped, synthetic/any comfortable material chin strap to be provided for secure fastening instead of Velcro strap. (b) Additional padding for the scalp portions and proper fitting. (c) All strap joints should have box stitching.	To be physically checked by the board of officers.
12.	Warranty up to 10 years for Steel Panel and 01 year for Harness and trauma pad from the date of acceptance of store.	An undertaking from the OEM should be provided.
13.	The shelf life of BP Patka shall be minimum 10 years from the date of acceptance of store.	An undertaking from the OEM should be provided
14.	The Ballistic testing of the B.P. Patka shall be carried out at TBRL, CFSL, NFSU or any other laboratory mandated to carry out such tests by Govt. of India/concerned States/UTs.	03 (Three) single shots of each ammunition will be fired from a distance of 10 m (for 7.62×39mm) and 05 m (for 9×19mm) and inter shot distance should not be less than 20 mm. There should not be any penetration in the panel(s). Further the Panel will be declared to be failed under following conditions. (a) Bulge at the back with the radial cracks should be impermeable to any type of liquid with viscosity at room temperature and properties equivalent to kerosene oil. Test certificate to be verified by BoOs. (b) Bulge with tear along the circumference seen at the back of the armour plate. (c) Development of cracks in the armour plate permitting kerosene oil or equivalent to kerosene oil extending beyond the area of penetration of bullet. To be checked by TBRL, CFSL, NFSU or any other laboratory mandated to carry out such tests by Govt. of India/concerned States/UTsas per instructions issued by MHA vide letter No. IV-24011/43/2010-Prov-I dated 03/11/2010.

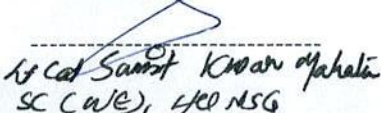

 Manish Kumar Thakur
 DC, CRPF

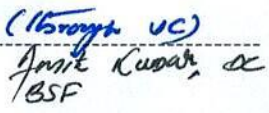

 Rajat NR, DC
 CRPF

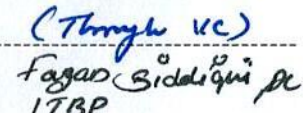

 Nib Sub Isbnwar Singh
 Asst Rifle


 Jaspal Singh, SSB


 Maj Suraj Bish
 ST SAG, NSG


 Lt Col Samrat Kumar
 SC (WE), HQ NSG


 Anil Kumar, DC
 BSF


 Fagad Bidolgi, DC
 ITBP

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15.	The Measurements, physical and visual inspection shall be carried out by the BOOs comprising of members from all the CAPFs	Trial procedure to be adopted by STEC during trial evaluation cum physical demonstration of BP. Patka.
16.	The firm shall provide 06 samples (02 samples in each size ie., small, medium & Large)	Samples shall be checked physically in accordance with physical parameters mentioned at sl. No.10 above.
17.	The testing for parameter 9 and 11 will be carried out at any National and International Accredited lab.	To be checked by BOOs


 Manish Kumar
 Hathi, DC, CRPF


 Rajni PR, DC
 EISF


 NS Sub Ishwar Singh
 Assam Rifles


 Jyoti Babu Rani
 SBB


 Major Suraj Bishit
 SI SAG, NSR


 Lt Col Sumit Kumar
 Mahata, SC (WC)
 HCP NSG

(Through VC)
 Jyoti Kumar, DC
 BSF

(Through VC)
 Fajam Siddiqui
 ITBP
