



सत्यमेव जयते



QA PROCEDURES BY DGQA

(POST PROCUREMENT SERVICES &
DEFECT INVESTIGATION)

UPDEX-2018 15 NOV18



By

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Controller,
CQA(T&C)
Kanpur





“Quality is never an accident;

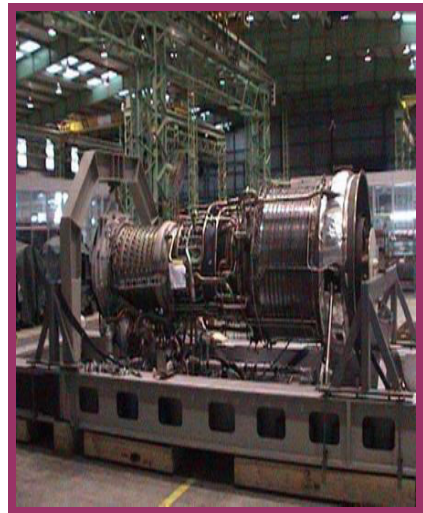
it is always the result of high intention,

sincere effort, intelligent direction, and skillful execution;

it represents the wise choice of many alternatives.”

–William A. Foster

INTRODUCTION TO DGQA



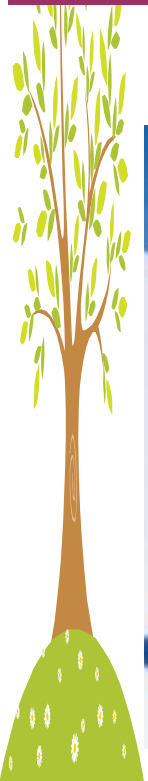
ASSURING QUALITY; A JOINT VENTURE



TOGETHER WE SHOULD

TOGETHER WE MUST

TOGETHER WE WILL



ROLE

DGQA Organisation is responsible for
Quality Assurance of Defence Stores
produced by
Ordnance Factories
Public & Private Sector
Ex-Import



BRIEF HISTORY

1869

- Inspectorate at AF Kirkee

1946

- Dte of Tech Devp under MGO

1957

- **Controller General of Defence Production under MoD**

1960

- Placed under DDP&S.

1963

- Dte Gen of Inspection

1987

- **Dte Gen Of Quality Assurance**

ORGANISATIONAL STRUCTURE



```
graph TD; A[MINISTRY OF DEFENCE] --> B[Department of Defence]; A --> C[Department of Defence Production]; A --> D[DRDO]; C --> E[DGOF]; C --> F[Def PSUs]; C --> G[Dte of Stdn]; C --> H[DGAQA]; C --> I[DGQA];
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**MINISTRY
OF
DEFENCE**

**Department
of Defence**

**Department
of Defence
Production**

DRDO

DGOF

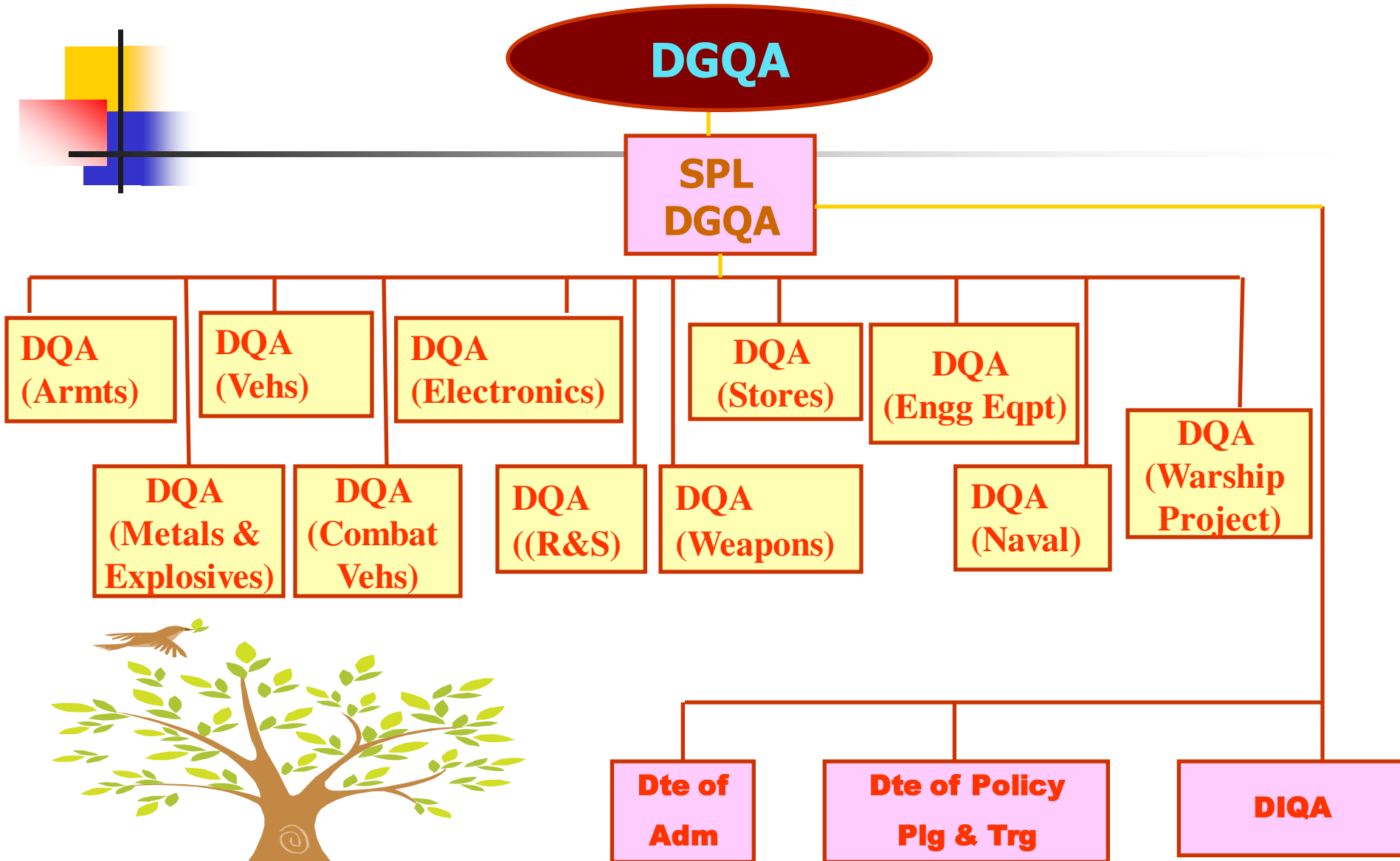
Def PSUs

**Dte of
Stdn**

DGAQA

DGQA

ORGANISATION



FUNCTIONS



PRE PRODUCTION PHASE

- **Vetting of GSQRs, Draft RFPs, Draft Contracts**
- **Design, Development & Developmental Trials**
- **Field Trials**
- **Formulation of Paper Particulars**
- **Vetting of Indents, TEs & SOs**
- **Consultancy on Capacity Verification & Vendor Registration**

FUNCTIONS



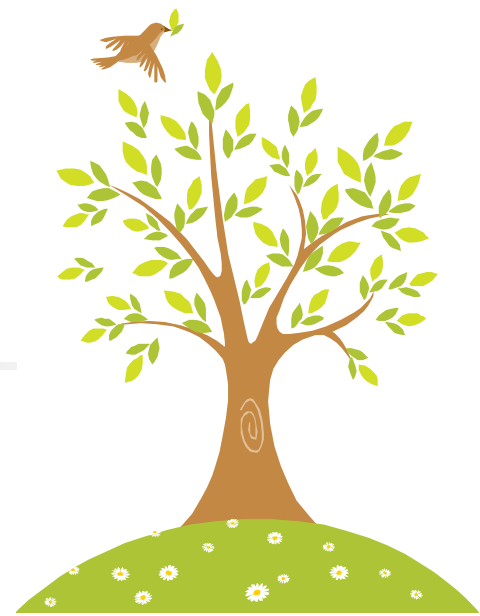
PRODUCTION PHASE

- **PDI, JRI & Check Proof in case of Ex-Import**
- **Technical Advise**
- **Production Deviations & Evaluation of Alternatives**
- **Frame QA Standards & Criteria**
- **Completion & Revision of Technical Publications**
- **Coordinate Technical Activities involving multi AHSPs**
- **Final Acceptance Inspection & Verdict**

FUNCTIONS

POST PRODUCTION

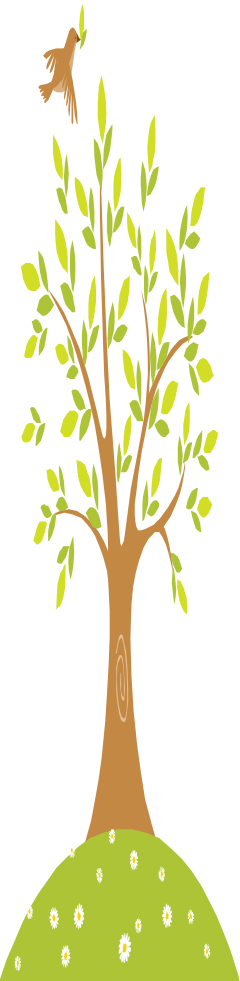
- **User Interaction**
- **Product Development / Improvement**
- **Introduction of change of status/Disposal**
- **Review Shelf Life**
- **Gauge manufacturing**
- **Assistance in Standardisation & Codification**
- **Representation in various sub-committees & panels**
- **Defect Investigation & Remedies**



QUALITY ASSURANCE AN OVERVIEW



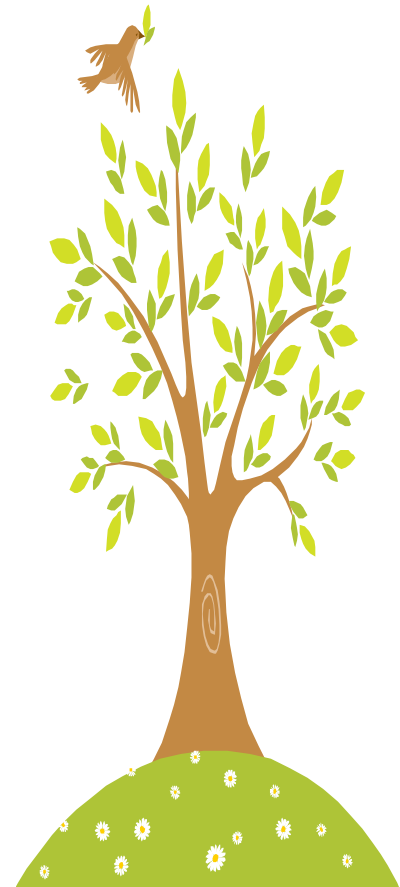
- Request For Proposal
- Tender Evaluation & Contract Negotiation
- Supply Order Placement
- Inspecting Officer & Authority
- Pre-inspection by Vendor
- Stores Offer through Challan
- Sampling as per lot size
- Lab Testing Details
- Verdicting the lot
- Bulk QA & Confirmation
- Issue of Inspection Note



QA TOOLS



- Quality Control
- Quality Assurance
- Quality Audit
- Surveillance
- Claims
- Pre Despatch Insp & Joint Receipt Insp
- Self Certification



CAPACITY VERIFICATION GENERAL PROCEDURE



- Request from firm / advice by AHSP.
- Submission Appx. B [VAAR] - IN TRIPLICATE.
- Authorization by AHSP to undertake capacity assessment / verification.
- Scrutiny by SQAE & visit of assessment team.
- Finalization of assessment report [Appx C- Part I & II].
- Recommendation by SQAQO & approval by designated CQA. [Issue of Registration Certificate]

TIME FRAME

- **General Registration:**
Within 90 days
- **Against Tender Enquiry:**
Within 30 days but not more than 45 days





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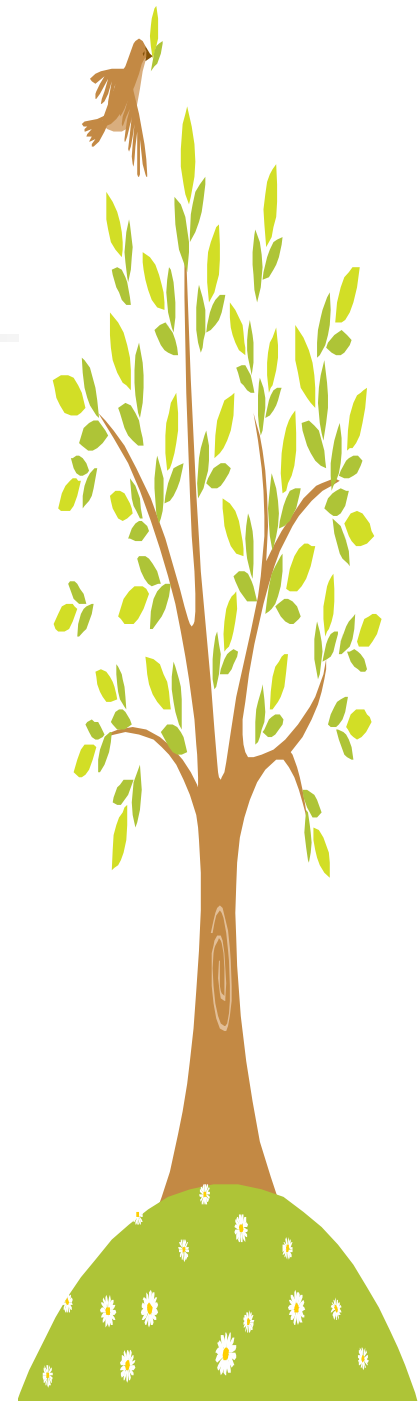


CQA (T & C) : INVENTORY PROFILE

TYPE OF STORES	EXAMPLE
PARACHUTE VARIOUS	SUPPLY DROPPING, MAN DROPPING, CANOPY, HARNESS, BAG INNER, PACK OUTER
ROPE & JUTE	ROPE CLIMBING, NETS, CORDS, ECSG, WEB EQUIPMENT
LIGHT & HEAVY TEXTILES	CLOTH CANVAS, RIB STOP, TOWEL OPERATING, CLOTH BLACK / WHITE / GREEN
SURGICAL & HOSPITAL STORES	BANDAGE, PLASTER OF PARIS, DRESSING FIELD COMPRESSED, SHEET HOSPITAL, WOOL COTTON
WOOLLEN STORES	SOCKS, BERET KNITTED, STOCKING, SCARF, SWEATER, BLANKET, CLOTH BUNTING
GARMENT STORES	TROUSER COMBAT DISRUPTIVE, JACKET, COAT PARKA, SALWAR, APRON COOK, SHIRT
LEATHER & FOOTWEAR	BOOT DVS, BOOT HIGH ANKLE, BOOT ANTI-MINE, SHOES
BULLET PROOF JACKET	HARD ARMOUR PLATE, FRONT & BACK SOFT ARMOUR PANEL, TRAUMA PAD, GROIN PAD, COLLAR PAD, OUTER JACKET

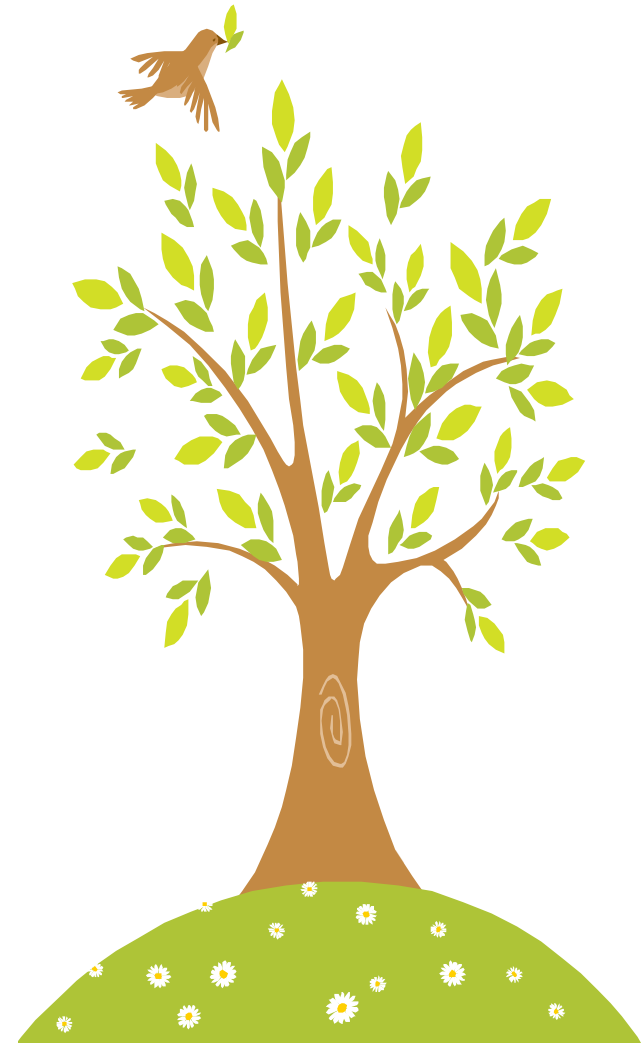
SNOW CLOTHING & MOUNTAINEERING ITEMS

- SOCKS WOOLEN SPECIAL
- BOOT MULTIPURPOSE
- THERMAL INSOLE
- SLEEPING BAG DOWN FILLED
- RUCKSACK 70 LTRS
- JACKET DOWN TUSER DOWN
- ECWCS
- GOGI
- MODULAR GLOVES



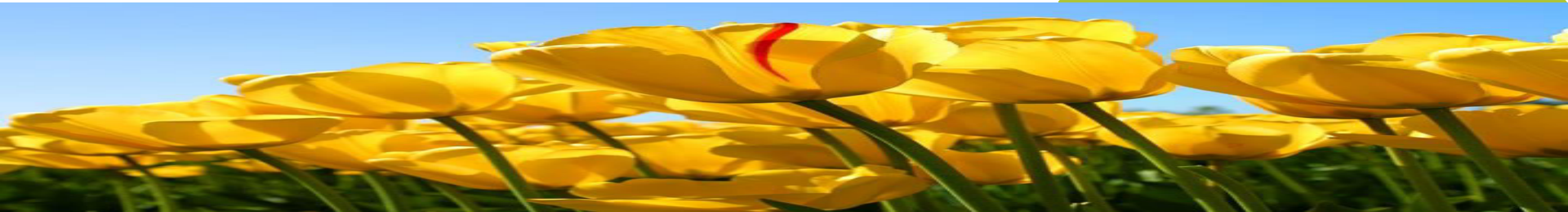
EXTREME COLD CLOTHING & EQUIPMENT ITEMS

- **BAG SLEEPING**
- **COAT ECC & TROUSER ECC**
- **SOCKS WOOLLEN**
- **RUCKSACK 90 LTR**
- **BOOT COMBAT RI**
- **GLOVES LEATHER**
- **UNDER PANT WOOLLEN**
- **VEST THERMAL**
- **CAP BALACLAVA**



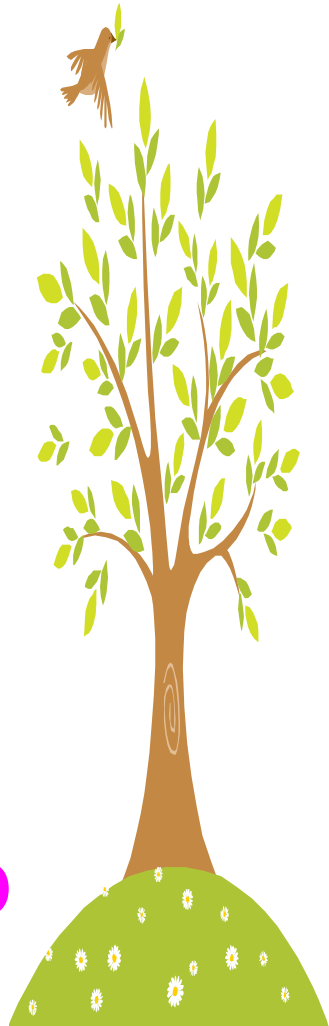
EXTREME COLD CLOTHING & EQUIPMENT ITEMS

- **RESCUE BAG**
- **MATTRESS KAPOK**
- **TENT ARCTIC**
- **GAITERS & FACE MASK**
- **CAMP MATTRESS OUTDOOR**
- **SNOW SHOE**
- **WINTER OVERALL**



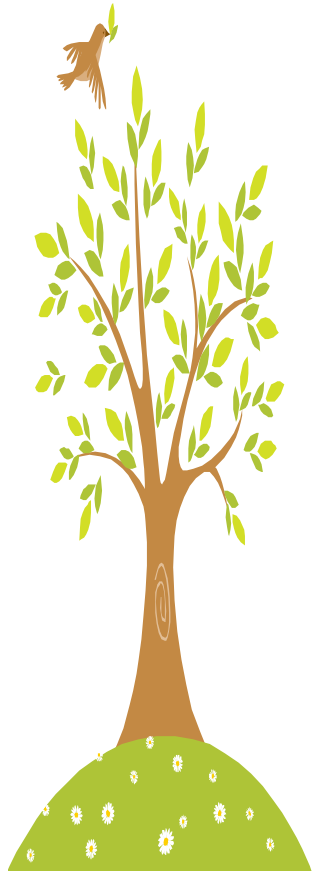
PRODUCT DEVELOPMENTS / IMPROVEMENTS

- **BAG SLEEPING**
- **RUCKSACK 90 LTRS / 70 LTRS**
- **MODULAR GLOVES**
- **ECWCS**
- **SOCKS WOOLLEN SPECIAL**
- **BAG KIT UNIVERSAL**
- **MATTRESS MK II**
- **TRACKSUIT SUMMER**
- **COAT ECC WITH INDIAN ARMY LOGO**
- **FACE MASK BALACLAVA**



INTRODUCTION OF NEW STORE / SPECS FORMULATION

- **GSQR / RFI**
- **SAMPLE SUBMISSION**
- **USER TRIAL**
- **DGQA VALIDATION**
- **TEST METHOD / DATA**
- **TOLERANCES**
- **USER TRIAL REPORT**
- **METHODOLOGY FOR FABRICATION**



TECHNICAL TEXTILES IN DEFENCE



Think about Army: a camouflage attired soldier, carrying minimum required essentials marching with arms, ammunitions & communication system



EXTREME COLD WEATHER CLOTHING SYSTEM (ECWCS)



This is a 3-layer upper and lower body clothing system offering protection from extreme cold climate. This is a modular design ensemble with wind locking seams and openings.

Technical Features

- Flexing Resistance
- Breathability
- Water Proofness
- Thermal Insulation
- Wind Proofness
- Abrasion Resistance
- Snow Shedding



SLEEPING BAG



- The system is a high performance protective enclosure for uncompromising warmth retention and maintaining comfort and waterproofness.
- The bag is of mummy shape with inbuilt hood. It has trapezoidal foot section.
- It has adjustable draft collar.
- Front opening antifreeze zipper of 150 cm duly covered with thermo-stitched draft tube cover.
- Inner bag is of differential cut compartments with systematic weight distribution of filling material (down goose).
- The outer bag in quilt texture is large enough to provide necessary space for the inner bag to develop its loft



SLEEPING BAG



Design Features



- A Mummy design to accommodate body shape, Bag in bag concept.
- Lt weight & can be carried by packing in a bag.
- Outer fabric Nylon 6'6, closely woven, PU coated, 50GSM Water resistance. Filled with 2 layers of polyester batting
- Inner bag of Nylon rip stop fabric, Down-proof finish WR. Filled with goose down, a protein fiber with 3-D structure, high movement to take body contour.
- Highly compressible but becomes bulky & lofty when deployed, shaken well to provide insulation.



JACKET & TROUSERS DOWN



The Jacket & Trousers Down is a protection clothing system for extreme cold climate and rough weather conditions.

- Outer Fabric: Nylon 6'6, PU Coated, W R.

- Inner Fabric: Nylon6'6, Down Proof, WR.
- Outer Fabric : 175 GSM
- Inner Fabric : 52 GSM
- Nature of coating : Polyurethane





GLOVES MODULAR



Three Glove System



The modular gloves system renders cold protection in glacier region and helps to discharge combat activities operating weapons and mountaineering equipment. It consists of three layers gloves combination.



TENT GLACIER



- This shelter is for 10 to 12 persons.
 - This is textile deck of modular construction supported over metal frame of Hot Finish Welded Steel Tubes.
 - The outer fly is strong PVC Coated WP Polyester fabric of 650GSM.
- The PVC coating consist of plasticisers, UV absorbers, inhibitors & heat stabilisers.
 - The inner liner is made of two layers of Non-woven polyester resin bonded fabric and one layer of Nylon knitted vacuum aluminised fabric encased in fabric Cotton closely woven 235 GSM and quilted.



UNDER SLUNG CARGO NET



Under Slung Cargo Net (USCN) is High modulus & High strength Nylon braided octagonal net which is used for carriage of various stores.

It is fitted underneath the helicopter for transportation of stores under slung.

It can carry a load of 1360 Kg (3000 lbs).

It is a lifeline for troops operating in in-accessable areas like Siachen Glacier and Jungles of NE.



BULLET PROOF JACKET



- Light weight Personal body armor for adequate protection from ballistic projectiles during combat duties and counter insurgency.
- Modular Structure to render protection to vital organs like Neck, Chest, Abdomen and Groin zone.



UNDER GARMENT



Shirt Specification

No.DMSRDE/T&GS/2002/457(a).

Made of Polypropylene, inverted pile knit texture. High neck, Half front open. Double layering at neck, Rib cuff and round bottom.



Drawers Specification

No.DMSRDE/T&GS/2002/458(a).

Ankle portion in rib knit and made stretchable with lycra. Crotch with cotton lining, elastic waist belt & fly opening provision.

HEAD GEAR



Cap Glacier (Specn No.IND/TC/4180(b).

Multilayer head gear with fabric nylon PU coated WR as outer layer, shirting angola and fabric nylon knitted aluminised as inner lining and double layer fleece as flap lining and batting polyester. A cap covering head, neck and cheeks of wearer. The aluminised fabric helps in adding thermal insulation of the caps.

Face Mask (DMSRDE/T&GS/88/370(a)

It provides protection of entire face including mouth and throat portion and nose. The detachable mouth cover of nylon mesh, batting polyester bonded and treated with phenol formaldehyde. The periphery is overlock stitched. It is reversible in design OG/White of basic material - Foam backed fabric laminated with knitted Nylon fabric to facilitate its use in vegetation as well as snowy terrains.



FOOTWEAR



Boot Multipurpose (Prov Specn No.IND/TC/3842). Fully waterproof, Shoe in shoe design. Vibram Sole with integrated shock absorbing part. Outer shell made of molded polyamide with overlapping tongue. Outer body is rigid at foot & toe region and having crampon attachment groove. Inner boot is made of aloe with insulation foam padding inside. The closure of inner boot is arranged with full lacing system.



PROV SPECN No. IND/TC/3842
DRAWING PLATE - 2



FRONT VIEW

BOOT MULTIPURPOSE ALTA VEGA EX M/S SCARPA



OUT SIDE VIEW



INSIDE VIEW

IND/TC/3842
DRAWING PLATE - 1



BOOT MULTIPURPOSE ALTA VEGA EX M/S SCARPA
INNER BOOT



FOOTWEAR



Thermal Insole [Prov Specn No.S/8003/TC-13/2013] Four layered with polywool blend knitted nylon fabric, EVA, Al foil, EVA. It is a detachable additional insole used with boot MP & boot combat RI. Provides warmth and comfort upto 8 hours continuous use in glacier.

Gaiters Glacier [IND/TC/4279]

To provide a water proof cover between boot ankle and trousers bottom so as prevent ingress of snow in foot. Made of fabric Nylon PU coated 250 GSM white with elasticized ends and fastened with PSF, buckle hook, strips & wire.



FOOTWEAR



Socks Woollen Special [Prov/S/5431/Socks Wn Spl/2012/01(b)]

Made of 64^S grade merino wool in inverted pile knit structure. Offers adequate thermal insulation for subzero temperatures at glacier. The pile knit texture with proper thickness at heel, arch & ball portion regulate foot & leg temperature. Thus absorbs and evaporate moisture to prevent bacteria/fungal growth during prolong usage. It also renders better cushioning to add in total comfort with durability. The stretchable ribtop with lycra strand maintains the retention of leg portion better.

OVER GARMENTS



Poncho Glacier [Specn No. IND/TC/4674 (b)]

Manufactured from Fabric Nylon PU Coated 105 GSM Snow White. Universal in size Intended to used by Army personnel providing complete protection in snow bound areas and even from torrential rains for multipurpose use in all region and terrain as over garment. It is designed to serve as Cape with Hood, Bivouac and Ground Sheet and provided with pack on the back.



LAB TEST PARAMETERS & STANDARDS

Thermal Insulation Value- ISO 11092, ASTM C 177.

Water Vapour Permeability- ASTM E96, ISO 15496, BS 7209.

Flame Resistance- ASTM D6413.

Hydrostatic Test- ISO 811, BS 3321.

Water Repellency – ISO 4920.

Air Permeability- ASTM D737, ISO 9327.

Flex Resistance – BS 3424, BS 8096.

Tensile Strength – ISO 13934-1.

Tear Strength – ISO 46741B, ASTM D5735-95

Seam Sealing (Peel Strength)- ASTM 2724.

Antimicrobial Test – ISO EN 20645, AATCC 1

Infra-red Reflectance – UK/SC/5721.





GENERIC ITEMS



DESCRIPTION

FEW MAJOR ITEMS

QTY

**MOUNTAINEERING
EQUIPMENT**

**SKI EQPT, ICE LADDER, CRAMPONS,
KARABINER, AVALUNG, ASCENDER,
DESCENDER ETC.**

**KITCHEN ITEMS, UTENSILS,
HEATING & LIGHTING
EQUIPMENT,**

**PRESSURE COOKER, STAINLESS
STEEL UTENSILS, UTENSILS
COOKING, COOKER OIL BURNER
LAMP (COBL), HEATER SPACE OIL
BURNING (HSOB) LANTERNS ETC**

**HARD & HOLLOW WARE,
FASTENERS**

**TENT EXTENDABLE FRAME
SUPPORTED (TEFS) COMPONENTS,
NAILS, RIVETS, NUTS, BOLTS,
EYELETS, CAMP STOOL/ CHAIRS,
JERRICAN, DRUMS ETC**

5150



GENERIC ITEMS



DESCRIPTION

EXAMPLES

QTY

**PARA DROPPING
ITEMS (METALLIC
COMPONENTS)**

**SHACKLES, SKID BOARDS, RIP CORD,
CANOPY**

2892

HAND TOOLS

**TRADESMEN TOOLS, GAUGES, DRILLS,
TAPS & DIES, SHOVELS,**

**HARNESS &
SADDLERY ITEMS**

ALL HARNESS & SADDLERY ITEMS

**TIMBER & WOOD
PRODUCTS**

**PACKING CASES, CARTONS, PLYWOOD,
BRUSHES, PAPER PRODUCTS, TIMBER
STORES, CANE WARE ETC**

1205

**SURGICAL &
HOSPITAL EQPT
PLASTIC, RUBBER &
CERAMIC ITEMS**

HOSPITAL BED, HAPO CHAMBER

**SNOW GOGGLES, EAR DEFENDER,
BULLET PROOF HELMET, SHIELD, COIR
MATTRESS, POLYTHENE FILM**

567



SPL/ CRITICAL ITEMS

HAPO Chamber – To overcome breathing problem in HAA



Avalung (survival for 30 mins in avalanches)



Boot Crampon (for movement in snow)



Snow Goggles





SPL / CRITICAL ITEMS

Helmets:

- **Ballistic Helmets**
- **Airborne Helmets**
- **Helmet Combat**





SPL/ CRITICAL ITEMS



Mountaineering Accessories

- Karabiner
- Ascender/ Descender
- Rock /Ice piton
- Ice axe
- Ice axe and Shovel
- Pulley
- Ladders
- Rod Avalanches



COLLAPSIBLE ALUMINUM PROBES

PETROLIUM PRODUCTS

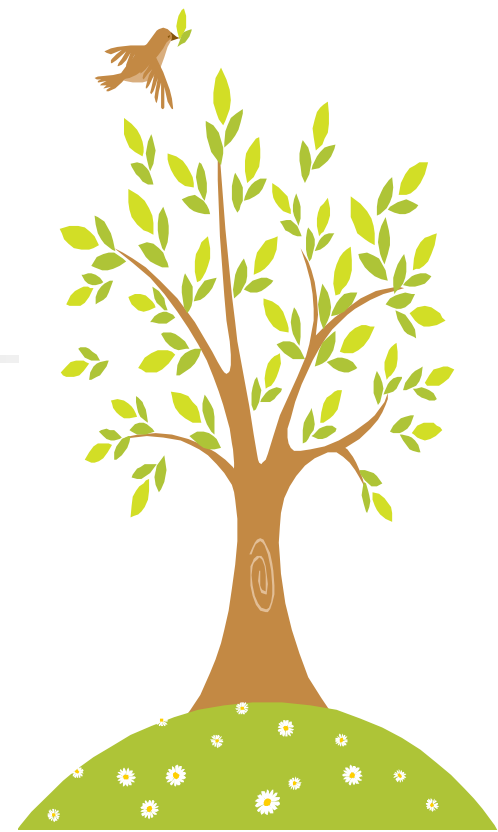
- Multi Purpose Gear Oils
- Multi Grade Engine Oils
- Hydraulic Oils

- Transmission Oils
- Protectives
- Greases
- Specialty Lubricants like OMHB



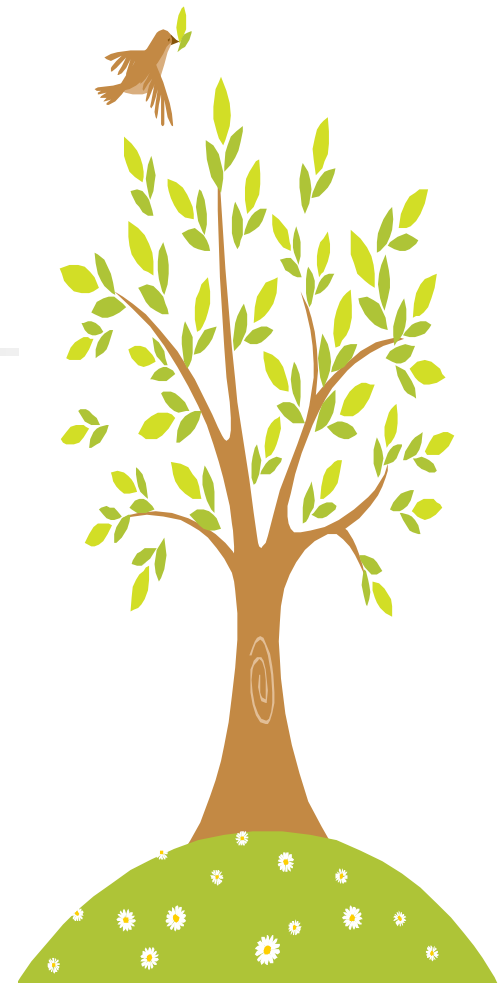
MATERIALS STORES

- **Paints, Lacquers & Varnishes**
- **Drugs & Pharmaceuticals**
- **Hygiene Chemicals like Foot Powder, Lip Salve & Insecticides**
- **Laboratory chemicals & glass wares**



THE LATEST IN QA

- **CORE & NON CORE**
- **PRODUCT IMPROVEMENT**
- **INDIGENISATION**
- **SELF CERTIFICATION**
- **GREEN CHANNEL REGISTRATION**
- **THIRD PARTY INSPECTION**
- **INTELLECTUAL PROPERTY RIGHTS**



**INDUSTRY HAS AN OPPORTUNITY TO
COME FORWARD & CONTRIBUTE
TOWARDS INNOVATIONS &
INDEGENISATION OF
TECHNICAL TEXTILES &
GENERAL STORES
FOR THE ARMY**



IMP TELEPHONE NUMBERS



- **HQ DQA (S) NEW DELHI (011)**

23011422, 23011368, 23012316

- **CQA (T&C) KANPUR (0512)**

2324529, 2328610, 2328611

- **CQA (GS) KANPUR (0512)**

2327472, 2326557, 2328607



THANKS

The background features a stylized landscape with a winding road that leads from the bottom left towards a sunset over a range of hills. The sky is composed of horizontal bands of blue, purple, and pink, suggesting a sunset or sunrise. The hills are rendered in shades of brown and tan. The road is a light tan color with a dashed white line down the center.

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**Quality is a Journey,
not a Destination**