Modernisation Thrusts of the Indian Army

The Centre for Land Warfare Studies (CLAWS) interviewed Lt Gen **J P Singh**, AVSM, Deputy Chief of Army Staff (P&S), seeking views on the numerous facets of military modernisation and the Indian Army's thrust areas. Team CLAWS comprised Brig **Gurmeet Kanwal** (Retd), Director CLAWS and Dr **Monika Chansoria**, Managing Editor, CLAWS Journal.

What are the major thrust areas in the army's modernisation plans up to 2020?

Security threats of the future are expected to be spread over a wide spectrum covering the conventional, sub-conventional, asymmetric and nuclear, biological, chemical (NBC) warfare from state/non-state actors. To enable the army to meet the envisaged challenges, the focus of the ongoing modernisation is to progressively increase our capability through acquisition of military hardware and software that can provide combat edge over our adversary, enable rightsizing of our forces and upgrade technology and infrastructure to provide continued support to our forces. The army modernisation plan aims to develop prioritised capabilities through induction of high technology weapons and acquisition of force multipliers, with a focus on creation of a lethal, agile and networked force prepared to meet the complex security challenges.

The critical capabilities that are being enhanced to meet challenges across the spectrum, include battlefield transparency, battlefield management systems, night-fighting capability, enhanced firepower, including terminally guided munitions, integrated manoeuvre capability to include self-propelled artillery, quick reaction surface-to-air missiles, the latest assault engineer equipment, tactical control systems, integral combat aviation support and network centricity. Due emphasis is also being given to make up deficiencies, upgrade "in inventory" platforms, streamline existing logistics support, improve infrastructure in border areas, especially in the Northeast and also focus on human development to harness technology at the cutting edge level.

Are budgetary constraints limiting the army's modernisation efforts?

The modernisation of the army through capital procurements in the 11th Plan will not be constrained by budgetary allocations. The demand is made keeping in view the requirements projected through the Long-Term Perspective Plan. The budget allocation is as per the utilisation capability in a particular year. The utilisation is under 'committed liabilities' and 'new schemes.' The liabilities under the committed head will rise once major acquisitions take place in the next two years. Once this happens, then, the combination of expenditure under committed liabilities and new schemes will ensure complete utilisation of the capital budget.

Presently, contracts of new schemes are taking time because our indigenous capabilities are on the cusp of maturing and ventures under 'make' or 'buy and make Indian' will take approximately five years to fructify. Under 'buy' (global or Indian) and 'buy and make' (transfer of technology–ToT), the acquisition cycle is nearly three years. The Defence Procurement Procedure (DPP) 2008 is a fine document and is getting understood better by the buyers and sellers. The government has assured that there will not be any budgetary constraints to limit the army's modernisation efforts under the capital head and I believe it.

Has the new Defence Procurement Procedure helped to streamline defence acquisition?

The DPP 2008 has streamlined the defence capital procurement procedure to a considerable extent. It lays down clear responsibilities and time-bound procedures to facilitate procurements, in a transparent manner. Periodic review of DPP is happening and there is a better understanding of procurement procedures by buyers and vendors. The normal time laid down for completion of actions from accord of acceptance of necessity (AoN) to signing of the contract is 24 to 30 months, which is an ideal time-frame for procurement under 'buy' and 'buy and make' categories, whether ex global or Indian. For design and development (D&D) cases, which involve the Defence Research and Development Organisation (DRDO) and the Defence Public Sector Undertakings/Public Sector Undertakings (DPSUs/PSUs), the time period is flexible and it depends on the time taken for fructification of the design into a prototype, approval of the prototype in field trials and thereafter, production by the nominated production agency (PA). This takes a long time. Likewise, time periods for acquisitions under the 'make' and 'buy and make' (Indian) are also flexible.

The DPP 2008 aims to promote a wider procurement base, transparency in procedures and progressive indigenisation of defence production. Besides the normal procurement procedure, it also has provisions for quick procurements within six months under the fast track procedure to meet urgent operational requirements. Acquisition of strategic and high technology equipment from friendly foreign countries is also facilitated under special provisions. It is adequately flexible and open to amendments as per the felt needs of the Services.

How does the army plan to reconcile the requirements of weapons and equipment for conventional and sub-conventional conflicts?

The primary role of the Indian Army is to safeguard the sovereignty and territorial integrity of the country against any external threat. When mandated, the army is also the primary instrument available to the constitutional authority to meet the challenges posed by proxy wars and sub-conventional and other internal threats. Although the focus of the current modernisation continues to be on enhancing the conventional war-fighting capability to maintain credible conventional deterrence against adversaries, the requirements of the combat forces employed in sub-conventional operations have been adequately factored in.

There is a huge overlap of weapons and equipment required for conventional and sub-conventional conflicts, in case you are tackling these within your own country. Communication networks, including mobile cellular communication systems being laid in the North and Northeast will assist the army in operations over the entire spectrum. Likewise, battlefield surveillance systems (BSS), battlefield management systems (BMS), the latest radio sets and radio trunk systems, net enablement, night vision devices, modern small arms, mine protective vehicles, bullet proof vehicles, reconnaissance and observation helicopters (under trials), advanced light helicopters (ALHs) and combat engineer equipment, which are being procured, are capable of supporting the conventional and sub-conventional operations.

Modernisation of the mechanised forces has been slower than may have been operationally desirable. What efforts are being made to overcome various challenges?

The modernisation of the mechanised forces involves acquisition of technologies that are on the critical technology list even with the developed nations. Even

when the technology is available, the state-of-the-art vetronics that are part of all modern tracked combat vehicles, pose peculiar challenges related to integration with other on-board sub-systems. The modest defence technology absorption capabilities in our country and intellectual property rights (IPR) related issues with original equipment manufacturers (OEM) also contribute to delays in modernisation of the mechanised forces.

The challenges involved in the process have been identified and all round efforts are being made to meet them. There is clarity on the future roadmap and the philosophy of equipping. The projects that are already underway are being monitored closely to ensure that further slippages are avoided. Induction of new tanks and upgradation of existing equipment have been accorded top priority. Progress on addressing the night blindness of the forces has been satisfactory. Both indigenous and external sources are being explored for enhancing our anti-tank capabilities. The results of indigenous development are encouraging.

Artillery modernisation plans appear to suffer regular setbacks for various reasons. What is being done to hasten this critical facet of the army's modernisation plans?

The modernisation programme of the artillery, though delayed, is now on track. Modernisation of the artillery is focussed on improving battlefield transparency, modernising command and control systems and enhancing firepower by inducting and operationalising long-range missiles, rocket regiments and advanced gun systems on varied platforms. Notable progress has been made in all the envisaged objectives. State-of-the-art surveillance systems have been introduced and efforts are on to further improve the range and depth of such capabilities. The procurement strategy caters for sourcing our immediate requirements from external sources with transfer of technology while simultaneously engaging indigenous sources for meeting our long-term requirements. The development work on the artillery combat command and control system (ACCCS) has been completed and it is at a very advanced stage of procurement. It is a force multiplier that will enable optimal employment of artillery resources.

Trials of new gun systems are progressing well. Actions for procurement of towed guns, mounted guns and tracked self-propelled guns and upgradation of existing guns have been initiated and we expect major trials in 2011. Indigenous industry is being engaged to upgrade existing guns and build a reliable support and production base for the long term. Lessons learnt from various

impediments that have delayed the modernisation of the artillery will be put to good use. We are optimistic that the artillery modernisation programme will stabilise by 2011-12.

What efforts are being made to move towards net-centricity? Has there been any progress in implementing plans for the modernisation of C4I2SR systems?

Our long-term modernisation objective of transcending from a platform-centric into synergised net-centricity lies in linking of platforms into one network of shared awareness in order to obtain information superiority which translates into enhanced combat power. The essential features of net-centricity for command, control, communication, computers, information, intelligence, surveillance, reconnaissance (C412SR) capabilities are a reliable, omnipresent, high speed, scalable and survivable network to enable decision support systems.

The army has made visible progress towards achieving a robust, survivable and high speed Common User Network (CUN) across the country. The Army Switched Communication Network (ASCON), Command Inter-Communication Network (CICN), Army Wide Area Network (AWAN) and Army Radio Engineered Network (AREN), etc., have been established to provide robust communication networks across the length and breadth of the country. These networks are being upgraded to meet the ever-growing user needs and changes in the technology.

Towards achieving the long-term modernisation objective of the Indian Army, a large number of projects like Network for Spectrum (NFS), ASCON Phase IV, Tactical Communication System (TCS) have been initiated which are in various stages of implementation. These shall provide a state-of-the-art and robust communication system for the CUN as well as in the tactical battle area (TBA). This will be the backbone network and will provide user interface for various applications for tactical command, control, communication and information (TacC3I) which are in various stages of development/fielding. These applications will ride intra-communication systems and the CUN for seamless flow of data across different domains.

Communications systems like TCS and BMS have not reached the stage of practical implementation. What is holding up the introduction of these systems?

At the very outset, it must be appreciated that projects like TCS and BMS are very complex systems with unique requirements.

BMS was conceived as a command and control system for the cutting edge, i.e. the elements at units and below down to individual soldiers. Unlike other systems which have specific functions, BMS aims to integrate all elements that undergo frequent grouping and re-grouping in the TBA which are operating in a given geographic area to provide a common operating picture. This is a major challenge since each arm and service also has certain specific requirements in terms of functionality. I would like to mention here that it takes time for the technology to support such a networked system with appropriate security layers, to operate within the parameters of spectrum availability, to mature. Optimising our requirements with available technology for large scale deployment of such systems is a challenge and requires great deliberations. A large number of stakeholders of BMS necessitates that all issues are deliberated and addressed at the planning stage. The delay as perceived is in effect the deliberations being carried out to give final shape to the project.

TCS is the state-of-the-art technology as an upgrade to the present AREN. It will be a fully deployable mobile tactical communication system which will provide:

- Integrated voice, data and video to field commanders and soldiers while on the move in the TBA.
- Flexible communication to combat forces in wide a variety of deployments and operational environments.
- Inter-communication between Tac C3I systems.
- Security architecture that will enable confidentiality and integrity.
- Reliable network topology with no single point failure.
- A robust network with adequate inbuilt redundancy.

While working towards achieving our goal of self-reliance in defence preparedness of the country, this project is categorised as 'make (high tech)'. Accordingly, the Integrated Project Management Team (IPMT) which has already been constituted to look into the various aspects of this project, is going to steer this project till the design and development stage of the prototype. Presently, the response to the expression of interest is expected shortly. This project, after unavoidable delays, is now heading in the right direction, at the desired pace.

Recent reports have pointed out critical deficiencies in air defence (AD) systems. What action is in hand to simultaneously fill operational voids and replace obsolescent air defence systems?

The two-pronged approach to inventory management by the army air defence (AAD) envisages consolidation of existing capabilities through upgradations while simultaneously building futuristic capabilities through induction of state-of-the-art weapon systems, in accordance with the approved perspective plan. The approach supports exploitation of indigenous expertise and visualises significant indigenous capability development in the process. As part of the consolidation efforts, the existing AD guns are being upgraded with state-of-the-art electro-optical fire control systems and mechanisms, while the associated surveillance, fire control, communication and battle management systems are being revamped. Efforts at enhancing all weather operational capabilities have been successful and significant progress has been made. Procurement actions for new training and target systems are progressing well.

The futuristic AAD envisages a layered and tiered defence employing an integrated family of weapon systems which include state-of-the-art gun systems, very short-range, short-range and medium-range surface-to-air missiles. There will be a very perceptible shift from the gun-centric approach to the gun-missile and missile-centric approach to air defence to cater for envisaged future threats. Efforts to modernise AAD are progressing well and the visible changes in its equipment profile can be expected in the near future. Definitive actions for induction of new missile systems and upgradation of existing equipment are expected to be completed this year. Actions for procurement of medium-, short- and very short-range missiles have gathered irreversible momentum and they should be inducted in due course of time.

At what stage is the modernisation of information systems? What efforts are being made to integrate all information systems on a tri-Service basis?

The three Services are in the process of developing/fielding various information systems based on Service-specific operational requirements. To ensure seamless exchange of information in a joint operations scenario, the Headquarters Integrated Defence Staff (HQ IDS) has undertaken the necessary measures, which include development of strategic tri-Services information communication technology (ICT) networks. The modernisation of information systems is being progressed as part of ICT projects. A large number of ICT projects are at different stages of development/fielding. These projects are generally based on open standards, enabling them to integrate at various

levels. There are two major projects, namely Data Communication Network (DCN) and Network for Spectrum (NFS) at the tri-Services level, besides other similar projects. DCN and NFS shall provide a network for seamless flow of information between tactically and strategically important locations of all the three Services.

Among the emerging threats, cyber warfare is a primary threat. What steps are being taken to establish defensive and offensive cyber war capabilities?

Our adversaries are making rapid advancements in acquiring information warfare (IW) assets to paralyse our information seeking processes during critical phases of operations. Efforts are afoot to equip the army to tackle these emerging threats and make our information structure robust by plugging vulnerabilities in the information domain. These transformations have led to the incorporation of IW and ISR concepts in the Indian Army. We are presently at a stage when these concepts have matured and are currently being operationalised. To this extent, posting of IW staff at formation HQ has commenced to closely monitor and coordinate all IW issues which *inter alia* include cyber warfare issues. The focus is presently on achieving a credible defence capability in the short term. Cyber organisations are being raised in consonance with the operational requirements of each Command. As part of the defence cyber warfare capability, important measures in vogue are:

- Conducting cyber audits and cyber security review.
- Evolving a comprehensive crisis management plan for incident handling and response facility.
- Vulnerability analysis and penetration testing of computer networks and applications.
- Cyber forensic analysis.

The long-term perspective would be to gradually develop, with the ability to undertake offensive cyber operations in future.