INCH-POUND
GL/PD-06-07
19 April 2006

PURCHASE DESCRIPTION

PARKA, EXTREME COLD WEATHER (GEN III)

1. SCOPE

1.1 Scope. This purchase description covers the requirements for an insulated loft jacket, manufactured from a water repellent nylon cloth and batting material to be used as a component of the Extended Cold Weather Clothing System (ECWCS), GEN III.

1.2 Classification. The loft jacket shall be of one type in the following sizes, as specified (see 6.2).

SCHEDULE OF SIZES

Size	Small	Medium	Large	X-Large
Regular	X	X	X	X
Long			X	X

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government Documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form part of this document, to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

V-T-295 - Thread, Nylon

FEDERAL STANDARDS

FED-STD-4 – Glossary of Fabric Imperfections

COMMERCIAL ITEM DESCRIPTIONS

A-A-55126 - Fastener Tapes, Hook and Loop, Synthetic
A-A-55634 - Zipper, (Fastener, Slide Interlocking)

DEPARTMENT OD DEFENSE SPECIFICATIONS

MIL-STD-129 – Military Marking for Shipment and Storage
MIL-PRF-5038 - Tape, Textile and Webbing, Textile, Reinforcing Nylon
MIL-DTL-32075 – Label: For Clothing, Equipage, and Tentage, (General Use)

(Copies of these documents are available from the Acquisition Streamlining and Standardization Information System (ASSIST) database, online at http://assist.daps.dla.mil/quicksearch/ or www.dodssp.daps.mil or from the Standardization Document Order Desk, 700 Robbins Ave. Philadelphia, PA 19111-9054).

2.2.2 Other Government documents, drawings and publications. The following Government documents, drawings and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation or contract.

CODE OF FEDERAL REGULATIONS (CFR)

16 CFR Part 1500 – Federal Hazardous Substances Act Regulations
29 CFR Part 1910 – Occupational Safety and Health Standards

(Copies of these documents are available online at: www.access.gpo/nara/cfr or from the Superintendent of Documents, U.S. Government Printing Office, North capitol & "H" Streets, N.W., Washington, DC 20402-0002.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are those cited in the solicitation or contract.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC-8 - Colorfastness to Crocking: AATCC Crockmeter Method
AATCC-16 - Colorfastness to Light
AATCC-22 - Water Repellency: Spray Test
AATCC-61 - Colorfastness to Laundering, Home and Commercial: Accelerated
AATCC-70 - Water Repellency: Tumble Jar Dynamic Absorption
AATCC-96 - Dimensional Changes in Commercial Laundering of Woven and Knitted Fabrics, Except Wool

AATCC-132 - Colorfastness to Dry Cleaning
AATCC-135 - Dimensional Changes in Automatic Home Laundering of Woven and Knitted Fabrics, Except Wool
AATCC-150 - Dimensional Changes in Automatic Home Laundering of Garments

(Copies of these documents are available from www.aatcc.org or American Association of Textile Chemists and Colorists (AATCC), P.O. Box 12215, Triangle Park, NC 27709-2215.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C-518 -	Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
ASTM D-737 -	Air Permeability of Textile Fabrics
ASTM D-747 -	Apparent Bending Modulus of Plastics by Means of a Cantilever Beam
ASTM D-751 -	Coated Fabrics
ASTM D-1388 -	Standard Test Method for Stiffness of Fabrics
ASTM D-1424 -	Tearing Strength of Fabrics by Falling-Pendulum Type Apparatus
ASTM D-1776 -	Practice for Conditioning and Testing Textiles
ASTM D-3775 -	Warp End Count and Filling Pick Count of Woven Fabric
ASTM D-3776 -	Mass Per Unit Area (Weight) of Fabric
ASTM D-5034 -	Breaking Strength and Elongation of Textile Fabrics (Grab Test)
ASTM D-6193 -	Practice of Stitches and Seams
ASTM E-96 -	Water Vapor Transmission of Materials

(Application for copies are available from www.astm.org or American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASQ Z1.4 - Sampling Procedures and Tables for Inspection of Attributes

(For all inquiries, please contact the American National Standards Institute, 25 West 43rd St., 4th Floor, New York, NY 10036). Website address is http://www.ansi.org)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

NATIONAL AEROSPACE STANDARD (NASM)

NASM 16491 - Grommet, Metallic, General Specification for-FSC 5325
NASM 20652 - Eyelets, Metallic, and Eyelet Washers, Metallic-FSC 5325

(Application for copies are available from the Aerospace Industries Association, 1250 Eye Street NW, Washington, DC 20005.)

MISCELLANEOUS

Principle and Methods of Toxicology, A Wallace Hayes (editor), pp 394-396, 1989.

(Copies of this document is available from Raven Press, 1185 Avenue of the Americas, New York, NY 10036)

Marzulli, F. and H. Maibach, "Contact Allergy: Predictive Testing in Humans," Advances in Modern Toxicology, Volume 4, pp 353-372, 1977.

(Copies of this document are available from the U.S. Army Center for Health Promotion and Preventative Medicine, ATTN: MCHB-DC-TTE, Bldg., E-2100, Aberdeen Proving Ground, MD 21010-5422.)

2.4 Order of precedence. In the event of a conflict between the text of this purchase description and the references cited herein, the text of this document takes precedence. Nothing in this document however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.3), a sample shall be subjected to first article inspection (see 4.2).

3.2 Guide samples. Samples, when furnished, are solely for guidance and information to the contractor. Variations from the specification may appear in the sample in which case this specification shall govern.

3.3 Recycle, recovered, or environmental preferable materials. Recycled, recovered, or Environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Design. The jacket shall have a single-breasted front with a slide-fastener, left-hand separating, (double-slider closure which will permit the opening of the fastener from either the top or bottom), from the base of the hood to the bottom of the jacket hem. The jacket shall have a draw-cord closing hood, and a draw-cord bottom. The hood shall be capable of being rolled up, and secured in a pocket at the back of the neck, by a loop fastener. The jacket shall have two vertical opening, outer pockets with slide fasteners, and two inner mesh pockets. The jacket will be fabricated with an outer layer, an insulation layer, and finally, an inside layer of lightweight rip-stop material. The sleeves shall have an exterior layer of durable fabric running from the elbows to the cuffs, with adjustable hook and loop cuff fasteners. A windbreak flap shall be provided, which runs from the top of the neck opening to the bottom of the jacket hem, on the

inside of the left section of the slide fastener. The exterior surfaces of the jacket shall be Urban Gray 505 in color. See Figures 1-3.

3.5 Basic materials.

3.5.1 Standard sample: All cloth materials shall match the applicable standard sample for shade and appearance on the face side, and shall be equal to or better than the standard sample with respect to all characteristics for which the standard sample is referenced (see 6.4).

3.5.1.1 Parka layer shell (outside material). The cloth shall be a plain weave, water resistant treated, nylon cloth (texture approximating 155 to 100 yarns per inch, warp and filling, respectively), meeting the requirements in Table I when tested as specified in 4.5. The color of the cloth shall match Urban Gray 505.

* 3.5.1.2 Physical requirements. The cloth shall conform to the physical requirements specified in Table I when tested as specified in 4.5.

TABLE I. Parka Layer Shell (outside material), physical requirements

Characteristic	**Requirement**
Weight, oz/sq. yd (max.)	3.3
Breaking strength, lbs (min.)	
Warp	100
Filling	100
Tearing Strength, lbs. (min.)	
Warp	8.0
Filling	8.0
Air Permeability, ft^3/ft^2/min. (max)	1.0
Moisture vapor transmission	
Rate, g/m^2/24h (min.) -	
Initial, Procedure B	800
Stiffness, in-lbs (max.)	
At 70ºF	0.001
At 32ºF	0.001
Blocking, rating (max.)	No. 2
Water permeability, cm (min) -	
Initial	30
Spray rating, (min.) -	
Initial	100, 100, 90
After 5 launderings	100, 90, 90
Resistance to organic liquid, pass/fail -	
Initial	No wetting
After 5 launderings	No wetting
Dynamic absorption, percent (max.)	1.5
Dimensional stability, percent (max.)	

Warp	2.5
Filling	1.5
Color	Urban Gray 505
Spectral Reflectance, %	Table II
Colorfastness to: Laundering	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Light	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Crocking	Equal to or better than the standard sample or not less than AATCC chromatic transference scale rating of 3.5
Toxicity	1/

1/ The finished cloth shall not present a dermal health hazard when used as intended.

3.5.1.3 Color.

3.5.1.3.1 Urban Gray 505. The color of the face side of the cloth shall be Urban Gray 505, and shall match the applicable standard sample.

3.5.1.4 Spectral reflectance. The spectral reflectance shall conform to the requirements specified in Table II, initially and after laundering, when tested as specified in 4.5. .

TABLE II. Spectral Reflectance Requirements: Reflectance (percent)

Wave length,	**Urban Gray 505**	
Nanometers (nm)	**Min**	**Max**
600	12	26
620	14	26
640	14	28
660	14	30
680	18	34
700	24	38
720	26	42
740	30	46
760	32	48
780	34	48
800	34	50
820	36	54
840	38	54
860	40	56

3.5.2 Nylon, rip-stop cloth (lining cloth). The cloth for the inside of the jacket lining shall be a rip-stop weave nylon meeting the physical requirements in Table III when tested as specified in 4.5. The color of the cloth shall match Urban Gray 505.

TABLE III. Nylon, Rip-Stop Cloth (lining cloth) - Physical Requirements.

Characteristic	**Requirement**
Weight, oz/sq. yd (max.)	1.7
Fabric Count, yarns/inch (min.)	
Warp	180
Filling	96
Break Strength, lbs. (min.)	
Warp	115
Filling	80
Tearing Strength, lbs. (min.)	
Warp	7.5
Filling	5.0
Air Permeability, $ft^3/ft^2/min.$	1.0 – 3.0
Color	Urban Gray 505
Spectral Reflectance, %	Table II
Colorfastness to:	
Laundering	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Light	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Crocking	Equal to or better than the standard sample or not less than AATCC chromatic transference scale rating of 3.5
Toxicity	1/

1/ The finished cloth shall not present a dermal health hazard when used as intended.

3.5.3 Batting material, heavy weight. The batting material used for the body and sleeve insulation shall conform to the physical requirements in Table IV. Testing shall be as specified in 4.5.

TABLE IV. Batting Material (heavy weight) - Physical Requirements.

Characteristic	**Requirement**
Weight, oz./sq.yd	6.0 +/- 0.6
Thickness @ 0.002 psi, in. (max.)	1.0
Intrinsic Clo @ 0.002 psi, (min.)	3.5
Drape stiffness, inches, (max.)	4.0
Water gain, wt % (max.)	400
Dimensional stability, percent (max.)	
After 5 Launderings	
Machine/Warp	10.0
Cross Machine/Filling	10.0
Toxicity	1/

1/ The finished cloth shall not present a dermal health hazard when used as intended.

3.5.4 Batting material, light weight. The batting material used for the hood and outer pockets insulation shall conform to the requirements in Table V. Testing shall be as specified in 4.5.

TABLE V. Batting Material (light weight) - Physical Requirements.

Characteristic	**Requirement**
Weight, oz./sq.yd	2.0 +/- 0.1
Thickness @ 0.002 psi, in., max.	0.35
Intrinsic Clo @ 0.002 psi, min	1.4
Drape stiffness, inches, max	2.5
Dimensional stability, percent, max.	
After 5 Launderings	
Machine/Warp	10.0
Cross Machine/Filling	10.0
Water Gain, wt%, max	400
Toxicity	1/

1/ The finished cloth shall not present a dermal health hazard when used as intended.

* 3.5.5 Cloth, nylon, (reinforcing material). The reinforcement material used for the elbow patches shall be a plain weave, nylon cloth conforming to the requirements in Table VI when tested as specified in 4.5. The color shall match Urban Gray 505.

TABLE VI. Cloth, Nylon (Reinforcing Material) - Physical Requirements.

Characteristic	**Requirement**
Weight, oz/sq. yd (max.)	5.5
Fabric Count, Yarns per inch (min.)	
Warp	58
Filling	38
Breaking strength, lbs (min.)	
Warp	280
Filling	180
Tearing Strength, lbs. (min.)	
Warp	8.0
Filling	8.0
Stiffness, in-lbs (max.)	
At 32°F	0.001
At 70°F	0.001
Blocking, rating (max.)	No. 2
Spray rating	
Initial	100, 100, 90
After 1 laundering	100, 90, 90
Resistance to organic liquid, pass/fail	

Initial	No wetting
After 1 laundering	No wetting
Dynamic absorption, percent (max.)	1/
Dimensional stability, percent (max.)	
Warp	2.0
Filling	1.0
Color	Urban Gray 505
Spectral Reflectance, %	Table II
Colorfastness to:	
Laundering	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Light	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Crocking	Equal to or better than the standard sample or not less than AATCC chromatic transference scale rating of 3.5
Toxicity	2/

1/ The cloth shall show not more than a 25 percent increase in dynamic absorption properties after one laundering when compared to an unlaundered sample of cloth.
2/ The finished cloth shall not present a dermal health hazard when used as intended.

3.5.6. Cloth, inner pockets. The cloth used for the inner pocket shall be a Tricot knit mesh of 100% polyester or equal conforming to the physical requirements in Table VII. The color of the cloth shall match Urban Gray 505. Testing shall be as specified in 4.5.

TABLE VII. Inner Pocket Material - Physical Requirements.

Characteristic	**Requirement**
Weight, oz./ sq. yd.	2.0 +/- 0.2
Colorfastness to:	
Laundering	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Crocking	Equal to or better than "3-4" rating on AATCC Gray Scale for Color Change
Light	Equal to or better than the standard sample or not less than AATCC chromatic transference scale rating of 3.5
Toxicity	1/

1/ The finished cloth shall not present a dermal health hazard when used as intended**.**

3.6 Components.

3.6.1 Bias binding tape. The binding tape for the inside pocket shall be a 5-7 oz/sq yd, 100% cotton or polyester/cotton woven material. The material shall be cut on the bias to make a 1-5/8 inch wide binding tape. The color shall be Urban Gray 505.

3.6.2 Elastic material. The elastic material used on the cuffs shall be in accordance with MIL-W-5664, Type II, 1 ± 1/16 inch in width.

3.6.3 Elastic cord. The elastic cord used on the jacket bottom and hood shall be 1/8 + 1/32 – 0-inch wide, having an elongation of 120% ± 10%; a minimum weight of 0.2 ounces per linear yard; a minimum of 62 picks per inch; 16 carriers, 1 end per carrier; a minimum of 12 elastic strands having a polyester yarn cover. The elastic cord shall have a seared and knotted end. The color shall match Urban Gray 505. Testing shall be as specified in 4.5.

3.6.4 Tape, nylon. The tape used for attaching the hook fastener tape on the cuffs shall conform to type III, class 1, 1-inch wide, of MIL-PRF-5038. The color shall match Urban Gray 505.

3.6.5 Tape, binding. Tape, MIL-PRF-5038, ¼-inch shall be used to attach the barrel locks at the jacket bottom and for the slide fastener thongs.

3.6.6 Fastener tape, hook and loop. The hook and loop fastener tape shall conform to type II, class 1 of A-A-55126, with selvage edges. No slit or split edges are permitted. Sew all hook and loop minimum of 1/8 inch from bound selvage to prevent needle cutting along edges. To prevent raveling, do not sew directly on selvage. However, each required width shall maintain a tolerance of ± 1/32 inch as to prevent stitching runoffs or improper fit into automatic sewing equipment. The color shall match Urban Gray 505.

3.6.6.1 Alternate tape, loop. As an alternate, loop fastener tape without selvages edges (reduce field fraying) shall conform to class 1 of A-A-55126 except without selvage edges: YKK Cosmolon Edge to Edge" with heat-sealed edges or Velcro "DD", an edge-to-edge loop tape. Sew all loop tape minimum of 1/8 inch from edge to prevent needle cutting along edges. However, each required width shall maintain a tolerance of ± 1/32 inch as to prevent stitching runoffs or improper fit into automatic sewing equipment. The color shall match Urban Gray 505.

3.6.6.2 Alternate tape, hook. As an alternate to hook tape without selvages (reduce field fraying), the following products may be used: Extruded plastic hook tape identified as "Velcro brand HTH 841" or "YKK brand SA200A". The color shall match Urban Gray 505.

3.6.6.3 Colorfastness, tape hook and loop. Unless otherwise specified, for Urban Gray 505, the fastener tapes (hook and loop) shall show fastness to dry cleaning (if required by contract), light (170 Kilojoules), laundering (after 5 cycles) and crocking when tested in paragraph 4.5. The finished tape fasteners shall show fastness equal to or better than a rating “4-5” to dry cleaning and light, equal to or better than a rating of “2-3” for laundering using AATCC Gray Scale for Color Change and equal to or better that rating of “4” for crocking using AATCC Chromatic Transference Scale. The color depreciation for laundering and light shall remain in the same hue as compared to the original sample. (Hue/cast is defined as the attribute of color that classifies a color as red, blue, green etc.)"

3.6.6.4 Hook and loop laundry durability test method. When tested in accordance with 4.6.14 the hook and loop tapes shall not exhibit fraying edges, peeling yarns, or damage appearance that detracts from the tape appearance or durability.

3.6.7 Thread. The thread for all seaming and stitching shall be Type I or II, size B, 3 ply at 6.0 pounds breaking strength, with a "Water repellent" treatment, conforming to V-T-295. As an alternate, bobbin/looper thread can be Nylon, size AA, 2-ply, with a minimum breaking strength of 4.0 pounds with a "Water-Repellent" finish. Stitching shall be 8-10 stitches per inch, lockstitch. The color of the thread shall be Urban Gray 505.

3.6.8 Fastener, slide, interlocking. All slide fasteners shall conform to A-A-55634, with the types and styles as specified below.

3.6.8.1 Front closure slide fasteners. Front closure zippers shall be plastic individual element, type III, style 13 (separating double autolock sliders such that opens both from top and bottom), No. 5 chain with 100 lbs. min. crosswise strength with water resistant treated tape and thong on top slider in shade Urban Gray 505.

3.6.8.2 Pocket slide fasteners. Pocket zippers shall be plastic individual element, type I, style 7 (closed ends, autolock slide that closes when pulled upward), No. 5 chain with 100 lbs. min. crosswise strength with water resistant treated tape and thong in shade Urban Gray 505.

3.6.9 Barrel lock. The barrel lock shall maintain a 3-lb. minimum holding strength on the elastic draw cord (see 3.6.3) at -40°F, 70°F and 140°F when tested in accordance with 4.8.13. The barrel locks shall be ½-inch x 3/8- inch elliptical or 3/8-inch round shape, minimum push-button size. The color of the barrel locks shall be Urban Gray 505.

3.6.10 Cannon clip. The cannon clip used inside the front pockets, shall be Urban Gray 505 and it shall be equal to or better than Part #743-0125 of ITW Nexus.

3.6.11 Grommet**.** The grommets used on the inside of the lower back of the front pockets and also on the inside of the front panels near the hem shall be in accordance with type III, class III, size zero (0) of NASM 16491.

3.6.11.1 Eyelet. The eyelets on the inner layer of the hem of the front panels shall be in accordance with NASM 20652, 1B, dash No. ABE-131.

3.6.12 Labels. Each parka shall have a label in accordance with Type VI, Class 14 of MIL-DTL-32075. The color of the labels shall approximate the ground shade of the basic fabric or White. In addition it shall contain a bar coding label in accordance with Type VIII and Class 17.

3.6.12.1 The combination size, identification and instruction label for the parka. The combination label shall be sewn on the inside of the parka along the middle back seam of the hood area. The printed label shall be facing the body. The instruction label shall include the following information:

Parka, Extreme Cold Weather
Care Instruction Label

LAUNDERING: (DO NOT DRY CLEAN)

a. Home Laundering. The parka shall be machine laundered using the delicate/gentle fabric cycle or laundered by hand. Use cold water (up to 90°F/32° C) and cold water laundry detergent (i.e. Liquid Tide or Era Plus). Rinse in clean cold water. DO NOT STARCH OR BLEACH. Dry in a tumble dryer at temperature not exceeding 130°F(54°C) as degradation of the component materials will result. Avoid over drying. To drip dry, place on rustproof hanger. DO NOT PRESS.

b. Field Laundering. The parka shall be field laundered using Formula II of FM 42-414, Appendix E. DO NOT STARCH OR BLEACH.

3.7 Patterns. Standard patterns providing a seam allowance of ½ inch for all seams, except where otherwise specified, will be furnished by the Government. The pattern list in Table VIII is provided to insure that the pattern set provided is complete. The Government patterns shall not be altered in any way, and are to be used only as a guide for cutting the contractor's working patterns. The working patterns will be identical to the Government patterns, except that additional notching to facilitate manufacture is possible. Also, minor modifications are permitted where necessary to accommodate manufacturer's processes and using automatic equipment. These modifications shall not alter the serviceability or appearance requirements.

3.7.1 Pattern parts. The component parts shall be cut from the materials indicated and in accordance with the pattern parts listed in Table VIII.

TABLE VIII. List of Pattern Parts

Material	**Code**	**Nomenclature**
Rip-Stop (Lining)	ECLT-PKTBAGBK	Pocket Bag Back
	ECLT-PKTBAGERT	Pocket Bag Front
Shell (outside)	ECLT-COLLARFACE	Collar face
	ECLT-FRT	Front
	ECLT-CUFF	Cuff
	ECLT-BK	Back
	ECLT-BTMBNHALF	Bottom Band Half
	ECLT-INCLR	Inner Collar
	ECLT-DRAWSTRING	Drawstring
	ECLT-FRBAND	Front Band
	ECLT-ZIPFAC	Zipper Facing
	ECLT-BTMBNDFULL	Bottom Band Full
	ECLT-SLV	Sleeve
	ECLT-OUTCLR	Outer Collar
Shell & Rip-Stop	ECLT-CLRENDS	Collar Ends
	ECLT-HOODCNTR	Hood Collar
	ECLT-HOODSLIDE	Hood Slide

Inner pocket material	ECLT-INPKBAGMESH	Inner Pocket Bag Mesh
Nylon (reinforcing)	ECLT-ELBOTCH	Elbow Patch
Batting light weight & Rip-Stop	ECLT-SLVINING	Sleeve Lining
Batting light weight & Rip-Stop	ECLT-HOODCNTRLIN	Hood Center Lining
Batting light weight & Rip-Stop	ECLT-HOODSIDELIN	Hood Side Lining
Batting heavy weight & Rip-Stop	ECLT-FRTLINING	Front Lining
Batting heavy weight & Rip-Stop	ECLT-BKLINING	Back Lining

3.8 Stitches, seams, and stitching. All seams shall be consistent and exhibit a uniform appearance and conform to the ASTM D 6193 stitch and seam types. The backside of seams (inside garment) shall be flat with no protruding seam allowance to create irritation or discomfort. The seams shall be sewn with 8-10 stitches per inch for all outside visible stitching. The width of the bight of stitching shall not be less than 1/16 inch. All material edges shall be clean finished, either turned-in, turned-under, or serged. Seam allowances shall be maintained with seams sewn so that no raw edges, run-offs, pleats, puckers or open seams occur.

Batting and ripstop fabric for the front, back and sleeve linings shall be joined by stabilizing stitching. Batting and ripstop fabric for the hood, side and center and the pocket bag front and back shall be joined by quilting.

3.8.1 Type 301 stitching. Ends of all stitching shall be backstitched or overstitched not less than ½-inch except where ends are turned under or caught in other seams or stitching. Ends of a continuous line of stitching shall overlap not less than ½-inch. Thread tensions shall be maintained so that there will be no loose stitching resulting in loose bobbin or top thread of excessively tight stitching resulting in puckering of the materials sewn. The lock shall be embedded in the materials sewn. All 301 stitch and bartack thread ends shall be trimmed to a length of not more than ¼-inch.

3.8.1.1 Repairs of type 301 stitching. Repairs of type 301 stitching shall be as follows:

a. When thread breaks, skipped stitches, run-offs, or bobbin runouts occur during sewing, the stitching shall be repaired by restarting the stitching a minimum of ½- inch back of the end of the stitching. 1/

b. Except for pre-stitching, thread breaks or two or more consecutive skipped or run-off stitches noted during inspection of the item shall be repaired by overstitching. The stitching shall start a minimum of ½ inch in back of the defective area, continue over the defective area, and continue a minimum of ½ inch beyond the defective area onto the existing stitching. Loose or excessively tight stitching shall be repaired by removing the defective stitching without damaging the materials, and re-stitching in the required manner. 1/

1/ When making the above repairs, the ends of the stitching are not required to be backstitched.

3.8.1.2 Automatic stitching. Automatic machines may be used to perform any of the required stitch patterns provide the requirements for the stitch pattern, stitches per inch, and size and type of thread are met; and at least three tying, overlapping or back stitches are used to secure the ends of the stitching.

3.8.1.3 Thread ends. All thread ends shall be trimmed to a length of not more than ¼ inch unless otherwise specified.

4 VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

1. First article inspection (see 4.2).
2. Conformance inspection (see 4.3).

4.2 First article inspection. When a first article is required (3.1 and 6.3), it shall be examined for the defects in 4.6, the finished dimensions in 4.7 and performance as specified in 4.4.1 and 4.5.

4.3 Conformance inspection. Sampling for inspection shall be performed in accordance with ANSI/ASQ Z1.4, as defined by contract, except where otherwise indicated.

4.4 Component and end item inspections. In accordance with 4.1, components and materials in the end items shall be tested in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified or qualified in this document or applicable procurement documents. The government reserves the right to inspect all components and end items to determine conformance to requirements.

4.4.1 Component and material certification. Unless otherwise specified, a certificate of compliance will be acceptable as evidence that the requirements of 3.5 and 3.6 are met. When certificate of compliance are submitted, the Government reserves the right to inspect such items to determine the validity of the certification.

* 4.5 Basic material testing. The materials specified shall be tested for the characteristics listed in Table IX in accordance with the test methods specified.

TABLE IX. Basic Material Tests

Characteristic	**Requirement Paragraph**	**Test Method**
Parka layer shell (outside material)		
Fiber identification, weave and yarns per inch	3.5.1.1	1/
Weight	3.5.1.2	ASTM D-3776

Breaking strength	3.5.1.2	ASTM D-5034 (GE or GT)
Tearing strength	3.5.1.2	ASTM D-1424
Air permeability	3.5.1.2	ASTM D-737
Moisture vapor transmission	3.5.1.2	4.8.1 & 4.8.1.1
Stiffness	3.5.1.2	
At 70°F		ASTM D-747 5/
At 32°F		2/ & ASTM D-747 5/
Blocking	3.5.1.2	4.8.2
Water permeability	3.5.1.2	
Initial		4.8.3
Spray rating	3.5.1.2	
Initial		4.8.4.1
After 5 launderings		4.8.4.3
Resistance to organic liquid	3.5.1.2	
Initial		4.8.5.1
After 5 launderings		4.8.5.3 & 4.8.5.1
Dynamic absorption	3.5.1.2	AATCC-70
Dimensional stability	3.5.1.2	AATCC-96, Option 1C
Color	3.5.1.2	4.8.6
Spectral reflectance	Table II	4.8.7 & 4.8.7.1
Colorfastness to:		
Laundering	3.5.1.2	4.8.8.1
Light	3.5.1.2	4.8.8.2
Crocking		AATCC-8
Toxicity	3.5.1.2	4.8.12
Nylon-rip-stop (lining material)		
Fiber identification and weave	3.5.2	1/
Weight	3.5.2	ASTM D-3776
Fabric count	3.5.2	ASTM D-3775
Breaking strength	3.5.2	ASTM D-5034(GE or GT)
Tearing strength	3.5.2	ASTM D-1424
Air permeability	3.5.2	ASTM D-737
Color	3.5.2	4.8.6
Spectral reflectance	Table II	4.8.7 & 4.8.7.1
Colorfastness to:		
Laundering	3.5.2	4.8.8.1
Light	3.5.2	4.8.8.2
Crocking	3.5.2	AATCC-8
Toxicity	3.5.2	4.8.12
Batting material, heavy weight		
Weight	3.5.3	ASTM D-3776
Thickness		3/
Intrinsic Clo @ 0.002 psi	3.5.3	ASTM C-518
Drape stiffness	3.5.3	ASTM D-1388
Water Gain	3.5.3	4/

Dimensional stability	3.5.3	AATCC-135 (1)(V)(A)(i)
Toxicity	3.5.3	4.8.12
Batting material, lightweight		
Weight	3.5.4	ASTM D-3776
Thickness	3.5.4	3/
Intrinsic Clo @ 0.002 psi	3.5.4	ASTM C-518
Drape stiffness	3.5.4	ASTM D-1388
Water Gain	3.5.4	4/
Dimensional stability	3.5.4	AATCC-135 (1)(V)(A)(i)
Toxicity	3.5.4	4.8.12
Cloth, inner pockets		
Fiber identification and knit type	3.5.6	1/
Weight	3.5.6 & 3.6.1	ASTM D-3776
Colorfastness to:		
Laundering	3.5.6	AATCC-61, IIA
Crocking	3.5.6	AATCC-8
Light	3.5.6	4.8.8.2
Toxicity	3.5.6	4.8.12
Cloth, Nylon (reinforcing material for elbow patches)		
Fiber identification and weave	3.5.5	1/
Weight	3.5.5	ASTM D-3776 (Method C)
Fabric count	3.5.5	ASTM D-3775
Breaking strength	3.5.5	ASTM D-5034 (G-E or G-T
Tearing strength	3.5.5	ASTM D-1424
Stiffness		
At 70°F	3.5.5	ASTM D-747 5/
At 32°F	3.5.5	2/ & ASTM D-747 5/
Blocking	3.5.5	4.8.2
Spray rating		
Initial	3.5.5	4.8.4.1
After 1 laundering	3.5.5	4.8.4.2 & 4.8.4.1
Resistance to organic liquid		
Initial	3.5.5	4.8.5.1
After 1 laundering	3.5.5	4.8.5.2 & 4.8.5.1
Dynamic absorption	3.5.5	
Initial		AATCC-70
After 1 laundering		4.8.8.3 & AATCC-70
Dimensional stability	3.5.5	AATCC-96, Option 1C
Color	3.5.5	4.8.6
Spectral reflectance	Table II	4.8.7 & 4.8.7.1
Colorfastness to:		
Laundering	3.5.5	4.8.8.1
Light	3.5.5	4.8.8.2
Crocking	3.5.5	AATCC-8

Toxicity	3.5.5	4.8.12
Elastic cord		
Elongation	3.4.9	4.8.10
Weight	3.4.9	ASTM D- 3776
Picks/inch	3.4.9	Visual
Number of carriers	3.4.9	Visual
Ends per carrier	3.4.9	Visual
Elastic strands/width	3.4.9	4.8.11
Fastener Tape, Hook and Loop		
Color	3.5.3	4.8.6
Colorfastness To:		
Dry cleaning	3.6.6.3	AATCC -132
Light	3.6.6.3	4.8.8.2
Laundering after 5 cycles	3.6.6.3	AATCC – 61, Opt. 3A
Crocking	3.6.6.3	AATCC – 8
Laundry Durability	3.6.6.4	4.6.14 - 4.6.14.4

1/ A certificate of compliance shall be submitted for this characteristic.
2/ The test specimens and testing machine shall be exposed to 32°F ± 2°F for 4 hours. The test shall then be performed in still air at that temperature.
3/ Batting thickness shall be measured on panels using a 12" x 12" calibrated Measure-Matic Thickness Gauge, or equivalent, under a pressure of 0.002 pounds per inch (psi).
4/ The insulation should adsorb a maximum weight gain in water when subjected to room temperature distilled water for 20 minutes with excess water when removed via centrifugation at 1500rpm for 5 minutes.
5/ Stiffness (bending moment) shall be conducted in accordance with ASTM D-747 except as follows:

a. Unless otherwise specified, the testing conditions shall be in accordance with ASTM D-1776.
b. The test specimen shall be a rectangle of cloth of dimensions two (2) by one (1) inches with the long dimension parallel to the fabric direction under test, warp or filling, as applicable.
c. The load scale reading shall be recorded only at the specimen angular deflection of 60 degrees.
d. The stiffness is the bending moment of specimen at a deflection angle of 60 degrees and shall be calculated to three significant figures as follows:

$$\text{Bending moment, in.-lb.} = \frac{\text{Load scale reading x moment weight*}}{100}$$

* Testing machine of Tinius Olsen Testing Machine Co.

4.6 End item visual examination. Each parka shall be subjected to visual examination. All fabric and garment defects shall be scored in accordance with Table X and XI. Material defects are defined in Section I of FED-STD-4. All shade evaluations of the garments shall be evaluated at a distance of approximately 3 feet and under the artificial daylight as specified in 4.8.6.

TABLE X. Material Visual Examination

Examination	Defect
Materials	Hole, cut, tear, smash, burn, exposed drill hole, run, thin place, dye streak, color not as specified, misweave, visible mends. Knots greater than Sears Scale Level C (See 6.6) Slubs greater than Sears Scale Level D (See 6.6)

TABLE XI. Parka Visual Examination

Examination	Defect
Component Part	Component part of parka omitted, not as specified, distorted, full, tight, or twisted; any part of jacket caught in unrelated stitching, the edge of any component part required to be forced out having folds or more than 1/8- inch. Fullness creating unwanted permanent fold, pleat, or crease in fabric or garment
Stitching and Seams	Parka seam: Open stitching, puckered, distorted, pleated, wavy, twisted, irregular, or loose or tight stitch tension, broken or missing thread or stitch, needle chew, edge or raise stitching sewn too close to the edge resulting in damage to cloth, seam allowance not as specified, no visible raw edge (more than one occurrence of inside raw edge greater than 1-inch) Stitching not as specified
Hook & Loop	Hook and loop misplaced, damaged or omitted, twist or distortion when closed, out of alignment causing bulge Hook and loop out of alignment by more than ¼-inch Hook and loop color or type not as specified
Slide Fastener	Not specified length, not specified type Twisted, distorted, damaged, puckered, color not as specified Thong omitted not as specified Not located in correct position on jacket front
Pockets	Pocket companions not uniform in size or shape Pocket construction not as specified Pockets out of alignment ¼-inch or more
Eyelets	Omitted, misplaced, improper size or caught in stitching
Shade	Shade variation within part or between parts
Elbow patches	Elbow patches not attached as specified
Cleanness	Spot stain, excessive thread ends no more than ¼-inch (more than 3) not trimmed or removed, odor, affecting appearance or serviceability
Labels	Any label omitted, incorrect, illegible, not attached where specified Bar Code/UPC code omitted, not readable by scanner; human readable interpretation (HRI) omitted or illegible Bar code/UPC code not visible on folded, package item bar code

	attachment causes damage to the item
Packaging	Any parka not packaged in accordance with contract or purchase order

4.7 Jacket finished measurements. The parka finished measurements shall be in accordance with Table XII.

TABLE XII. Parka finished measurements (Inches)

Size	Tolerance	½ Chest	Back Length	Sleeve Inseam
Small-regular	-1/4, +1/2	TBD	TBD	TBD
Medium-regular	-1/4, +1/2	28	32	25
Large-regular	-1/4, +1/2	TBD	TBD	TBD
Large-long	-1/4, +1/2	TBD	TBD	TBD
X large-regular	-1/4, +1/2	TBD	TBD	TBD
X large-long	-1/4, +1/2	TBD	TBD	TBD

4.8 Methods of testing. All testing shall be done in a standard condition environment defined by the ASTM D-1776, if not specifically defined by the individual test procedure.

4.8.1 Moisture vapor transmission rate. ASTM E-96 with temperature and humidity conditions of 73.5° +/-1°F and 50 +/- 2% Relative Humidity. The linear air flow velocity in the wind tunnel shall be set to yield an upright, "open cup" evaporation rate at all test specimen positions of 15,000 +/-1,000 $g/m^2/24h$ (The evaporation rate shall be determined by conducting an upright cup, Procedure B test (see 4.8.1.1), without a test specimen for a period of exactly two (2) hours).

4.8.1.1 Procedure B, ASTM E-96. The backside of the basic material shall face the water. The test specimen shall be conditioned, after set-up in the test cup with water level of ¾ +/-1/16-inch below the specimen surface, in the wind tunnel for a period of not less than four (4) hours and not more than sixteen (16) hours (Conditioning time of less than 4-hours may be used provided that equilibrium conditions have been demonstrated to exist within the test sample/sample cup/wind tunnel. In cases of dispute, the conditioning time shall be 4-hours). After conditioning, the cup shall be immediately weighed to start the test and again after exactly twenty-four (24) hours to complete the test. Five (5) specimens shall be tested.

4.8.2 Blocking. ASTM D-751, Blocking Resistance at Elevated Temperatures, except that the test shall be performed at a temperature of 180° +/- 2°F for 30 minutes. Only one (1) specimen shall be tested. Evaluate the resistance of the specimen to blocking by the scale given below:

1 – *No Blocking*. Cloth surfaces are free and separate without any evidence of cohesion or adhesion.
2 – *Trace Blocking.* Cloth surfaces show slight cohesion or adhesion.
3 – *Slight Blocking.* Cloth surfaces must be lightly peeled to separate.
4 – *Blocking.* Cloth surfaces separate with difficulty or coating is removed during separation.

4.8.3 Water permeability. ASTM D-751, Hydrostatic Resistance, Procedure B, Procedure 1 with a rising hydrostatic head at 10 mm/sec applied to the face side of the test specimen. Five (5) specimens shall be tested. Leakage is defined as the appearance of one (1) or more droplets of water within the 4-1/2 inch diameter test area.

4.8.4 Spray rating.

4.8.4.1 Initial. Testing shall be conducted in accordance with AATCC-22

4.8.4.2 After 1 laundering (for cloth, nylon (reinforcing)). Test specimens shall be laundered for one (1) laundering cycle in accordance with AATCC-96, Test VI, A.

4.8.4.3 After 5 laundering (on loft layer shell fabric). Test specimens shall be laundered for five (5) laundering cycle in accordance with 4.8.8.3 and then tested for spray rating.

4.8.5 Resistance to organic liquids.

4.8.5.1 Initial. Place a small specimen of the cloth on a smooth horizontal surface, face side up. Using a pipette or eyedropper, gently deposit one (1) drop of n-tetradecane on the surface of the specimen. After 30 seconds, examine the specimen under light at an angle. Absence of light reflectance at the cloth/drop interface shall be taken as evidence of wetting. Three (3) specimens (or areas) taken at various locations across the sample unit shall be tested. Evidence of wetting on one (1) or more specimens shall be considered a test failure.

4.8.5.2 After 1 laundering (for cloth, nylon (reinforcing)). Test specimens shall be laundered for one (1) laundering cycle in accordance with AATCC-96, Test VI, A.

4.8.5.3 After 5 launderings . Test specimens shall be laundered for five (5) laundering cycles in accordance with 4.8.8.3 and then tested for resistance to organic liquids.

4.8.6 Color matching. The color and appearance of the cloth shall match the standard sample when viewed using the AATCC Evaluation Procedure 9, Option A, with sources simulating artificial daylight and that have a correlated color temperature of $7{,}500^{o} \pm 200^{o}$K, with illumination of 100 $\pm$ 20 foot candles, and shall be a good match to the standard sample under incandescent lamplight at $2{,}300^{o} \pm 200^{o}$K.

4.8.7 Spectral reflectance. Spectral reflectance data shall be determined on the face side and shall be obtained from 600 to 860 nanometers (nm) at 20nm intervals on a spectrophotometer relative to the barium sulfate standard, the preferred white standard. Other white reference materials may be used provided they are calibrated to absolute white, e.g., magnesium oxide or vitolite tiles. The spectral bandwidth shall be less than 26nm at 860nm. Reflectance measurements may be made by either the monochromatic or polychromatic mode of operation. When the polychromatic mode is used the spectrophotometer shall operate with the specimen diffusely illuminated with the full emission of a source that simulates either CIE source A or CIE source D65. The specimen shall be measured as a single layer, backed with six layers of the

same fabric and shade. Measurements shall be taken on a minimum of two (2) different areas and the data averaged. The measured areas should be at least 6-inches away from the selvage. The specimen shall be viewed at an angle no greater than 10 degrees from normal, with the spectral component included. Photometric accuracy of the spectrophotometer shall be within 1 percent and wavelength accuracy within 2 nm. The standard aperture size used in the color measurement device shall be 1.0 to 1 1/4-inches in diameter. Any color having spectral reflectance values falling outside the limits at four or more of the wavelengths specified shall be considered test failure.

4.8.7.1 Accelerated laundering (Spectral Reflectance Durability Test.). The cloth shall be laundered separately in accordance with AATCC-61 (Option 3A) except that a 4-gram sample size shall be used (Note: A sample size large enough to evaluate the spectral reflectance shall be used) and that the procedure shall be conducted using (10) stainless steel spheres and the 1993 AATCC Standard Reference Detergent without optical brightener. The samples shall then be evaluated for spectral reflectance in accordance with 4.8.7.

4.8.8 Colorfastness.

4.8.8.1 Laundering. AATCC-61, Test 1A (3 cycles) except that 1993 AATCC Standard Reference Detergent (non-phosphate) without optical brighteners shall be used.

4.8.8.2 Light. AATCC-16, Option A (after 40 fading units) or E (after 170 kilojoules).

4.8.8.3 Laundering procedure. Place 2.0 +/-0.2 pounds of the cloth and, if needed, ballast in an automatic washing machine set on permanent press cycle, high water level and warm (100°F + 10°F, -0°F) wash temperature. Place 0.5-ounce (14 grams) of 1993 AATCC Standard Reference Detergent (non-phosphate) without optical brighteners into the washer. The duration of each laundering cycle shall be 30+/- 5 minutes. After laundering, place sample and ballast in an automatic tumble dryer set on permanent press cycle, 150°F – 160°F, and dry for approximately fifteen (15) minutes. The laundering equipment, washer and dryer, shall be in accordance with AATCC-135.

4.8.9 Stiffness. ASTM D-747.

4.8.10 Elongation. Cut a 14-inch specimen from a representative sample cord and make two marks on the cord so that a distance of 10 inches is between the gage marks. Suspend the cord from a clamp in such a manner as to allow a 2-pound weight to be hung on the lower end of the cord. Gradually lower the weight until the entire load is carried by the cord. After 2 minutes, take a measurement between the two marks and calculate the increase in length as follows:

$$\text{Elongation (\%)} = \frac{B-A}{A} \times 100$$

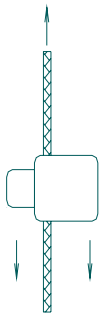
Where:
A = Initial measurement
B = Measurement of elongation at 2 pounds

4.8.11 Gage of rubber. The gage of rubber (elastic strands) shall be determined by counting the actual number of strands, laid side by side, contained in 1 inch. The gage is equivalent to the actual number of rubber yarns contained in 1 inch. A measuring device that measures the gage of rubber yarns may be utilized providing results are comparable.

4.8.12 Toxicity assessment. The contractor must furnish information, which certifies that the finished product is composed of materials, which have been safely used commercially or provided sufficient toxicity data to show compatibility with prolonged, direct skin contact. At a minimum, toxicity data should include results from a primary dermal irritation study in laboratory animals and a repeated insult human patch test (Modified Draize Procedure). The latter must be conducted under the supervision of a qualified dermatologist using at least 100 free-living individuals.

4.8.12.1 Toxicity documents. All finishes/chemicals used to process the garment shall be identified and accompanied by the appropriate Material Safety Data Sheet (MSDS) information. The use of chemicals recognized by the Environmental Protection Agency (EPD) as human carcinogens is prohibited.

4.8.13 Barrel lock test. The barrel –lock holding strength shall be tested as follows:



Barrel lock holding strength: Using tensile testing machine in accordance with ASTM D-5034 at 2 inches/minute either pull-up cord on stationary engaged barrel-lock or vice-versa.

4.6.14 Hook and loop laundering durability test method procedures. The hook and loop tape shall meet the requirements stated in 3.6.6.4 when tested for laundry durability. Use test replica or garment test sample method to verify laundry durability.

4.6.14.1 Test Replica Sample Preparation: Fabricate two test replica samples from basic material paragraph 3.5.1.1. One test replica sample shall contain hook tape on the outer surface and the other test replica sample shall contain loop tape on the outer surface. Finished dimensions of each test replica sample shall be 20-inches by 20-inches. The hook and loop tape, paragraphs 3.6.6 – 3.6.6.2, sewn to the test sample shall represent production widths, lengths and quantities used in jacket fabrication. Evenly distribute hook and loop tape pieces on both sides of each test replica sample. Sewn hook and loop pieces with box stitch 1/8-inch to 3/16-inch from selvage using 301 stitch type. Insert fabric squares into test replica sample to achieve 1.4

pound minimum weight per test sample. Close test replica sample and stitch around entire sample to prevent curling and balling up of internal fabric squares.

4.6.14.2 Alternate Garment Test Sample. As an alternate, use two parkas sewn with representative hook and loop tapes used in production shall be laundered as a set. To assess worse case situation of hook and loop failure during laundry test, do not engage hook and loop tapes or slide fastener (zipper).

4.6.14.3 Wash Procedures for Test Replica Samples or Alternate Garment Test Samples. Launder two test replica samples, one hook sample and one loop sample, two parkas, with test method AATCC-150 which includes sample and ballast load weighing a total of 4-pounds. Note: For Garment Sample – do not engage hook and loop tapes to represent worse case situation. Wash setting shall be Permanent Press, 140°F wash and 80°F rinse with a 10 minute agitation time. Use 66 grams of detergent conforming to 1993 AATCC detergent without bleach for each laundering. Drying time shall be Permanent Press for 40-45 minutes.

4.6.14.4 Number of Laundering/Drying Cycles. A total of 10 laundering and drying cycles for each test replica sample set or parka sets.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The ECWCS, GEN III Parka is intended for use by personnel of the Department of Defense as a component of the Extended Cold Weather Clothing System. The principle purpose is to provide protection against the adverse effects of extreme cold weather.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number and date of this document.
b. Size required (see 1.2)
c. When a first article is required (see 3.1, 4.2, and 6.3**)**
d. Packaging (see 5.1)

6.3 First Article. When a first article is required, it shall be inspected and approved under the appropriate provision of FAR 52.209. The first article should be a preproduction sample. The contracting officer shall specify the appropriate type of first article and the number of units to be furnished. The contracting officer shall also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Standard shade samples. For access to standard samples, address the contracting activity issuing the invitation for bids or request for proposal.

6.5 Material sources.

6.5.1 Fabric.

a. Parka layer shell – Praetorian (Nextec Style No. 1161)
   Available from: Nextec Applications, Inc.
b. Nylon rip-stop material.
   Available from: Duro Industries
c. Batting material (insulation).
   Available from: Albany International
d. Cloth nylon (reinforcing material)
   Available from: Milliken & Company

6.5.2 Cloth mesh, bushed tricot knit.
   Available from: Collins and Aikman

6.5.3 Other components.

a. Elastic webbing.
   Available from: South Carolina Elastic Co.
b. Fastener tape, hook & loop
   Available from: Velcro USA, Inc.

   Or

   YKK Corporation of America
   Atlanta, GA

c. Interfacing fabric.
   Available from: Milliken & Company, Brookwood, Westmark, and Top Value Fabrics.

d. Tape Binding.
   Available from: Mutual Industry

e. Elastic cord.

Available from: Hope Global (Style #2831)
or

RI Textile Company (Style #DLB48)

f. Barrel locks.
Available from: ITW Nexus (Part #350-3000)
or
YKK Corporation of America (Part #LC055F/H)

g. Grommets and washers.
Available from: Stimpson Co., Inc.
or

Stimpson Co., Inc.

h. Cannon clip.
Available from: ITW Nexus (Part #743-0125)

6.6 Fabric defects scales. Fabric Defect Replica Kits are available from Sears, Roebuck and Company, Department 817HG, FC568B, 3333 Beverly Road, Hoffman Estates, IL 60179.

6.7 Subject term (keyword) listing.

Cold Weather Clothing
ECWCS
Extended cold weather clothing system
Moisture vapor permeable
Loft
Jacket

6.8. Asterisk (*) denotes change/update has been made to the paragraph compared to previous revision.

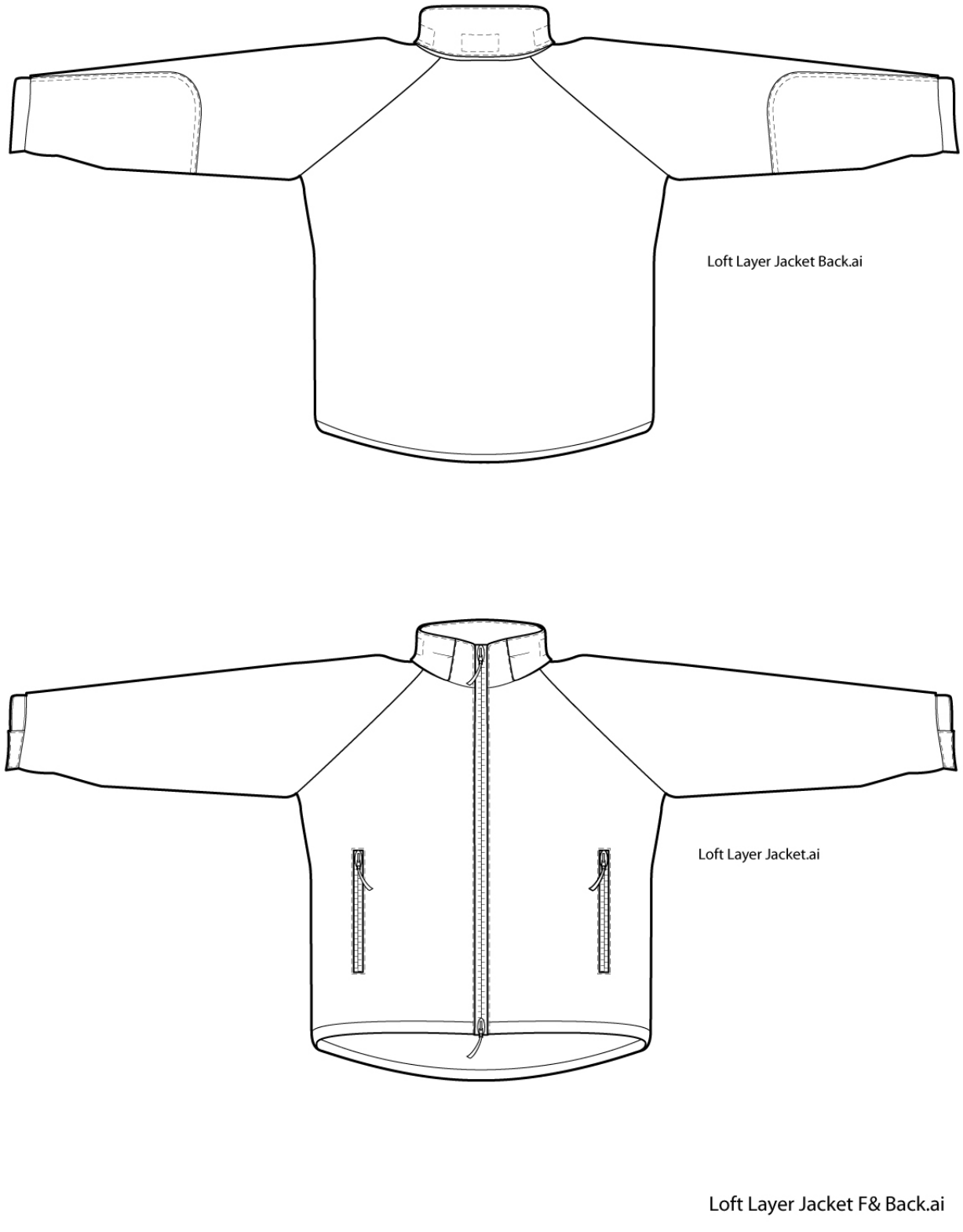

Loft Layer Jacket Back.ai
Loft Layer Jacket.ai
Loft Layer Jacket F& Back.ai

Figure 1

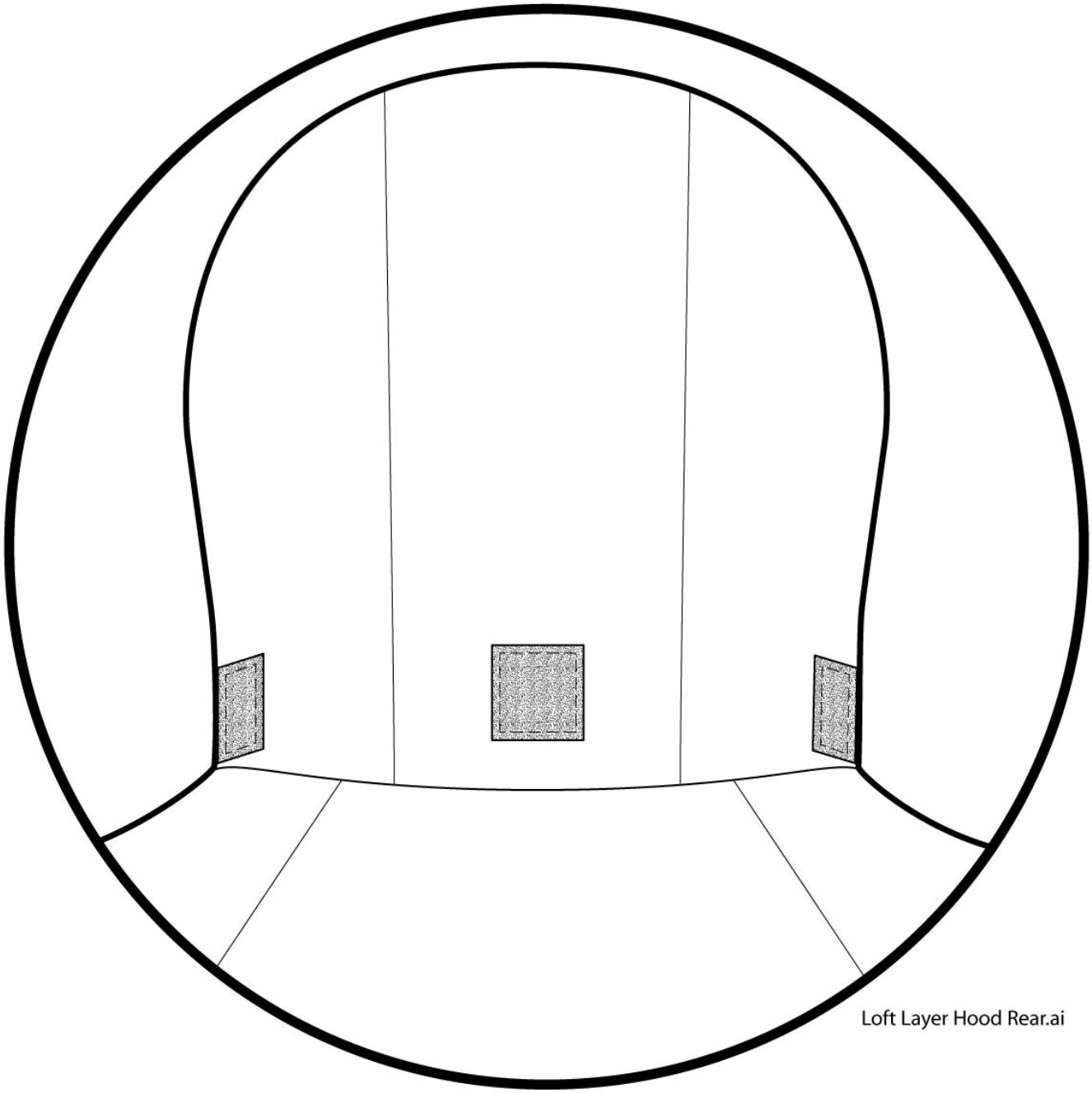


Figure 2

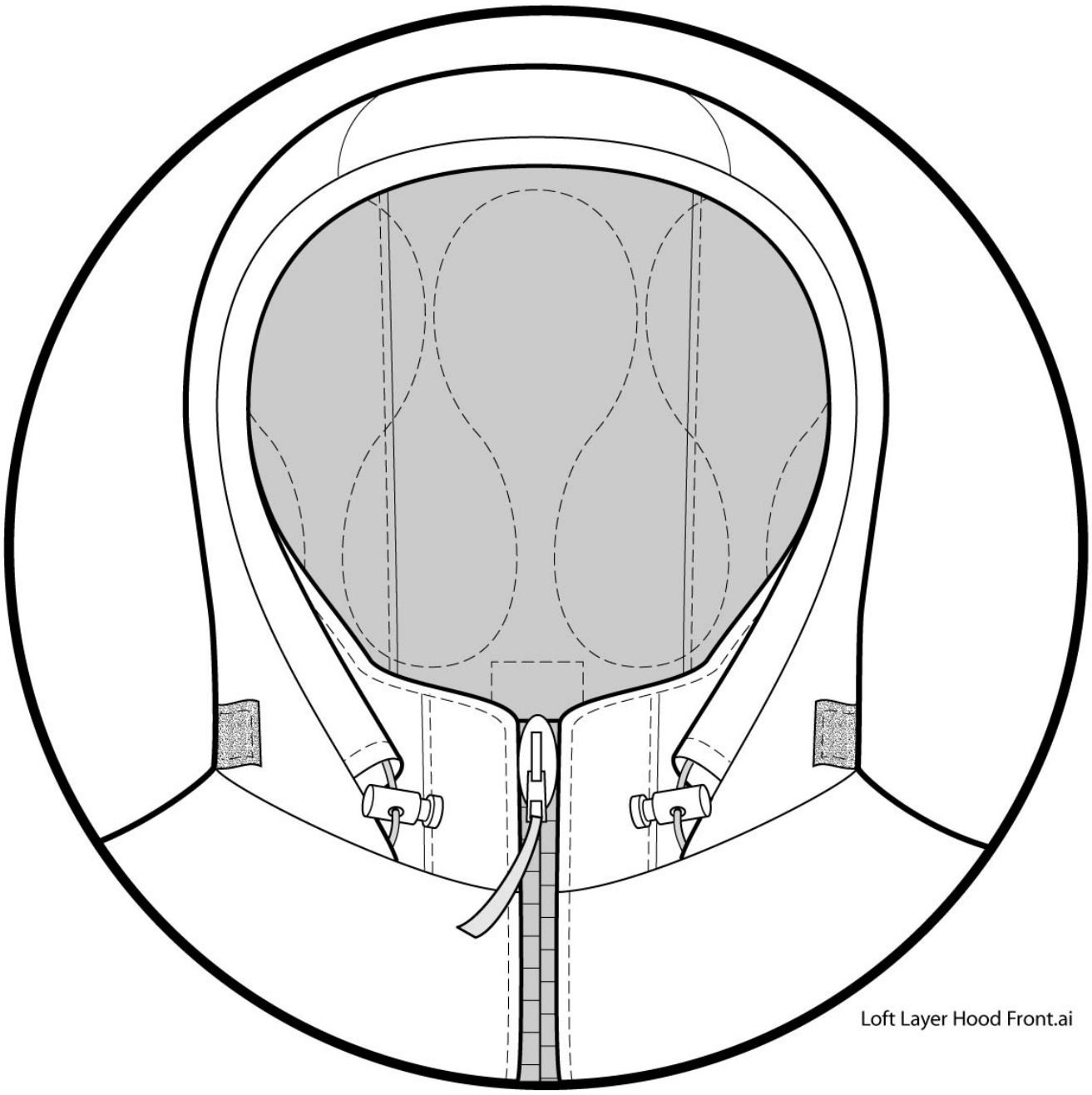


Figure 3