

(94)

Government of India/भारत सरकार
Ministry of Home Affairs/गृह मंत्रालय
Police Modernization Division/पुलिस आधुनिकीकरण प्रभाग
Prov.I Desk/संभरण-I डेस्क

26, Man Singh Road, Jaisalmer House
New Delhi-110011

CORRIGENDUM

**Subject: QRs/Specifications of Durable Combat Ruck Sack
(40 Ltrs.) for CoBRA Battalion.**

It is informed that the QRs issued vide no. U.II-13/2009-11-
Prov(CoBRA), dated 26-02-2013 for Durable Combat Ruck Sack (40
Ltrs.) have been approved for CoBRA Battalion(s) only.



(S.B. Nanda)

Under Secretary (Prov-I)

Tele No.23381278

Fax No.23386191

*issued
13/3/13*

DsG : AR(through LOAR/BSF/CRPF/CISF/ITBP/NSG/SSB

No. U.II-13/2009-11-Prov(CoBRA)

dated 13-03-2013

o/c

Copy forwarded :-

SO(IT), MHA : it is requested to post this letter on website alongwith the
QRs of Durable Combat Ruck Sack (40 Ltrs.).

No.U.II-13/2009-11-Prov(CoBRA)
Government of India/Bharat Sarkar
Ministry of Home Affairs/Grih Mantralaya
P.M. Division/Prov-I Desk

26, Man Singh Road, Jaisalmer House
New Delhi, dated 26th February'2013

To,

DsG : AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG &
BPR&D.

**Subject :QRs/Specifications of Durable Combat Ruck Sack (40 Ltrs)
for CoBRA Battalion.**

The QRs of Durable Combat Ruck Sack (40 Ltrs) as per annexure
have been accepted by the Competent Authority in MHA.

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

Encl: - As above

Yours faithfully,



(Smt. S.B. Nanda)

Under Secretary to the Govt. of India

Copy forwarded for necessary action to:-

- (i) So(IT), MHA: It is requested to host the QRs (soft copy attached)
on the MHA website (under the page of Original Set up Police
Modernisation Division under CTs head (Clothing Equipment list) -
Qualitative Requirements).



(R.K. Soni)

Section Officer (Prov-I)

Copy to : Director (Procurement), MHA

Copy for information to : PS to JS(PM)

BOARD PROCEEDINGS

Proceedings of : A Board of Officers

Constituted vide : GOI/MHA O.M. No. IV-24011/12/2011-Prov-I dated 13/6/12.

Assembled at : CoBRA Sector HQ, Old Secretariat, Civil Lines, Delhi-54.

Assembled on : 31/07/2012

For the purpose of : For framing of QRs/Specification of Durable Combat Rucksack.

COMPOSITION OF BOARD

Chairman : Shri K.Vijay Kumar, DG, CRPF

Member : Dr. N.C.Asthana, IG, CoBRA Sector, CRPF

Member : Shri S.K.Srivastava, DIG (Prov), BSF

Member : Shri Jai Singh. Dy. Comdt., NSG


Member : Shri Y.K.Sharma, Dy.SP, BPR&D


Member : Shri Sahadev Sethi, AC(CTS), ITBP


Member : Shri Senthil Rajan, A/C, CISF


In pursuance to the orders of GOI/MHA O.M. No. IV-24011/12/2011-Prov-I dated 13/6/12, the sub-group of officers assembled at CoBRA Sector HQ, Old Secretariat, Civil Lines, Delhi-54 on 31/07/2012 for framing of QRs/Specification of Durable Combat Rucksack. The QRs/Specification prepared by the sub-groups is enclosed as per appendix-A.

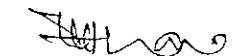

CRPF


BSF


CISF


ITBP


NSG


BPR&D

**SPECIFICATIONS OF THE DURABLE COMBAT RUCKSACK
(ALSO KNOWN AS RUCKSACK OR MILITARY BACKPACK) FOR
COBRA**

0.0 FOREWORD

- 0.1 This specification shall be used for tender enquiry, procurement, manufacture and Quality Assurance.
- 0.2 This specification is liable to be amended at any time and therefore is applicable only to specific enquiry made at any time, for any subsequent enquiry, a fresh copy of the specification is to be obtained.
- 0.3 This is restricted document and therefore should not be communicated to any one who is not authorized to receive it.
- 0.4 Any deviation from this specification will not be restored to without the express written sanction of authorized body.

1.0 SCOPE


- 1.1 Durable Combat Rucksack governed by this specification is required to carry a variety of military equipment, including food items and water especially by the CoBRA troops (or any other troops) undertaking counter insurgency operations primarily in jungles of India in various states.
- 1.2 This is a system to reliably pack and contain diverse types of military equipment which may be carried by the soldiers on their backs during operations—the load will be borne by adjustable straps over the shoulders and a broad belt across the waist in addition to that so that the load is shared and the shoulders are not unnecessarily strained.
- 1.3 This specification is intended to provide guidance to manufactures/suppliers, quality assurance agencies and store holding depots/indenters so that they may quote for our exact requirement.



CRPF


BSF


CISF


ITBP


NSG


BPR&D


[Explanation: The military backpack is intended to carry a variety of military equipment, including food items and water. Soldiers in operation may need any one of them at any time, and they must have it quickly. Precisely for this reason, it should not be a top-loading draw-cord type bag typically used by civilians. In a top-loading draw-cord type bag, one has to unload the whole pack to get something at the bottom. The military backpack must have a large number of pouches in it and they must all be zippered—there should be no draw-cords at all. Their description is given later. The emphasis is on functionality in field use and not on technical details of the material used—this is not intended to be an exercise or research in textile technology—this approach, adopted in the past, has resulted in a situation where, the rucksack could not be purchased because no supplier could meet the unnecessary intricacies of textile technology. The CoBRA commandos or any other troops operating in jungles for similar durations have certain field requirements and the rucksack will be tested under those field conditions simulated for the purpose of testing—selection will be made first by the test parameters and then by the cost. Due weight will, in general, be given to the quality of the materials used in fabricating the rucksack, particularly where they are not subjected to some scientific testing so as to reduce the level of complexity—such as the inner lining of the rucksack, for example. Unnecessary detailing has been avoided and photographs have not been given purposefully. The basic idea is that while our overall functional requirements have been made very clear and minimum acceptable standards set, the manufacturer has considerable flexibility of design within those. Although the description given is self-explanatory for any intelligent manufacturer who has dealt with rucksacks, in case of any doubt, clarification may be had in person from the CoBRA HQ, Old Secretariat, Civil Lines, Delhi-54.]


2. DESIGN / MATERIALS USED


A. In decreasing order of preference, the base fabric material must be:


- Cordura 725 denier fabric
- MIL-C-43734 Class III textured nylon duck cloth
- Nylon 6-6 multifilament texturized yarn

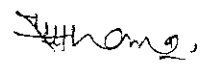

CRPF


BSF


CISF


ITBP


NSG


BPR&D

[Decreasing order of preference means that if rucksack made of Cordura 725 is offered by a firm, it shall be given preference over rucksacks made of other fabrics. If a rucksack made of Cordura 725 is offered and passes the performance tests then rucksacks made of other fabrics would not even be tested. If no firm offers Cordura 725 but offer the other two, then rucksacks made of MIL-C-43734 Class III textured nylon duck cloth will be preferred over those of Nylon 6-6 multifilament texturized yarn and the same criterion would apply as above. If only Nylon 6-6 multifilament texturized yarn is offered then competition will be on the basis of performance in test parameters and finally on the basis of cost.]

B. The fabric must weigh 9.4 to 12.0 ounces per square yard and must have a minimum breaking strength of 500 pounds warp and 300 pounds filling (weft).


C. It must have MARPAT (Marine Pattern) digital camouflage print on it—sample for color combinations may be seen from the uniform which CoBRA commandos wear—available at CoBRA Sector HQ. The color must be fast and the dyes used for dyeing and printing must be free from banned amines. [Explanation: The MARPAT digital camouflage print is required so that the rucksack blends with the uniform and does not stand out in contrast, thereby making the soldier more visible.]

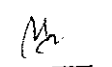
3. MECHANICAL PROPERTIES

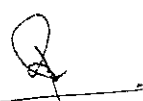
The base fabric material must necessarily be coated on the back side with clear polyurethane and water repellent treated. The coating shall be smooth and it should firmly adhere to the fabric. The coated fabric must be pliable and free from tackiness, stain, pinholes, surface irregularities, wrinkles, patches and all other coating defects. The coating should not have any objectionable odor. [Explanation: This is necessary because soldiers may have to walk during rain and they cannot afford to cover it separately nor can they afford to get the material and equipments kept inside wet].


4. Volumetric Capacity : 40 liters

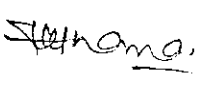

CRPF


BSF


CISF


ITBP


NSG


BPR&D

5. Overall dimensions of Rucksack

Sl.No.	Characteristics	Requirement
1	Length	* Maximum 22"
2	Width	* About 16"
3	Thickness	* About 6"
4	Weight	Not more than 05 lbs (2.25 Kg)
5	Weight carrying capacity of the rucksack	80 lbs


(*) Note :- The rucksack is required in a configuration in which the vertical length is substantially greater than the width and thickness of the rucksack. The basic consideration is that it must have an ergonomic design and shape. This is necessary so that the weight is distributed along the height of the soldier. Assuming that the width of a man is the x-axis, his height along the y-axis and his thickness along the z-axis, a rucksack which is thick, that is, protrudes much on the z-axis, will have the center of gravity of the loaded weight at a greater 'z' from the spine, than in a rucksack which has got greater length along the spine and is less thicker. The adverse effect of the center of gravity of the loaded weight lying at a greater 'z' is that it exerts a greater torque on the base of the spine through the shoulder straps and hence tires the man faster besides straining the lower back. A greater width causes impediments in dynamic motion of the soldier as the rucksack protruding to the sides has a tendency to snag with bushes etc. Dimensions are therefore given as a general guideline only. What is critical is the total volumetric capacity. Manufacturers are free to vary the dimensions to the extent of half an inch either way and also to contour the shape of the rucksack suitably while respecting the concept mentioned above—the volumetric capacity must remain at 40 liters.

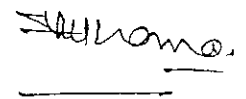

CRPA


BSF


CISF


ITBP

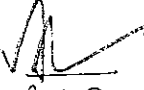

NSG

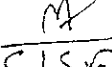

BPR & D

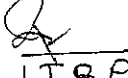
6. Description of the main compartment and the pouches of the rucksack


Sl. No.	Characteristics	Requirement
1	Description of pouches in general	All pouches, unless stated otherwise, must have zippers. When they are on the outside of the rucksack, they must be made of the same fabric as used in the main body of the rucksack. When the pouches are inside, they must be made of nylon and not of polyester mesh.
2	Main compartment of the rucksack	The zipper must open along the full length and width of the main compartment. Two symmetrically placed straps with snap buckles must be provided inside along the length of the rucksack, and one strap with snap buckle along the width in the center of the length of the rucksack to secure the stuff kept there.
3	Pouches inside the main cavity of the rucksack	Inside the main compartment or cavity of the rucksack, there should be two pouches on the rear side of the rucksack, that is, the side which is towards the back of the wearer and touches it. They should be on top of each other along the length. The top pouch should be of dimensions not less than 9" in height and 12" in width. The bottom pouch should be of dimensions not less than 8" in height and 12" in width.
4	Two side pouches	Two side pouches on each side with fully closing cover flaps must be provided on the thickness of the rucksack.
5	Main front pouch on the outer side	This shall be on the outside of the front of the rucksack when it is worn. Its dimensions should not be less than 15" in height, 12" in width and 3" in thickness. On its outer side there should be a Pouch Attachment Ladder System (PALS) as used in the MOLLE (Modular Lightweight Individual

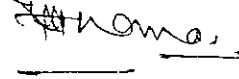

CRPF


BSF


CISF


ITBP



NSG



BPRD


		Load-Carrying Equipment System) pack of the US Army, of interwoven straps to attach small pouches, accessory carriers and other attachments. This must have 5 plain straps with 5 loops each and two velcroed straps with 5 loops each.
6	Pouch inside the outer flap of the main front pouch	On the inside of the outer flap of the main front pouch there should be a pouch of dimensions not less than 6" in height and 11" in width.
7	Pouch inside the inner rear side flap of the main front pouch	There shall be three pouches stacked on top of each other along the thickness of the rucksack. They shall be successively smaller. The innermost pouch, that is the one closest to the rear side of the rucksack will be of dimensions not less than 10" in height and 11" in width. The next pouch lying on top of it will be of the same width but 8.5" in height; the next would be 7" in height.
8	Pouch on top of the front outer side of the rucksack	This pouch shall sit above the main front pouch described above. The shape of this pouch shall blend with the contours of the top of the rucksack, but its height must not be less than 7" at its maximum height and the width must not be less than 12".
9	Stitching	Heavy duty tight double stitching [Lock stitch (4 stitches/cm) and Bartack (2 mm wide), preferably by Cordura though Nylon would not be a disqualification. The rucksack must be evenly stitched, free from missed stitches, holes, cuts, puckering and other defects. [Explanation: The weakest link in any device made out of fabric is the stitching, including that of carrying handles and load-bearing straps. The fabric may be very strong, but if the stitching is weak, the device would give way under dynamic loading.]
10	Padding in general	All padding must be of polyurethane foam.

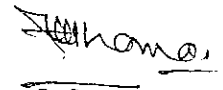

CRPF


BSF


CISF



ITBP



NSG



BPR&D


11	Padding on the back	This refers to the padding on the rear inner side of the rucksack—the surface that comes in contact with the back of the wearer. The padding is intended to serve two purposes. The first is to reduce the pressure on the back of the wearer so that it becomes more comfortable. The second is to create some space between the rucksack and the body so that there is ventilation; heat buildup is reduced and perspiration dries up. For this reason, padding on the back must be modular and not continuous on the whole area. The padding at the bottom, that is the part that is in contact with the lower back, must be not less than 3 cm (1.2") thick. The padding at the top, that is the part that is in contact with the back must be in 4 appropriately contoured modules, not less than 2 cm (0.8") thick and with not more than 1"-1.5" space between them.
12	Shoulder straps	Fully adjustable with snap-lock buckle. They must be appropriately contoured with a padding that must not be less than half an inch thick. The shoulder strap must not be less than 3" wide at its maximum and must be connected by a nylon belt not less than 1" wide.
13	Hip belt	Fully adjustable with snap-lock buckle. They must be appropriately contoured with a padding that must not be less than half an inch thick. The hip belt must not be less than 5.3" (13.5 cm) wide at its maximum and 3.5" (9 cm) at its minimum. It must be connected by a nylon belt and snap-lock buckle not less than 2" wide.
14	Zippers	All zips used in the rucksack must be heavy duty metallic or synthetic ones. All zips must have provision for pulling the sliders from both ends. They should have heavy duty 3" long nylon cord loops at the ends to make pulling of the zipper easier in the dark without fumbling.

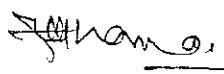

CRPF


BSR


CISR


ITBP


NSG


BRRZD

15	Snap-lock buckles	<p>All buckles must be of plastic and not metal. All the clasps (snap-lock buckles) must lock with direct insertion and must open with a single application of two fingers on the sides. The clasps must be adjustable and the synthetic material must be such that it does not slip under tension.</p> <p>[Explanation: Soldiers may have to take off the backpack quickly due to operational requirements. The system must lend itself to quick-release in the shortest time. It has frequently been noticed that the straps tend to slip making the fastening loose under load.]</p>
----	--------------------------	---

7. SAMPLE FOR TESTING

The firm will submit two samples for testing with their tender documents.

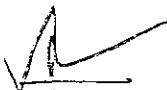
8. WORKMANSHIP AND FINISH

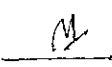
The general workmanship and finish must be of high standard. The rucksack shall be free from stitching defects like uneven stitch, puckering, gathering of threads, cuts & holes, streaky or patchy dying, stains and any other spots affecting the aesthetic appearance.


9. TRIAL DIRECTIVE

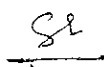
A unique approach has been adopted for testing the product. The testing methods are described below. They are so designed as to correspond to real life as closely as possible. In other words, the testing methodology seeks to simulate real life field conditions. The tests shall be conducted before the company representatives for absolute transparency shall be video recorded/photographed and the company representatives will be required to sign the test results.

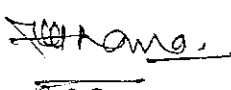

CRPF


BSR



CISF

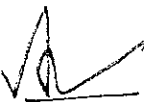

ITBP

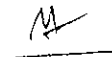

NSG

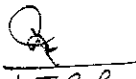

BPR&D

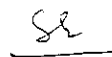
5.	Polyurethane	If there is any doubt about the polyurethane coating then it shall be got tested by the following method. Take approximately 5 g of the coated fabric. Treat it with 50 ml glacial acetic acid by warming for several minutes. To this add 0.1 g p-dimethy-amino benzaldehyde. The solution is further heated for 2-3 minutes. The solution turns yellow indicates presence of polyurethane.
6	Volumetric Capacity	The rucksack is not a precise geometric shape that would lend itself to calculation of volume by a formula. The volume shall be determined by direct experiment by us. For testing the volume, the firms will be required to coat the insides of the rucksack and all its pockets with any waterproof paint and allow it to dry. After that water in measured quantity will be poured in them to see the quantity of water they hold. Due allowance will be given for some loss of volume due to the paint.]
7	Weight carrying capacity of the rucksack	By direct experiment by us. The rucksack will be loaded with 80 lbs and hoisted a given number of times by its main handle as well as by the shoulder straps to see whether the rucksack and the handles/shoulder straps hold the weight without snapping, rupturing or giving way in some other manner.



C R P F


B S F


C I S F

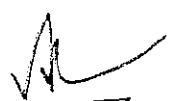

I T B F



N S G



B P R & D


8	Two side pouches	They should be of a size which may hold a 2 liter PET bottle commonly used for soft drinks/popular cold drinks in India because it is in such bottles that the soldiers usually carry their water.
9	Stitching	The stitching will be tested by us by putting a given load (55 lbs) in the rucksack. The load will be made half of hard material like bricks and half of softer material like clothes. The rucksack will be suspended by a rope of 5 feet length. The rucksack will be tested to see how the stitching responds to dynamic loads such as may be encountered when soldiers jump from heights with the rucksack or it is subjected to jarring motions when they make violent movements in operations. The rucksack will be raised to a height of 5 feet and allowed to drop a given number of times without ever touching the ground so that all the shock is absorbed by the rucksack and the rope. It will be also be swung from the same rope a given number of times to a given angle. After that, the rucksack will be opened and examined to see if stitching has given way anywhere.
10	Padding in General	If there is a doubt about the quality of foam used, the polyurethane foam shall be got identified by the following test. Approx. 1g of foam is treated in 50 ml glacial acetic acid by warming for several minutes. To this added 0.1 g p-dimethylamino benzaldehyde. The solution is further warmed for 2-3 minutes. The solution turns yellow indicating presence of polyurethane. Padding will also be tested for wearing comfort.



CRPA


BSA


CISA



ITBP


NSG

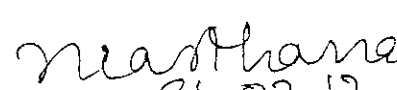

BPR&D

11	Zippers	The functional quality of a zipper lies in how smoothly it operates. Zips will be tested by opening and closing them a given number of times (minimum 100) and checked for whether they snag or require extra effort at any stage or leave any part unzipped etc.]
12	Snap-lock buckles	They will be tested for slippage by actual tension applied. Field trial will be carried out before the tenderers with a given tension common to all.

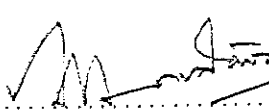
Chairman


 (K. Vijay Kumar), DG, CRPF

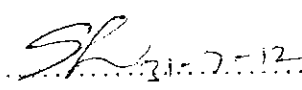
Member


 31.07.12
 (Dr. N.C. Asthana), IG, CoBRA Sector

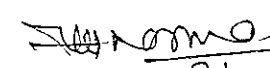
Member


 31.7.12
 (S.K. Srivastava), DIG (Prov), BSF

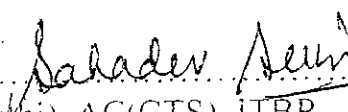
Member


 31-7-12
 (Jai Singh), Dy. Comdt., NSG

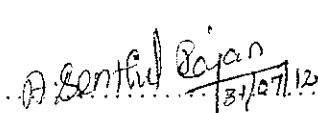
Member


 31-7-2012
 (Y.K. Sharma), Dy. SP, BPR&D

Member


 31/7/12
 (Sahadev Sethi), AC(CTS), ITBP

Member


 31/07/12
 (Senthil Rajan) A/C, CISF