EXPRESSION OF INTEREST

1. Assam Rifles is in the process of formulating the QR (Qualitative Requirements)/ Specification for the **Disruptive Digital Pattern Dress for Assam Rifles** for all Assam Rifles troops. The draft QRs/ Specification of these items are attached herewith.

2. The interested firm/parties dealing in subject matter are invited to submit their view/opinions on the draft revised QRs/Specification of the items by **19 Dec 2025.**

Contact Persons

R S Karki
Lt Col
SO-1(Provn)
For DG Assam Rifles.
E-mail : so1.provision-dgar@gov.in

महानिदेशालय असम राइफल्स Directorate General Assam Rifles SHILLONG

Appendix B
(Refer para 8 of HQ DGAR letter No IV.19038/Prov(CTS)
New pattern/2025____ dated_____ December 2025)

SUBJECT: DRAFT /QRS/SPECIFICATION OF "CLOTH (NYCO) DISRUPTIVE DIGITAL PRINT FOR ASSAM RIFLES PERSONNEL"

1.0 **Forward**.

1. 1. This specification has been prepared by Office of the Headquarter Directorate General Assam Rifles on the authority of the Directorate General Assam Rifles.

1.2. This specification is for use by the Assam Rifles

.

1.3 This specification would be used for manufacture, quality assurance and procurement of the items.

1.4. Quality assurance authority for the item covered in this specification is Office of the Directorate General Assam Rifles. Shillong, Meghalaya. All enquiries regarding this specification, including those relating to any contractual condition to the official address as above.

1.5. This specification holds good only for the supply order for which it is issued.

1.6 The quality assurance authority reserves the right to amend or modify this specification as and when required.

1.7. The quality Assurance Authority is the competent authority to grant concessions, if any, in respect of any clause contained in this specification.

1.8 For the purpose of deciding whether a particular requirement of this specification is complied with the final value observe or calculated expressing the result of the test shall be rounded off in accordance with IS-2-1960 (Referred 2006). The number of significant places retained in the rounded off value should be the same as that of the specified valued in this specification.

2.0 **Scope**.

2.1 The specification prescribes the requirement of Disruptive Pattern (Camouflage Pattern) Cloth (Dark & Light colour) for jungle operations made of Nylon and Cotton blended material, in general Known as NYCO.

2.2. This specification does not specify the design/ pattern and stitching of uniform form the disruptive pattern cloth.

2.3 This specification does not specify general appearance feel etc. of the Disruptive pattern cloth.

3. **Manufacture and Finish**

3.1 The Disruptive Pattern cloth shall have Rib stop wave (IS-13510: 2000). It shall be made from uniform bland of 50% of Nylon fibers with 50% Cotton. The selvedges shall be firm and straight. The cloth shall be well singed. The fabric shall be Heat set and fully shrunk. The blend composition of the cloth shall conform to the requirements given in the Table-I.

3.2 The disruptive pattern may be obtained may repeats of the design of 34.25 inch ±5% in warp direction and 33.25 inch ±5% in weft direction (See Figure-I). Figure-2 and Figure-3 indicate various colour for the light and dark colour disruptive pattern cloths respectively. The repeat of the design in both the colour is same. The various areas of the pattern shall be properly registered in relation to each other and shall present definite sharp demarcations with a minimum of feathering or spew. Each patter shall show solid coverage. Dyes used in the dying and printing shall be free from banned amine (Test method IS 15570: 20005)

3.3 The fabric supplied will be in the width of 150 cm and above **excluding 2.5 cm from selvedge**. The length of each piece shall be 40 meters or as agreed between supplier and purchaser.

3.4. Freedom from Defect. The cloth shall be fee from Major flaws (Defects) which shall not exceed 10 per 100 meter length (Sec Not). A list of major flaws (defect) is given in Append ix-A of IS:4125. The allowance for providing extra length of cloth in lieu of the flaws (defect) not exceeding the permissible limit may be agreed between the buyer and seller. It shall also be free from dyeing defects such as streaks, stains and uneven dyeing defects such as streaks, strains and uneven dyeing and improper printing in case of printed design etc, The finished cloth shall be free from sizing filling and dressing materials and substance liable to cause subsequent tendering. The Disruptive patterns cloth shall be determined on all pieces under test and converted in number of defects per 100 meter length (Sec 6.4).

3.5 The design and shape of the Disruptive Pattern Uniform shall be as per the buyer requirement. The type of stitch (Sec IS -11161:2000 Reaffirmed 2007) and count of sewing thread for seams and stitches (Sec IS 10789: 2000 Reaffirmed 2007) at various portions of Disruptive Patterns Uniform may be as per the requirement of buyer. The uniform may be assembled throughout with lock stitches regulated at 35 to 40 stitches per 10 cm. The stitches shall be even tension with all loose ends fastened. However, selection of type of stitch and sewing thread shall be as agreed to between the buyer and seller. The disruptive patter uniform shall be visually examined and shall be evenly seven or stitched and shall be free from missed stitches, holes, cuts and free form puckering defects. The colour of the sewing thread used in the disruptive pattern uniform shall not bleed or stain.

4. **Requirements**.

4.1 The Disruptive Patter Uniform cloth shall conform to the requirements given in Table-. Specification for colour used in printing shall be given in Table 3,4 & 5 for light colour disruptive printed cloth and Table 2 for dark colour disruptive printed cloth.

4.2. Sealed Sample in order to illustrate or specify the indeterminable characteristics such as general appearance, Luster, feel and print design of the Disruptive pattern cloth, a sample has been agreed upon and sealed: the supply shall be conformity with the sample in such respects.

4.3 The custody of the sealed sample shall be a matter of prior agreement between the buyer and seller.

5. **Marking**.

5.1. Each piece of cloth shall be marked with the following:

a. Name of the material, namely disruptive pattern cloth- Nylon/Cotton blended material:

b. Composition, namely Nylon 50 percent and Cotton 50 Percent to be marked on every alternate meter of the cloth at a height not exceeding 2.5 cm form the selvedge:

c. Length and width;

d. Manufacture's name initials or trade-mark;

e. Any other information required by the law in force and/ or by the buyers;

6. **Packaging & Packing**.

6.1. The Disruptive Pattern uniform cloth shall be packed in polyethylene or polypropylene bags and or in box, as required by the buyer (See IS 2194 and IS 2195)

7. **Sampling and criteria for conformity**.

7.1. The number of pieces to be selected at random from a lot for inspection shall be according to col 1 and 2 of Table 6. To ensure randomness of selection procedure given is IS 4905 shall be followed.

7.2. The sampling procedure detailed in 7.2 to 7.4 shall give desired protection to the buyer and the seller. Provided that the lot submitted for inspection id homogeneous. To achieve this, the manufacturer shall maintain a system of process control at all stages of manufacturing ensuring the Disruptive pattern cloth tendering by him for inspection to comply with the requirement of this standard in all respects.

NOTE: for effective process control the used of statistical quality control technique is recommended and helpful guidance may be obtained in this respect from 397 (Part I): 2003 and IS 397 (part-II) 2003

7.3. Lot: The number of pieces of cloth of same composition and constructional particulars delivered to a buyer against a dispatch note shall constitute a lot.

7.3.1. The conformity of a lot to the requirements of this specification shall be determined on the basis of the test carried out on the samples selected from the lot.

7.4. The number of pieces to be tested at criterion for conformity for each of the characteristic shall be as follows:-

Characteristic	No of Samples	Criterion for conformity
i) Visual inspection for freedom from major flaws (defects)	According to col 2 of Table -6	All the pieces for cloth selected according to col 2 to Table -6 shall be visually examined for major flaws, meter by meter. The total number of defects observed on sample piece shall be converted into number of defects per 100 meter length. Permissible number of non conforming pieces not to exceed corresponding number given in col 3 of Table 6.
ii) Construction, Ends picks, mass length and width	According to col 4 of table -6	All specimens shall satisfy the relevant requirement.
iii) Blend composition shrinkage, breaking strength, tearing strength colour fastness pH etc.	According to col 5 of table -6	All specimens shall satisfy the relevant requirement.

8.0 **Terminology** .

For the purpose of this specification the definition given in IS-3596:1967 (RA 2004) shall be apply.

Table 1: requirements of Disruptive Pattern Cloth

Sl No	Characteristics	Requirements	Test Method
1.	Approximate count of yarn (for guidance only) Ne -Warp Weft	 20s X 2(2/40^{s}) 16s	 IS 3442:1980
2.	Composition, % -Nylon 6 -Cotton	 50±5% Remainder	AATCC Test Method 20 and 20 A

Sl No	Characteristics	Requirements	Test Method
3.	End/dm (minimum)	400	IS-1963:1981
4.	Picks/dm (minimum)	180	IS 1963: 1981
5.	Width, Cm	150 and above	IS 1954: 1990
6.	Mass, gm/m2	220±5%	IS 1964:1970
7.	Breaking Strength, Newton (Minimum) Warp-wise Weft-Wise	 1100 600	IS 1969: 1985
8.	Elongation at break% (Minimum) Warp-wise Weft-Wise	 35 20	IS 1969:1985
9.	Tearing Strength, Newton (Minimum) Warp-wise Weft-Wise	 35 35	IS 6489:1993
10	Abrasion Resistance up to 50,000 cycles	Not thread breakage	IS 12673: 1989
11	Colour fastness to washing Change in colour Staining on adjacent fabric	 4 or better 4 or better	IS/ISO 105 C10 C(3) 2006
12	Colour fastness to perspiration Change in colour Staining on adjacent fabric	 4 or better 4 or better	IS 971: 1983
13	Colour fastness to Hot pressing (200^0 C only dry press) Change in colour Staining on adjacent fabric	 4 or better 4 or better	IS 689: 1988
14	Colour fastness to rubbing -Dry -wet	 4 or better 4 or better	IS 766: 1988
15	Colour fastness to See water -Change in colour -Staining on adjacent fabric	 4 or better 4 or better	IS 690: 1988
16	Colour fastness to light	5 or better	IS 2454: 1985
17	Dimensional change due to relaxation, both directions, percentage maximum	1	IS 2977: 1967
18.	Heat Shrinkage both directions, percentage, maximum	2	IS 12170: 1967 (temperature 150 ± 2^0C
19.	pH Value	6.0-8.0	IS 1390 9Cold method): 1983
20.	Pilling (after 5 hour of test Minimum)	4	IS 10971: 1984
21	Wrinkle Recover (after 24 hours), Minimum	3	AATCC 128-2004
22	Air permeability, cc/sec/cm^2Minimum	3	IS 11056: 1984

Sl No	Characteristics	Requirements	Test Method
23	Water vapor permeability (water method), g/m^2/day. Minimum	1400	ASTM E-96/E-96 M-05, (Water method, Temperature: 32 ± 2^0C, RH 50±2% Upright Method, Air velocity 0.02-0.3 m/Sec)
24.	Colour difference (For all colour (AE)	<2.0	See table 1
25.	Nature of dyes	For ground –Acid and VAT dyes For print – VAT dyes	IS 4472 (Part -1) 1667. * All test method will be as per latest IS.

TABLE 2 DISRUPTIVE PRINT – DARK GREEN COLOUR

Table 2: Specification of colour of Disruptive pattern Uniform
(AATC Test Method 173: 2005 & AATCC Evaluation procedure 7: 2003)

Colour	:	**Dark Green**
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
5.227	6.267	5.639

LCH :

L	C	H
30.075	8.911	149.496

CMC (I:c) : 2: 1

Colour Difference, ΔE_{cme} : ≤ 2.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note -1 : Absorbance/reflectance/transmittance are affected by surface characteristic feature of the substrate. Therefore comparison should be made between sample of same type i.e identical fabric construction parameters and filament/ fiber composition

Note -2 : Test should be carried out after proper conditioning as per AATCC 173.

TABLE 3DISRUPTIVE PRINT – BROWN

Table 3: Specification of colour of Disruptive pattern Uniform
(AATC Test Method 173: 2005 & AATCC Evaluation procedure 7: 2003)

Colour	:	**Brown**
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
10.206	9.663	6.721

LCH :

L	C	H
37.230	14.959	55.620

CMC (I:c) : 2: 1

Colour Difference, ΔE_{cme} : ≤ 2.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note -1 : Absorbance/reflectance/transmittance are affected by surface characteristic feature of the substrate. Therefore comparison should be made between sample of same type i.e identical fabric construction parameters and filament/ fiber composition

Note -2 : Test should be carried out after proper conditioning as per AATCC 173.

TABLE 4DISRUPTIVE PRINT – KHAKI

Table 4: Specification of colour of Disruptive pattern Uniform
(AATC Test Method 173: 2005 & AATCC Evaluation procedure 7: 2003)

Colour	:	**Khaki**
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
14.070	14.423	11.136

LCH :

L	C	H
44.834	11.188	76.878

CMC (I:c) : 2: 1

Colour Difference, ΔE_{cme} : ≤ 2.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note -1 : Absorbance/reflectance/transmittance are affected by surface characteristic feature of the substrate. Therefore comparison should be made between sample of same type i.e identical fabric construction parameters and filament/ fiber composition

Note -2 : Test should be carried out after proper conditioning as per AATCC 173.

TABLE 5DISRUPTIVE PRINT – BLACK

Table 5: Specification of colour of Disruptive pattern Uniform
(AATC Test Method 173: 2005 & AATCC Evaluation procedure 7: 2003)

Colour	:	**Black**
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
3.635	3.785	3.853

LCH :

L	C	H
22.947	1.386	57.502

CMC (I:c) : 2: 1

Colour Difference, ΔE_{cme} : ≤ 2.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note -1 : Absorbance/reflectance/transmittance are affected by surface characteristic feature of the substrate. Therefore comparison should be made between sample of same type i.e identical fabric construction parameters and filament/ fiber composition

Note -2 : Test should be carried out after proper conditioning as per AATCC 173.

CAMOUFLAGEDESIGNPATTERNFORASSAMRIFLES
(4 COLOR DIGITAL PATTERN)

Annexure-A (CAD & PANTONE)

Colors	L*	C*	H*	X	Y	Z
DARK GREEN	30.075	8.911	149.496	5.227	6.267	5.639
BROWN	37.230	14.959	55.620	10.206	9.663	6.721
KHAKI	44.834	11.188	76.878	14.070	14.423	11.136
BLACK	22.947	1.386	57.502	3.635	3.785	3.853

Table 6- Sample size and permissible number of non-conforming Disruptive PrintedUniform Cloth

Lot Size	Sample Size	Permissible number of non-conforming pieces	Sub –Sample Size	Sub-sub sample size
(1)	(2)	(3)	(4)	(5)
Upto 100	5	0	3	3
101-150	8	0	3	3
151- 300	13	1	5	3
301-500	20	1	5	3
501-1000	32	2	8	5
1001 and above	50	3	13	5