

Future Armoured



Lt Gen Bipin Rawat
AVSM, YSM, SM, VSM, VCOAS

In keeping with what has become a convention, South Asia Defence and Strategic Review conducted the annual symposium on Armoured Vehicles in concert with the 'Centre for Joint Warfare Studies' on 16 and 17 Nov 2016 at the Manekshaw Centre, New Delhi. This was the seventh edition of the said symposium, which has become a forum for informed debates on armoured vehicles and a platform to bring together all concerned stake holders viz the user, the industry and the PSUs. The symposium was enriched by participation of representatives of the British and US Army and those of the industry both indigenous and foreign.

'Sound Bites'- Opening and Keynote Session

The welcome address was delivered by Lt Gen Vinod Bhatia, PVSM, AVSM (Retd), Director CENJOWS and he had to say the following: -

- The tank is an integral component of both deterrence and fighting capability.
- The tank has evolved since World War 1 and will always remain a game changer.
- The changing nature of warfare is bringing in new challenges hence we need to consider whether the tank should be evolutionary or revolutionary in design.



Colonel Mathew Botsford, OBE
British Army



Colonel (Ret) Michel Lautier
Nexter Systems



Lt Gen DRN Soni, VSM,
GOC-in-C, ARTRAC



- Stake holders need to synergise capabilities whilst looking at future projects and incorporate cutting edge technologies therein.

The Chairman's address was delivered by Lt Gen AK Singh, PVSM, AVSM, SM, VSM, Former Lt Governor A&N and Puducherry and erstwhile GOC-in-C Southern Command. Excerpts: -

- Armoured Forces (tank units and mechanised infantry) have done the country and the army proud during all wars.
- We need to continually hone both our technical and human skills.
- Over 100 sub conventional conflicts have happened since WW II. The probability of these conflicts is high but the consequences are not far reaching whereas the probability of conventional conflicts taking place is low. However, the consequences of such conflicts will be far reaching.
- Western countries are going in for equipment suited for sub conventional conflicts. India, however, must equip for conventional conflicts whilst having a limited number of light tanks and a common platform for variants.

The VCOAS, Lt Gen Bipin Rawat, AVSM, YSM, SM, VSM delivered the opening address and stated the following: -

- We must look at emerging technologies and go about capacity building with due thought and deliberation.
- Fleet management needs to be looked at holistically from preventive maintenance through overhauls and upgrades

Vehicles India 2016



*Lt Gen AB Shivane, AVSM, VSM
DG Mech Forces*



*Lt Gen AK Singh, PVSM, AVSM, SM, VSM (Retd)
Former Lt Gov A&N and Pundbierry & GOC-in-C*

Equipping Mechanised Forces to Meet Future Threats and Latest Tech Trends

The second session was chaired by Lt Gen Philip Campose, former Vice Chief of the Army Staff. He underscored the need for cost effectiveness and affordability, a major factor for the future. He also gave a brief on the Army Design Bureau. He stated that weight restrictions must be kept in mind as excess weight adversely impinges mobility. The General Officer also said that there is no moving away from Make in India and the need to collaborate with the private industry.

The speakers during the session were: -

- Brig Vikrant Nayyar- Commander SOTT
- Col Michel Lautier- Nexter Systems
- Colonel Mathew Botsword – British Army
- Er Gen Michel Petre and Jean Paul Faye, MBDA
- Arnaud de- Villermont, Safran Electronics and Defence
- Col AK Gupta- Alpha Technologies

Several important issues were dwelled upon during the session. The issues that were covered and the salient aspects that came forth are: -



Naresh Ummat, MD, Baracuda



Er Gen Michel Petre, MBDA

hence looking at the entire life cycle support.

- The way forward is to be self-reliant and pursue Make in India.

The key note address was given by Lt Gen AB Shivane, AVSM, VSM, the DG Mech Forces. Gen Shivane emphasised on the following: -

- We need to relook at the three attributes of the iron triangle as prevalent now and future tank design needs to factor in changing battlefield dynamics and technological advances.
- With the increase in asymmetric warfare the requirement for armoured vehicles will increase in order to deal with multiple threats.
- We must rethink our equipment holding pattern from the present ratio of 30:40:30

Mr MD Gowtama, Chairman and MD BEL gave a historical perspective and stated that BEL has been involved with a number of upgradation projects related to Mechanised Forces in the past and will continue to be a major partner in all Make in India Projects in the years to come.

Paul Everitt, the CEO of the ADS Group UK stated that this was an interesting time on the world stage and we need to be innovative by being ahead of the enemy whilst being cost effective. There was great room for cooperation between UK and India and that the UK will support India's export endeavours.



Book release by Gen VN Sharma (Center): Indian Armour in Battle

- **Current and futuristic trends in armoured vehicles.** We must factor in new threats and the likely operational scenarios whilst looking at futuristic vehicle designs. We also need to go in for state of the art technologies.
- **Wheeled versus tracked vehicles.** The French Army has opted for wheeled vehicles over a tracked ones' on the basis of an analysis of operational requirements. The advantages thereof were brought out.
- **Future Protected Programme of the British Army.** The British Army has an organisation called 'Defence Equipment and Support' which aims at interlinking defence services, R&D and the industry in order to look at the picture holistically and optimally integrate 'Acquisition and Sustenance'.
- **Fifth Generation Missile.** A presentation was given on 5th Generation ATGM, MMP, by MBDA, France, which is the next generation missile. The missile is based on a modular concept and has plug and play facilities.
- **Navigation and Precision.** There was a review of the Coriolis Vibrating Gyro which is a state of the art system and is very small. It comes into play both in navigation and stabilisation.
- **Forging Partnerships.** An industry perspective on how partnerships are being forged with the mechanised forces was given out by India's Alpha Design Technologies Limited.

Fleet Management: Modernisation, Upgrades and Overhauls within a Budget Constrained Environment.

The session was chaired by Lt Gen JP Singh, PVSM, AVSM, former DCOAS (P&S). The session also included a panel discussion. The speakers during the session were, Brig Saini, Col KV Kuber, Maj Gen AK Sengar (retd), former ADGMF, Brig PS Rana, DOI, and Major Christopher Michael Ainsworth of the British Army.

Some interesting aspects came out during the session. During the life cycle of any equipment the cost of support is three times that of the initial acquisition. And as the gestation period of new equipment is 10-12 years, we must look after the existing fleet by way of overhauls and upgrades; these are rather expensive, for instance an overhaul costs INR 4 to 7 crores for each piece of equipment. We also need to deliberate on whether we go in for a complete overhaul or a systems overhaul. Both have their pros and cons as in the case of systems overhaul there are challenges of integration and EMI/EMC even though it facilitates prioritisation.

Sustainment and upgradation of equipment is very important. The British Army have outsourced these aspects and a representative deliverable given to the outsourcing agency is that X number of vehicles must be maintained at X standard at all the times. The outsourcing model is cost effective as the logistics of creating facilities and training personnel is obviated.

There is a need for the forces to move towards the industry and assist them in every which way that is possible. At present, there several grey areas that impinge upon harmonious interactivity for example there are innumerable delays in payment to the industry by the CDA for work done on behalf of the forces. This needs to be streamlined. There is also a need to integrate all agencies involved viz the services, DPSUs, DGQA etc.

Smart Survivability

The session on smart survivability was chaired by Maj Gen P Dixit, Commandant ACC&S. He stated that we must shape our equipping policy as per threats. The speakers during the session were: -

- Mr Naresh Ummat – MD Barcudda.
- Me Richard Beatson, International Sales and Marketing Manager, Pearson
- Mr Rajesh Gupta, Vice President, MKU



Unveiling the First Day Cover commemorating 100 Years of the Tank

Salient aspects that came out during the session are delineated. Smart Survivability gives the first strike advantage by helping to avoid detection and identification. As the battlefield is now laden with sensors there is a need to defeat them. The MCS are platform specific mobile camouflage systems which provide 24-hour protection against signatures. There are soft armour protection systems which provide protection against armored piercing ammunition and fragments and can withstand several strikes in the same area without any degradation of protection.

Aspects pertaining to contemporary lightweight armouring solutions and composite materials were lucidly brought out. The threats to vehicles both tracked and wheeled from IEDs and mines and the steps that can be taken to mitigate these threats were spoken off. The aspect of clip on or add on armour which can be fitted on an as required basis was also discussed.

Future AFV Design Concepts

This was a panel discussion chaired by Lt Gen DRN Soni, VSM, GOC in C, ARTRAC. The panellists included: -

- Brig YS Mor, DDG (Ops and Coord)
- Rahul Chaudhry, CEO, TATA power SED
- Col Michel Nautier- Nexter Systems
- Colonel Mathew Botsword – British Army
- Edouard Taufflieb, Safran Electronics and Defence

The Army Commander stated that we need to look at the threats of the future and available technologies whilst looking at future tank design. He said that the Iron Triangle as we know it was based on the technology available at that time. We need to reassess it and suggested that lethality, survivability and manoeuvrability form the new parameters of the said triangle instead of the ones at present. He also stressed the need for taking terrain considerations like reduced availability of ranges



on our western border into account.

The industry representatives desired that the Services must clearly delineate their requirement so that the industry is clear about its goals.

Commemorative Session

The last session was to Commemorate 100 years of the BATTLE TANK. General VN Sharma, a former COAS said that tanks and other armoured vehicles will continue to form the back bone of armies across the world. He cited the use of such vehicles in current conflicts around the world like the one in Syria. GOC in C, ARTRAC, reiterated the point and stated that it is incorrect on anyone's part to question the relevance of the tank, which is a very adaptive weapon system.

In the end a First Day Cover- Commemorating the Tank - was released by General VN Sharma. A book entitled Indian Armour in Battle, the First Seventy-Five Years written by Colonel Puneet Tewari of 70 Armoured Regiment was also released on the occasion.

Takeaways

• **Role of Mechanised Forces.** There was unanimity on the aspect of threats and the wide canvas that these threats will manifest themselves in, ranging from the conventional to the asymmetric. Besides we must also look at getting involved in expeditionary roles. As hybrid and 4G threats evolve and the conventional conflict scenario becomes more intense yet transparent, mechanised forces must modernize and adapt to the changing environment. Lethality, Survivability and Manoeuvrability acquire greater significance and synergy with aerial platforms and force multipliers like UAVs and Attack Helicopters is an absolute must for operational success.

• **Future Armoured Vehicles.** The issue whether we should go in for an Evolutionary or a Revolutionary design was



Col AK Gupta (Retd), ADTL



Panel discussion on futuristic armoured platforms

debated. Whilst there are no clear-cut answers as far as this aspect is concerned, what we must bear in mind is the gestation period for new designs, the fact that some of our current fleet will continue to be in service for a length of time and the need for standardisation. We must look at evolving and future technologies, modular designs and prevailing trends in the important armies of the world. An important aspect that needs to be considered in our context is the different types of terrain that the Indian Army would require to operate in, ranging from areas in the north of the country to the Sir Creek. We also need to factor in the impact that changes in terrain attributes, like reduced ranges because of vegetation and emerging built up areas will have. The importance of stealth technologies, signature management, BMS, various kinds of protection systems and a networked centric approach was stressed upon. We also need to seriously relook at the attributes of the Iron Triangle.

- **Common Platform and Variants.** This would help standardisation and is a distinct and clear possibility with the availability of modular systems and therefore must be seriously deliberated whilst taking decisions about future AFVs. However, fitting modular systems on existing platforms is a challenge even for the industry.

- **Wheeled versus Tracked.** The subject generated much interest and the inputs were essentially based on the lessons learnt by the French in Mali. The French Army has opted for wheeled vehicles on the basis of their operational commitments and experience. The French use relatively lightly armoured wheeled vehicles, which have smaller sustenance requirements compared with heavier, tracked vehicles. However, a point to be borne in mind is that the French have migrated towards wheeled vehicles essentially because of the requirements of the tasks assigned by NATO and for expeditionary operations. Wheeled vehicles have better strategic mobility because their light weight facilitates air transportation. Wheeled vehicles also have better operational mobility and tactical agility. However, protection levels are lower than tracked vehicles because of lesser weight. Current technologies are looking at weights

ranging from 27 to 35 tons – max of 9 tons per axle.

- **Fleet Management.** There is a need for taking a holistic view and go about fleet management in an integrated and goal oriented manner. Current procedures for upgrades faced criticism because of inflexibility, red tape and time-consuming processes. Experts advocated upgrades

of complete systems viz a viz systems upgrade as they adversely impinged upon integration and raised EMI/EMC issues. The need to co-opt the Indian Industry was agreed upon and had no detractors to the idea.

- **Affordability.** It is imperative that we factor in affordability whilst drawing up our wish lists. We must look at the entire life cycle of any given equipment. This includes acquisition cost and the costs of maintenance and overhauls etc. We must look at pragmatic solutions which are in the realm of possibility within a budget constrained environment and are therefore cost effective.

- **Army Design Bureau.** The Bureau has been recently inaugurated; it aims at creating an institutionalised forum which offers the advantage of cogent inputs from knowledgeable and informed stake holders. The Bureau is modelled on the Naval Design Bureau which came into being 52 years ago, for indigenous programmes. The Army has also recommended that a DRDO representative be co-opted in the Bureau.

- **Synergy: Different Agencies.** It is imperative that structural changes are made to integrate all agencies involved in the process of planning acquisition/modernisation. Synergy based on mutual trust and cooperation must be created so that we make very realistic and synchronised goals and thereafter endeavour to achieve them in right earnest.

- **Industry Perspective.** There must be a paradigm shift in collaborating with the industry as partners in achieving self-reliance in defence. MSMEs need to be encouraged and procedural red tape minimised to the maximum extent feasible. The industry also desired that the forces must clearly spell out their requirements. At times the GSQRs are nebulous and this gives rise to unnecessary speculation and more importantly causes delays which are totally avoidable.

- **New Systems.** Any new system that is being developed (like the FICV) must serve a larger purpose in building capacities and not remain limited to the development of the platform alone. It is imperative for success of 'Make in India' initiative, which aims at making the country self reliant in defence. SA