Technical Specification for
CAP, SERVICE
Ceremonial Queen's Colour Squadron
RAF

Defence Clothing
Integrated Project Team

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Defence Equipment & Support

MINISTRY OF DEFENCE

PREFACE

TABLE 1 – PRODUCT LIST

Item Name	CAP, SERVICE Ceremonial Queen's Colour Squadron RAF
Development File No.	NN/SCD/P1093
Product Support File No.	NV/452/034

NATO Stock Numbers	**Pattern Number**
8405-99-978-9166 to 9182 and 8405-99-132-4031 Out size	35/R/1795C

Any colour shown in this document is for representation and must not be used for colour matching.

IPR STATEMENT

Technical documents in this specification refer to the edition current at the date of tender or contract unless otherwise stated.

TABLE 2 – ISSUE RECORD

Issue No	Comments	Issue Date
8	Reformatted to DE&S template. Updated Specs & docs. Updated to Pattern No. 35/R/1795C. Badge eyelets requirement retained for QCS Warrant Officer cap only.	12 November 2008
7	Reformatted, updated and amendment to para 5.7	04 August 2003
6	Clause 5.5 Additional headband. Amended to read 'join at centre back'.	18 February 2003
5	Amended Related documents, to add badge and chin strap position.	24 October 2002
4	Minor modifications and re-formatted.	30 July 2001

PART 1

1. THE PRODUCT

a. Use of the Product. A peaked cap for wear by the Queen's Colour Squadron RAF. The size schedule provides for seventeen sizes and out size.

b. QCS Warrant Officer 1 “special measure” cap to be fitted with eyelets as detailed in para 4.19 and 5.12.

TABLE 3 - RELATED SPECIFICATIONS AND DOCUMENTS

Specification/Document	Detail
BS EN ISO 105 Part X12	Textiles. Tests for colour fastness. Colour fastness to Rubbing.
BS EN 12590	Textiles. Industrial sewing threads wholly or partly from synthetic fibres.
BS EN ISO 139	Textiles - standard atmospheres for conditioning and testing.
BS 2780	Glossary of leather terms.
BS 3870 Part 1 & 2	Stitches and seams.
BS 4060	Pressed wool felts.
BS 4560	Fabrics for linings in uniform clothing.
UK/SC/4687	Embroidered and other distinguishing items and components used therein.
UK/SC/4776	Cloth, buckram, jute.
UK/SC/4885	Cloth, barathea, worsted, blue-grey.
UK/SC/5628	Cloth, velvet, cotton and silk, WR.
UK/SC/5696	Leather, sheep head leathers.

2. PATTERNS.

a. Master Patterns. The DC IPT at Caversfield holds a Master Pattern for this product. Potential contractors may view the pattern on site by arrangement with the DC IPT Commercial Department.

c. Standard Patterns. A Standard Pattern may be obtained from the DC IPT Technical Information Office and may be used to provide the criteria for all materials, components and manufacturing features not fully defined in this specification.

PART 2

3. PRODUCT DESIGN

a. Product Description. A peaked cap with additional headband and 2 chin straps.

TABLE 4 – PRODUCT COMPONENTS

4.1 Crown, bevel and band	• Cloth, barathea, wool worsted, blue-grey No. 4 Pattern No. 8373A, to Specification UK/SC/4885 NATO Stock No. 8305-99-942-5419.
4.2 Additional headband	• Braid, textile, black, worsted, flat 44mm, Pattern No. 9337A to Specification UK/SC/4687 NATO Stock No. 8415-99-973-0787.
4.3 Crown and bevel lining	• Cloth, twill viscose, plain weave polyester or plain weave, viscose. • All linings to be grey or black to meet the colour fastness requirements for perspiration. Table 4 Ref 1.4 of BS 4560.
4.4 Crown disc	• Cellulose acetate sheet, colourless; • Or Polyethylene film. • Or PVC sheeting. • Not less than 0.1mm and not more than 0.13mm.
4.5 Interlining crown	• Cloth, compressed felt, wool, white, and bevel natural, unstoved, Pattern No. 8056A, to BS 4060 NATO Stock No. 8305-99-942-7158, • Or an alternative approved by the DC IPT.
4.6 Cord for crown piping	• Mercerised piping cord, 8 turns per 2cm 's' twist first doubling, 2.5 turns per 2cm 'z' twist second doubling. 856 Tex. • Or an alternative approved by the DC IPT.
4.7 Head leather and pocket	• Leather, sheep, basil at least 1.0mm and no more than 1.3mm thick, to UK/SC/5696. The term basil is defined in BS 2780. • Or an imitation leather approved by the DC IPT. • Or an alternative approved by the DC IPT.
4.8 Bow for head leather	• Braid, fawn or brown 13mm ± 1mm

TABLE 4 – PRODUCT COMPONENTS Continued

4.9 Band stiffener	• Cloth buckram, jute, laminated 2 ply, impregnated buckram to comply with the buckling and flexibility tests specified in specification UK/SC/4776. • Or; Glued hessian plain weave, 1000 g/m². • Or; High density polyethylene sheet 1.0mm thickness ± 0.1mm, solid. • Or High density polypropylene sheet 1.0mm thickness ± 0.1mm, solid.
4.10 Peak	• Flexible PVC, black/beige laminate, with black side polished and beige side flock sprayed, approximately 1.0mm thick, laminated to flexible vulcanised fibre or flexible fibreboard. • Or Two-part laminate, poly cotton, impregnated with polyurethane with black patent finish approximately 1.0mm thick, laminated to polypropylene/polyethylene, surface finish leather grain, colour to be bottle green, approximately 1.5mm thick. • Or Total thickness of peaks to be no less than 2.5mm and no more than 2.8mm, to comply with the requirements of Table 9.
4.11 Lining for peak (except two part laminate)	• Skiver green or imitation skiver green embossed cotton backed plastic, to conform to Table 7. The term skiver is defined in BS 2780.
4.12 Binding for peak	• PVC, black, 0.6mm thick.
4.13 Binding stiffener at peak	• Cloth, velveteen, black to comply with the colour fastness requirements for perspiration, Table 2 of UK/SC/5628.
4.14 Wire for crown	• Steel, galvanised, flat section 5mm wide 25 SWG with brass or steel connecting tube.
4.15 Front support	• Sprung steel support with leather tab or brass tip. • Or an alternative approved by the DC IPT.
4.16 Chin straps	• PVC, black, 10mm wide, at least 1.0mm but not more than 1.3mm thick with buckles.
4.17 Badge	• Badge organisation, RAF Other Airman. Pattern No. 35/R/2219, NSN 8455-99-978-9655.

TABLE 4 – PRODUCT COMPONENTS Continued

4.18 Buttons	• Button, flexible flat 18 ligne (13mm) sewn on or pushed through with a split pin
4.19 Eyelets for badge mounting.	• Eyelets, black, oval, with washers **– only required for RAF QCS WO1 special measure cap only.**
4.20 Sewing threads for all purposes.	• Thread, corespun, polyester/cotton to Table 5 to BS EN 12590. a) Metric Ticket No. 25(26) for peak to stiffener. b) Metric Ticket No. 36 for bevel, band, crown, back and front finishing, lining and all hand sewing. c) Metric Ticket No. 75 for all other sewing.

TABLE 5 – PRODUCT CONSTRUCTION

5.1 Crown	• The crown tip, oval in shape, is to comply with the measurements set out in Table 6. The measurements are to be taken from the crown tip piping seam. • The crown is to be securely combined to white felt with a suitable adhesive to form a waterproof barrier and the laminate produced is to comply with the requirements set out in Table 8. The bond is to be continuous to ensure that the outer material is free from blisters. • The perimeter of the crown tip is to have a corded piped edge joined in line with the back seam of the bevel quarters.
5.2 Bevel	• The bevel, combined to white felt as specified in para 5.1 above, is to be quartered with the seams opened and pressed flat. • The Band / Bevel seam is to be pressed open through its entire length.
5.3 Band	• The band is to be joined at the centre back of the cap in line with the seam of the bevel. Seam to be opened and pressed flat. • The band is to have a stitched out welt, 0.6cm from the bottom edge, formed using seam type 6.05.01 of BS 3870 Part 2.
5.4 Additional headband	• The additional headband is to be fitted with the join at the centre back, seamed 1.5cm. The corners are to be turned and stitched to avoid fraying.

TABLE 5 – PRODUCT CONSTRUCTION Continued

5.5 Band stiffener	• The band stiffener is to be cut sufficiently long to allow a 2cm overlap where it is joined at the back of the cap, slightly offset to reduce thickness. • The stiffener is to be stitched through the outer material immediately below the stitched out welt, and basted through the outer material at the band/bevel seam.
5.6 Lining	• The crown lining is to be sewn in with the crown tip piping seam and be securely attached at the bottom edge of the stiffener. The lining may be securely glued with a suitable adhesive, machine or hand-sewn. • The lining is to be cut deep enough to allow the side and back bevel to roll without distortion. • A detachable transparent disc, sufficient to cover the crown tip, is to be inserted on top of the crown lining.
5.7 Peak	• The peak, black side uppermost, chamfer edged on the brow line and lined on the underside with skiver green, is to be identical in shape to that of the Standard Pattern. • The outer edge is to be bound with black PVC 0.6cm deep when finished. The binding is to be formed to seam type 3.01.01 of BS 3870. • The peak may be fitted to the band stiffener by sewing the inner edge of the peak to either the inner or outer edge of the stiffener. The seam allowance from seam to inner peak edge is not to be less than 0.3cm and not more than 0.5cm. • When fitting the peak to the outer edge of the stiffener, the bottom edge of the stiffener is to be bound in velveteen. • When fitting the peak to the inner edge of the stiffener, an additional strip of band stiffener approx. 2.5cms in depth and running the length of the peak is to be attached to the inner edge of the peak. The bottom edge of the stiffener is to be bound with velveteen.

TABLE 5 – PRODUCT CONSTRUCTION Continued

5.7 Peak continued	• The peak is to be securely sewn on to the stiffener with approximately four stitches per 2cm • When fitted, the peak is to be correctly balanced and be central to the front seam of the bevel quarters. • The black surface of the peak is to be free from cracks and all other defects and comply with Table 8
5.8 Head leather	• Each cap is to have a brachered head leather, the ends of which are to be overlapped 1cm at the centre back of the cap and tacked together at the top edge with a braid bow. • The taping on the head leather may be sewn to the band by hand or machine, but in neither case is the leather to show below the bottom edge of the band.
5.9 Chinstrap and buttons	• A button is to be securely attached on each side of the cap with sufficient shank to retain the 2 chinstraps, positioned 1cm from the bottom edge of the band and 2.5cm behind the junction of the peak. One chinstrap is to be positioned around the front above the peak, the other chinstrap around the back.
5.10 Badge	• The badge is to be securely sewn to the cap, positioned centrally at the front with the top of the badge 2.5cm below the crown/bevel seam (below piping).
5.11 Crown wire	• A covered cap wire with a connecting tube is to be fitted on the inside of the cap above the piping of the crown.
5.12 Eyelets **RAF QCS Warrant Officer cap only.**	• Two oval eyelets, with washers, are to be fitted at the front of the cap, in the quarters of the bevel. Each eyelet is to be positioned 1.4cm from the centre seam measured to the centre of the eyelet and 1.1cm from the headband seam, when measured from the centre of the eyelet to the respective seam.
5.13 Front support	• The front steel support is to be fitted with a good quality leather tab or brass tip. • The leather tab is to be riveted and turned over at the top of the support. • The bottom of the support is to be housed in a 2.5cm square pocket of good quality leather sewn to the centre front of the band stiffener.

TABLE 5 – PRODUCT CONSTRUCTION Continued

5.14 Seams and stitching to BS 3870	• Machine stitching is to be stitch type 301, with at least eight but not more than ten stitches per 2cm and be correctly tensioned. • The piping is to be formed using seam type 1.18.01. • The brachering on the head leather is to be stitch type 304 with at least six stitches per 2cm. • The felling on the head leather is to have at least six stitches per 2cm.
5.15 General	• All seams are to be free from pucker. • The cap is to be free from all ends of sewing thread, be blocked and pressed and delivered in a clean condition. • The surface of the peak is to be free from cracks and all other defects.

TABLE 6 – SCHEDULE OF NATO STOCK NUMBERS, MEASUREMENTS AND TOLERANCES

All measurements are in cm unless otherwise stated

																			Tol mm	
NATO Stock No. 8405-99		978-9166	978-9167	978-9168	978-9169	978-9170	978-9171	978-9172	978-9173	978-9174	978-9175	978-9176	978-9177	978-9178	978-9179	978-9180	978-9181	978-9182	132-4031	+	−
Size and internal circumference		48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	Special Measure		
Crown	Length	24.9	25.2	25.5	25.8	26.1	26.4	26.7	27	27.3	27.6	27.9	28.2	28.5	28.8	29.1	29.4.	29.7		2	2
	Width	23.7	24	24.3	24.6	24.9	25.2	25.5	25.8	26.1	26.4	26.7	27	27.3	27.6	27.9	28.2	28.5		2	2
Crown		1.2 oval																		2	2
Bevel		6 deep at centre front graduating to 5 at centre back																		2	2
Width of Band		5																		2	2
Peak	Depth at front	5.3																		1	1
	From point to point	23.0																		5	5
Depth of Headleather		4.5																		2	2
Depth of stiffener		6																		2	2
Front Support	Length	9.0																		2	2
	Width	1.2																		2	2
Chinstrap	Width	1																		2	2
	Length when fully extended	51																		20	20

TABLE 7 – TEST REQUIREMENTS.

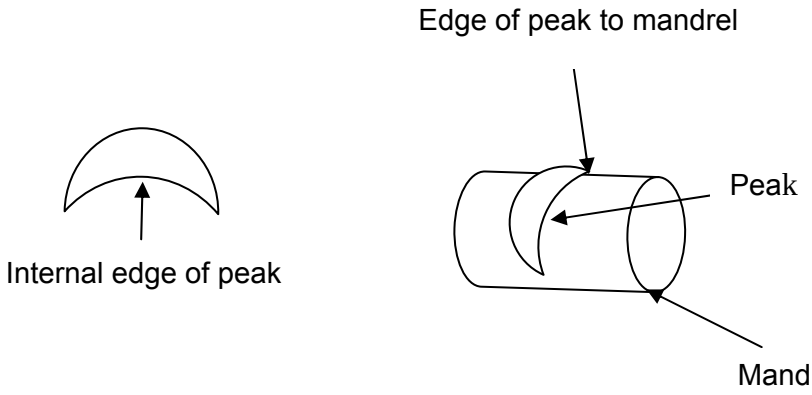
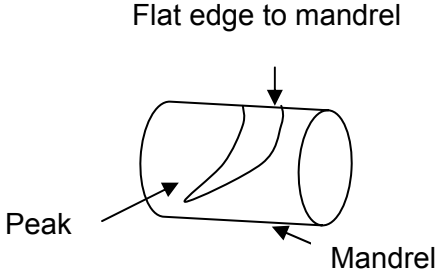
The peak lining is to conform to the requirements of the following Table:

Agency	Rating for colour change	Method of Test
Rubbing wet	4	BS EN ISO 105 (X12)

TABLE 8 – METHOD OF TEST. To Determine Fabric/foam Laminate Bond Strength. The minimum bond strength of the laminated fabric is to be 1.25N/25mm when determined by the following method:

8.1 Sample preparation	• Specimens which have been conditioned for 24 hours in the standard testing atmosphere defined in BS EN ISO 139 are to be cut 200mm x 25mm with at least two samples being cut with the 200mm dimension in the warp and weft direction respectively.
8.2 Procedure	• The conditioned samples are to be delaminated by hand for 100mm. The tails are to be clamped in the jaws of a CRE tensile testing machine. The sample is then to be peeled apart with a jaw separation of 100mm/min for a 50mm length of sample.
8.3 Calculation and expression of results	• The maximum value of peel bond strength is to be recorded for each sample that peels for 50mm without the foam breaking. If the foam does break during delamination this fact is to be noted and the value at break recorded. • The mean value of two results for samples, which delaminate for 50mm without the foam breaking, is to be calculated in the warp and weft direction respectively.

TABLE 9 – TEST FOR DELAMINATION OF CAP PEAKS

9.1 Test procedure	• Two cap peaks are to be conditioned for 24 hours in the standard testing atmosphere as defined in BS EN ISO 139. • One peak is then to be placed in a cabinet with a temperature of 70°C and a relative humidity of 100% for six hours. The peak is then to be removed and closely examined to ensure that there has been no delamination of the black PVC or the green skiver. Any degree of distortion is to be such as will not effect the fitting of the peak to a cap. • The other peak is to be placed into a freezer for 2½ hours at -20°C. The peak is then to be removed and flexed once in each direction. The peak must not fracture or crack. • Freezer temperature – 20ºC • Time in freezer – 2 hrs 30 mins • Mandrel 150 mm diameter
9.2 Edge test	 • Bend the internal edge of the sample around until full contact with the Mandrel's circumference is achieved, using the minimum of force required. Repeat for both black and green side up. Examine both sides of the peak for fractures or cracks; any such damage on either peak is to render the batch rejected.
9.3 Flat test	 • Bend the face of the sample flat around the Mandrel until full contact with its circumference is achieved, using the minimum of force required. Repeat for both black and green side up. Examine both sides of the peak for fractures and cracks, any such damage on either peak is to render the batch rejected.

4. LABELLING REQUIREMENTS. Information and format is to be as follows:

- The size number, NATO Stock Number and the contract number

- Position: a. Clearly marked on a label to be sewn to the centre of the crown lining. or;

  b. Clearly printed on a pressure sensitive self adhesive label to be adhered to the crown lining.

- The identification label is to be covered by the crown disc, including pressure sensitive self adhesive labels.

- The size number is to be 1.2cm high and the remainder of the characters 0.6cm high.

TABLE 10 – SPECIMEN LABEL

Size
NSN
Contract Number

Example Identification and marking label