

ROUNDTABLE SOLDIER MODERNISATION

07 MAY 2019



Forces across the world have been making continual efforts to enhance the fighting capabilities of their soldiers by providing them with the latest in weapons and equipment. As the canvas of technology has widened rapidly, especially in the last few years and resulted in a corresponding increase in costs, it is for the planners to decide what is the best optimal that can be provided.

To discuss various aspects related to the issue, a Roundtable was conducted by South Asia Defence and Strategic Review in concert with CENJOWS on 07 May on Soldier Modernisation. The infantry soldier was taken as the basis for equipment provisioning as it is his model that is replicated (as required) in other arms and services of the Army, Navy, Air Force, Assam Rifles and the CAPF.

South Asia Defence and Strategic review had in its Nov-Dec issue of 2007 spoken of the 2020 Soldier and as the Roundtable progressed, we realised that some issues raised in 2007 are still in the wish list.

SESSION 1 OPENING & KEYNOTE SESSION

Welcome Address. Lt Gen Vinod Bhatia, PVSM, AVSM, SM (Retd), Director CENJOWS welcomed the delegates for the Roundtable and set the tone for deliberations in his address. He emphasized the fact that Soldier modernisation is the buzzword for many armies in transition these days. The process of modernisation needs to be well thought out, pragmatic and cost effective for a country like India. Some salient aspects on which he laid emphasis were:-

- There is no equipment that is perfect. What we should aim at is equipping our soldiers with optimum equipment to meet envisaged tasks.
- It is incumbent on all of us, who are in positions to do so, to ensure that infantry soldiers are equipped appropriately. They cost the least and deliver the maximum.
- Brigades and infantry battalions are expected to operate for 72 hours and seven days respectively, behind enemy lines, with each soldier expected to carry 22-25 kgs of

weight. Our soldiers who are intelligent and committed, must get at least 80% of their expectations from us, it will then be a good achievement on our part.

- With the current levels of imported components at about 63%, we must endeavour to constantly reduce it putting greater reliance on indigenous products.
- We must have a pragmatic policy paper. This paper should cover our plans from now till mid-term, and from the mid-term to the long-term.

Opening Address: The Opening Address on Capability Enhancement of a Combat Soldier in keeping with overall Modernisation was delivered by Lt Gen Sanjay Verma, AVSM, VSM**, DGWE. He drew important lessons from his experience in Northern Command and how the modernisation plans should cater for terrain specific and operations specific requirements. The salient aspects covered were:-

- The General gave a reference to the 2007 slide (our Nov-Dec cover) and indicated that there have been many slips between the cup and at the lip. However, it is incumbent on us to remember that the Infantry is the capital as far as soldiers are concerned. Therefore, they need special attention.
- The issue with failures in equipping infantry soldiers are essentially related to rapid changes in technology and the huge numbers involved.
- It must be remembered that the UK Soldier Modernisation programme has been on since 2005. They have also been affected, because despite the procurement cycles being short, rapid technological changes have been instrumental in unanticipated delays.
- Indian Army has vast challenges due to different requirements posed by the varying types of terrain in the Eastern and Western theatres.
- We must have Theatre-specific procurement. This would warrant that we give more powers to our Theatre commanders. In consequence, we will be able to fast track procurement of essential equipment.
- We should look at small and manageable solutions as technology being inducted in the near term will soon become passé.

Keynote Address. Examining Multiple Threats and Equipping the Soldier for Future Wars was the theme of Keynote Address which was delivered by Lt Gen S S Mishra, VSM, DG Infantry. His speech touched upon the envisaged

requirements for modernising infantry as a whole while highlighting the key issues to increase the combat effectiveness of a soldier in future. He stated,

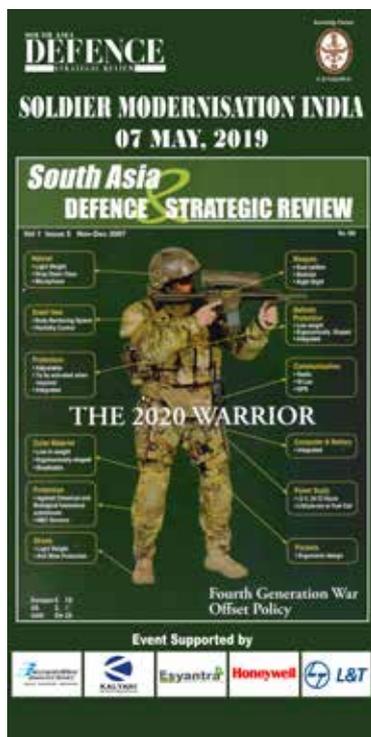
- The man behind the machine is the most important facet. And the boon being showered upon us by the technology must be harmonised with the requirements of the soldiers.
- Not much has been invested in R & D. This needs to be done with a view to promote indigenisation.
- The threat to us will continue to be both conventional as well as sub-conventional, where we will continually remain embroiled.
- Thus, the important facets of soldier modernisation are:-
- Situational awareness.
- Mobility.
- Enhanced lethality.
- Sophisticated comn and appropriate command and control systems.
- The infantry is looking holistically at an ensemble of equipment to meet the above requirements.

Panel Discussion: Examining the Essential Attributes of a Future Soldier, Chair: Lt Gen Vinod Bhatia (Retd), Director, CENJOWS. The panellists were Maj Gen A Bhuyan, SM, ADG RR; Brig Shailendra Singh, VSM, DDG Inf and Brig SS Raina, VSM, BGS, Assam Rifles who gave presentations on the specific requirements and roadmap for Soldier Modernisation in their respective organisations. Important issues which emerged were:-

- The key characteristics of a future soldier were spelt out. These were essentially an elaboration of what the DG Inf brought out in his keynote address. The capability enhancement of indigenous manufacturing achieved by establishing AK 203 production facility as a JV with Russia at Korwa was highlighted and future requirements in terms of Small Arms, supporting weapons and night vision / reflex / holographic sights were dwelt upon in detail.
- It was brought out that the procurement of the RR is akin to the

Infantry.

- RR soldiers have to respond fast and are vulnerable on account of the tasks envisaged for them. They have to be self contained for 3-4 days on a routine basis with adequate protective clothing, an essential requirement in CI operations.



- The essential requirements for RR are lighter equipment, night sights and a C4 control room/command post for managing operations.
- RR troops have to move in vulnerable areas, hence MPVs are required for them.
- Brig Raina brought out that the terrain in Northeast is different and some duties are also at variance from the Army because the Assam Rifles also gets involved in conducting police duties. However, the basic attributes of an Assam Rifles soldier are the same as an Infantry soldier. Assam Rifles requires user-friendly equipment.

SESSION 2 FIREPOWER AND NIGHT FIGHTING CAPABILITY

Lt Gen Subrata Saha, PVSM, UYSM, YSM, VSM** (Retd), was in the chair. The panel discussion started off by bringing out the fact that we should be able to maximise and sustain



our capabilities. It is important for us to be able to concentrate firepower in time and space.

- It was also brought out that the future operational environment would necessitate real-time information and the ability to take on hybrid threats. Hence there is a need to have light weapons, which are capable of being used in urban areas.
- Our night-vision capabilities are do not match our operational necessities. This impacts situational awareness.

- We must also look to improve our logistic ability by standardising equipment.
- The 1971 war was the first multi-dimensional war. Industry will do a great service by looking at ground-level innovations and help the armed forces standardise those for us.
- LC management dictates that windows to apply force are very small, therefore faster actions are required. We need sensors, surveillance capabilities and EW which enables us to achieve this.
- We will be required to transit from LC Ops to conventional operations very fast and therefore we need to choose our weapons system accordingly.
- The LAC has been non-kinetic. Our philosophy to transit to conventional Ops must therefore be ready and practiced.

Col Vikram Mahajan (Retd), Bharat Forge spoke of Indigenous Endeavour: Small Arms in India. The Kalyani Group has forged a number of Defence Strategic alliances and are involved in a vast array of products. Apart from their success in developing world class barrel manufacturing technology, Bharat Forge has various products on offer which will assist in Soldier Modernisation programme.

Dr Sreekant Narayan from Indo-MIM spoke of Metal Injection Moulding technology for precision components and how their company had unique manufacturing processes with many clients from world over. Indo MIM is already supplying a number of components to OFB and DRDO. The MIM technology will find applications in many of the products on the wish list of Armed Forces for their modernisation programmes.

Panel Discussion: A panel discussion was held on Maximising Firepower and Sustainability during different operational Scenarios. In the Chair was Lt Gen Subrata Saha, (Retd) and the panellists were Maj Gen Umong Sethi (Retd) and Brig Shailendra Singh, DDG Inf.

During the session a presentation was given on Innovative Solutions to Power and Temperature Management in Extreme Climate by Dr Sunod Mathew and Dr Vijay Maddali, of Esysantra Combined Heat & Power Solutions Pvt Ltd. Our soldiers endure extreme weather conditions a human body can endure. Providing reliable heating and power solutions can substantially improve the morale of our frontline soldiers and save precious lives. The technology is developed around the clean energy concept; where energy from a renewable source is used for charging the novel Combined Heat and Power Device. The presentation evoked lot of interest amongst the delegates, especially from the forces and certain valuable user recommendations were provided to the company. The technology developed by Esysantra holds a lot of hope for future utilisation by field armies.

SESSION 3 PROTECTION & SURVIVABILITY



The session was chaired by Lt Gen Sanjay Kulkarni PVSM, AVSM, SC, SM, VSM, (Retd), Former DG Infantry. Gen Kulkarni spoke about the need to work out optimal solutions and provide the best possible equipment to the soldiers. During the session a presentation on Anatomy of Protective Uniforms was given by Puneet Bhalla, AVP Honeywell. Salient aspects of his presentation are given below.

- The new generation of Spectra Shield products can easily reduce the weight of current bullet proof jackets by approx. 20% or more; 1.8-2 Kg reduction in weight for a soldier wearing a jacket for prolonged periods will surely be of great value. US Army & many other armies in the world have graduated to a Rifle Helmet (against AK-47 Mild Steel Core threat-Level III-NIJ).

- Spectra has a demonstrated history world over to safeguard our troops against mine threats using steel/ceramics. It can reduce the weight of the vehicle significantly; enhancing the mobility of the vehicle to move out of the kill zone at the fastest.

- The Shelf Life, Quality Traceability of products on offer can be easily tested as Honeywell has proven procedure to ensure quality assurance with each fibre having a Cat Part No printed on it.

Another presentation was given by Col Debashish Singh, Director Indigenous Solutions, DGMF on Assessing Future Armour Requirements of Operational Vehicles for Protected Mobility. He essentially dwelled on how characteristics of weight, protection and mobility would have to be given priority as per terrain and operational requirements.

Power management is an essential aspect and a background

SESSION 4 POWER MANAGEMENT AND COMMUNICATIONS



function on which most of the equipment used by the soldier will depend on for their efficient utilisation. Silent and alternative energy based charging systems which are light in weight coupled with power sources with longer lives are non negotiable requirements for a future soldier. Following presentations were given on the subject:-

Smart Solutions to Power Management: **Increasing Power Requirements & Innovative Solutions by Debasish Dam, GM, Elcomponics Technologies.** He brought out that the company offers a wide range of solutions, especially in Solar Power and cabling, which will be of immense help to the Services. Elcomponics has the ability to apply their specific industry experience to create tailored solutions for the forces if the exact requirements are given. A presentation on Fail Safe Communications at Sub Unit and Unit Level was conducted by Col MK Singh, Senior Dy GM, BEL. He brought out the following aspects:-

- Importance of Communication.
- Overview and Architecture the of Soldier System.
- Benefits which include, MANET spectral efficient waveforms with ECCM, ultra-light computing devices ,advanced navigational solution with or without GPS, seamless continuous operations for more than 48 hours with battery back-up and latest power solutions viz fuel cell charger and, solar charger etc.

Takeaways



Modernisation. Soldier Modernisation has been an integral part of capability enhancement of armies the world over since times immemorial. However, the subject has gained increased relevance in recent times on account changes in the nature of warfare and rapid advances in technology which have brought about the introduction of new weapon systems and multifarious enablers.

Components of Modernisation. The essential components of modernisation will include increased surveillance and robust communications. The surveillance and communication systems must have built in redundancy. The soldier must be provided with better safety and protection equipment and in the present context improved night vision needs no emphasis. A key component of modernisation would be better mobility, commensurate with the dictates of the terrain and envisaged tasks. And last but not the least a modern soldier must be provided enhanced lethality. At the Brigade level, we must have adequate ISR capability.

The Indian Context. Our modernisation plans must keep the likely operational scenarios and varying types of terrain in mind. We are involved in a sub conventional conflict on our Northern borders whereas the engagements on the LAC are non-kinetic. The soldier, however, should have the ability to changeover to conventional conflict at a short notice. His equipping will have to be done accordingly. Hybrid threats as being currently faced also necessitate the need to have light weapons which are capable of being used in urban areas. We should look at small and manageable solutions as technology being inducted in the near term will soon become passé.

The Modernisation Philosophy. It is imperative that we have a modernisation philosophy from now till the mid term and from the midterm till the long term. As our procurement

procedures are protracted, we need to ensure that very few mid-course changes are allowed as this has a cascading delaying effect. Some acquisitions could also be done by the Theatre Commanders to expedite procurement.

Optimal Equipping. Since costs are becoming prohibitive, it may not be feasible to provide the soldier with 100% of the wish list that planners prepare. We will have to fine tune and look at the optimal requirements that should be met. We could also look at some sector specific acquisitions in addition to the WE Equipment.

Industry Participation. The Indian industry has tremendous potential to help the forces. This potential must be exploited. The Armed Forces and the Industry must work in synergy so that best possible results can be achieved. There have been a lot of innovations done by the army at the ground level, the industry must come forward and help standardise these innovations so that can be exploited better and cover a larger canvas.

Logistics. Indian Army has to cover a lot of ground in standardising its inventory and placing greater reliance on indigenous equipment/components. This will reduce costs substantially.

Power Management. Power Management at all levels, from a soldier to higher field formations, must be given adequate importance and the most efficient technology coupled with innovative solutions on the offer must be evaluated and provided.