CENTRE FOR LAND WARFARE STUDIES (CLAWS)

CLAWS-INDIA STRATEGIC JOINT SEMINAR

FIREPOWER INDIA 2010

24 JUNE 2010

SEMINAR REPORT

The second 'CLAWS-*India Strategic*' joint seminar FIREPOWER INDIA 2010 was held on 24 June 2010 at IIC, New Delhi. The seminar was structured around four sessions. At the inaugural, Brig Gurmeet Kanwal (Retd), Director, Centre for Land Warfare Studies (CLAWS) and Air Marshal Ashok Goel (Retd), Aviation Editor, *India Strategic* welcomed the participants. The keynote address was delivered by Air Marshal PK Barbora, PVSM, VM, ADC, Vice Chief of Air Staff. Mr Gulshan Luthra**,** Editor, *India Strategic* proposed a vote of thanks. The second session was themed *"Combat Helicopters: Tilting the Balance"* and the third "*Missiles as a Currency of Power*". Eminent speakers from the defence forces, strategic community and industry spoke at these sessions. The highlight of the final session was the valedictory address by Air Chief Marshal F H Major (Retd), PVSM, AVSM, SC, VSM, former Chief of Air Staff.

Keynote Address: Air Marshal PK Barbora, PVSM, VM, ADC, Vice Chief of Air Staff

Air Marshal PK Barbora commenced his address with the thought that in a democracy, the role of the armed forces was to prevent war and keep the peace, enabling the country to progress. If called upon to wage war, the armed forces have to do it in a professional and cost effective manner. Future wars cannot be won by a singular service, he opined. The four elements of air, surface, sub-surface and space will have a distinct role to play in time and space, with future conflict being very short, swift and lethal. Therefore, all the four elements have to synergise firepower. In earlier times there was a warning period before the conflict started. That is not the case today. Also, war-fighting have to begin with a synergised operation between the army and the air

force. Airpower is a national power and should not be considered as an adjunct to the army. The air force has to be recognised as the first strike force. Army formations cannot go off into battle on their own. They have to be provided an umbrella of protection from the air. This will help in shaping the battlefield.

The important factor in war today is that strategic firepower of all three services be synergised. The conflict is very transparent and the forces have to contend with many external factors too; the media, NGOs, the Red Cross, the Geneva Convention among others. Thus, precise firepower becomes a necessity. The conflict has to be effect-based, the weapons precise to avoid mass destruction and collateral damage, as these would alienate the world. In the Tactical Battle Area (TBA), there are a plethora of air defence weapons which belong to the various services. For effective usage, their Command and Control should be singular. Core competence of each service must be respected, honoured and exploited. Turf battles should be avoided and duplication of role, effort and financial implications should be seriously considered in a developing country. Billions of rupees are being spent and the government is receptive to genuine demands.

For effective firepower and synergised war the essential requirements are:

- Real time sensor input to decrease the sensor to shooter time.
- A common network for all the services which will give the complete picture of the battlefield.
- Weapon to target matching to use the correct weapon for the intended target. Thus, PGMs are necessary.
- Indigenisation is needed to avoid spending a huge amount of money for buying arms and ammunition from outside. Especially, the private players should be encouraged.

There are few dilemmas in the use of power. The Indian Air Force is in a process of buying a large number of weapons – both indigenous and foreign – costing billions. The dilemma is, will the air force be able to use them at the right time, in the present scenario of the nuclear shadow. India is a responsible nation but the same cannot be

said of our neighbours. The type and quantity of weapons to be used will need a lot of thought and planning.

SESSION II – Combat Helicopters: Tilting the Balance

The session was chaired by Air Vice Marshal Kapil Kak, AVSM, (Retd), Additional Director, Centre for Air Power Studies (CAPS). He said that the coming of age of combat helicopters was the Vietnam War. To put into perspective the scales of operation, hundred helicopters were used. He recounted a few lesser known facts. In the Falkland war, the Lynx helicopter fired a missile and sank a submarine in the docks. The Russians lost close to 300 helicopters in Afghanistan. In India, in the 1965 war, 78 sorties of Mi-4 helicopters were flown against Pakistani infiltrators.

Lt Gen BS Pawar, PVSM, AVSM (Retd) former Commandant School of Artillery & ADG, Army Aviation: Combat Helicopters for Land Forces

To begin with, the general explained that combat helicopters are primarily of two types.. *Armed Helicopters/Gun-ships* are military helicopters modified with weapons to attack targets on ground. They differ from attack helicopters as they were designed for other tactical uses, such as utility, cargo and reconnaissance. Weapon mounts are modified rather than being a part of the design of the helicopter. *Attack Helicopters* are military helicopters specially designed & built to carry weapons for engaging targets on ground and in air. Weapons include machine guns, auto cannons, rockets and guided missiles for air-to-ground & air-to-air engagements. Modern day attack helicopters have 2 main roles; providing direct & accurate closed air support to ground troops and anti-tank role to destroy the enemy's armoured forces.

Historically, the fire support delivered by weapons mounted on helicopters began during the Korean War. The concept further evolved with the French during the Algerian campaign & first Indo-China wars in the form of armed helicopters. Until the Vietnam War, military helicopters were mostly used for troop transport, observation & casualty evacuation. Due to ground fire on helicopters during troop lifting, the need was felt for arming them. The utility helicopters were cumbersome for use in field and the US developed a dedicated gunship (AH-1 Cobra). In 1960's, the Soviet Union also felt the

need for armed helicopters. They equipped the Mi-8 helicopters with rocket pods. Helicopters gun-ships continue to be relevant despite the development of modern day attack helicopters. In the Indian context, we earlier had the Mi-8 and Ranjits (a Cheetah helicopter modified with MMG), and presently have the Mi-17 armed helicopter and Lancer (Cheetah armed with MMG and rockets).

The dedicated attack helicopter was developed in the late 70s and early 80s. This led to the advent of the Apache, upgraded Huey Cobras, Italian Mangusta and the Soviet Mi24. The cost of development was high but 1991 Gulf War put at rest any doubts about the relevance of attack helicopters. Post 9/11, the Afghanistan War took the attack helicopters into battle once again and the 2003 Iraq Invasion saw the deployment of attack helicopters but in a changed environment. As regards, modern day attack helicopters, Apache has been further refined in the form of AH-64D Longbow, the Russians are currently deploying the Ka-50 and Mi-28 and the Chinese have developed Zenshing-10. In our context, the development of the light combat helicopter (LCH) is in progress.

The employment of combat helicopters in future can be divided into:

- Nature of future wars and conflict scenarios – wars will be short, swift and intensive with deeper and wider combat zones. There will be low intensity conflicts with sophisticated weapon systems and out of area contingencies.
- Employment Philosophy – attack helicopters are capable of firepower and manoeuvre. They should be used with detailed planning and coordination. Their employment is very important in the first twenty four hours of battle, especially in the cold start strategy.
- Roles/ Missions –similar for all armies all over the world. These are anti-armour, escort to SHBO, area domination, anti-UAV, armed reconnaissance, fire support missions and counter-insurgency/counter-territory operations.
- Kargil – the situation was tailor made for combat helicopters but they could operate at those heights.
- Air Space Management – is essential in a dense air defence scenario.

Points for rethinking are their efficient use as they have definite vulnerabilities, their command and control and employment in the internal security and urban situations. In particular, he stressed that command and control of combat helicopters that support land operations should be with the Indian Army.

Air Cmde R Isser, VM, PD Ops Helicopters, Air HQ – Attack Helicopters: Challenges And Prospects

Attack helicopters, along with other networked weapon systems that contribute directly to the battle on the ground, are key enablers of a sustainable victory. Over viewing the roles of attack helicopters (AH); AHs can play an important role in offensive counter-air by suppressing enemy air defence (AD). Utility helicopters escorted by attack helicopters can insert Special Forces to take out AD radars and even relocate own ground-based AD systems. In joint operations, the counter surface force operation (CSFO) missions such as battlefield interdiction (BAI), battlefield air support (BAS) and armed reconnaissance can be carried out by AHs. Most modern helicopters have graduated to all weather 24 x 7 capabilities which allow night operations, exactly the time when they are least vulnerable and the enemy is on the move and can be targeted. The ability of attack helicopter units to plan multiple missions and execute them in rapid succession provides the ground commander with great flexibility and an advanced ability to focus his combat power.

The three important tenets of attack helicopter operations are; *initiative* – AHs should be used as offensive weapons; *synchronisation* – should be used as integrated members of combined arms team, *versatility* – a plethora of roles can be performed. The ability of the AH to transition smoothly and rapidly is the result of well-led, well trained, and well-equipped forces; high standards; and detailed planning. In the mountains, ***terrain*** becomes a primary consideration and factor of warfare. Here, an attacker's game plan would include recee and surveillance of anti-air assets of the defender to neutralise them at the earliest with attack helicopters using terrain masking and stand-off weapons, if required. UAVs and HUMINT would provide the intelligence inputs, some even real-time, to pairs of hunter-killer helicopters. Thus, pairing of helicopters and UAVs at the tactical level seems to be in order in the mountains.

Amongst the means of enhancing the potency and survivability are night operations and standoff weapons. Integrated data link, counter-measures and effective tactics for manoeuvre and evasion are also needed. Few of the issues meriting attention in the Indian context are:

- Concept of deep operations and the efficacy of the attack helicopter in this role vis-à-vis fixed wing platform.
- Bigger reserves of power and agility in the high mountains would be required.
- Greatest cause of helicopter losses has been pilot error, technical defects and even poor tactics as a result of inter-service turf fights.
- Existing model of joint funding, IAF ownership and manning, and joint employment: at the same time, the AH force is a tactical force and needs to be fully responsive to the ground commander.
- Airspace management will be complicated.
- Provisions will have to be made for decentralised, combined arms, small units operating in non-linear and non-contiguous areas of operations.
- Only time will tell whether the LCH will meet the high altitude requirement.

Mr Vivek Lall, Vice President, Boeing India

Helicopter gun-ships were developed during the Vietnam War and armed helicopters were used mainly in the anti-tank role both by the NATO and the Warsaw Pact countries. In the late1970s, the US Army felt the need to have an attack helicopter with an all weather capability. The 1990s saw the coming of age of attack helicopters. The Apache fired the first shots of Gulf War I and was used extensively in its anti-armour and anti-ground forces role. The Apache has been further refined into the Longbow. It has been developed keeping in mind the need for integrating it into network centric battleground, linking it with other elements in the conflict zone.

India has expressed a need for a modern day multi-role all terrain 24 hour helicopter and the Boeing Company has offered it’s AH 64D Longbow to meet those needs. Also, India’s indigenisation process is very much on track with the Advanced Light Helicopter (ALH) and the Light Combat Helicopter (LCH). Earlier, the helicopters were made of

sheet metal making them heavier. Modern helicopters are made of composite material which is lighter and these helicopters can operate at higher altitudes as is the case with ALH and the LCH. The Longbow has technical superiority, overwhelming firepower and survivability characteristics to bring the soldiers home after the mission. Its configuration can suit any commander's varied needs without any changes and thus without any loss of time. It is interoperable with other systems and the US helicopters are easily operating with other countries of the world in various conflict areas.

Military aviation production is not limited to a few big private companies, the Department of Defense, or PSUs only. It is an aerospace ecosystem and has an entire supply chain of products from Small and Medium Enterprises (SMEs). Boeing is a lead system integrator with these Tier II and Tier III firms and these firms are essential for Boeing's overall production. If selected, Boeing will look to provide guidance to indigenous companies and collaborate with them for ancillary product support.

Discussion

- Focus of future attack helicopters should be on High Altitude (HA) operations in the watershed areas rather on lower mountains or plains.
- The current helicopters being built by India are capable of operating in HA areas.
- Any weapon platform, AH in this case, should be inducted for the specific task envisaged for it and the associated equipment should be mission oriented.
- The Command and Control of these should be singular and turf battles to be avoided.
- If Boeing comes to India with its Apache Longbow, the company will seek support of Indian SMEs in Aero structure, Avionics and software development.

Session III: Ballistic Missiles as a Currency of Power

Chairperson: Vice Admiral Pradeep Kaushiva, UYSM, VSM (Retd)

Military power is but one component of comprehensive national power and has subsets in terms of numbers, volume and technology, ordnance. Missiles are important because of the propellant and warheads. Put together, these two can be used for strategic, operational or tactical purposes. Even though, the lines between these three levels are forever blurring, it is important to view them in an integrated manner. At the operational and tactical level, conventional capabilities, though approved by the government, are more in the domain of the armed forces. Our Integrated Guided Missile Development Programme (IGMDP) was conceived and led by the DRDO. In offensive role, Prithvi can be employed as part of the strategic capability and in the defensive mode, as a part of missile defence. Lessons from the past should be employed and not ignored.

The second dimension relates to conventional lessons learnt from deterrence of the Cold War days. In point defence to theatre defence, BMD is a continual that stretches outwards to surveillance zone and also to the launch detection. Advancements in the missile defence capability by definition, seek to degrade the effectiveness of the strike. Acquisition of such defensive measures triggers a quest to restore balance and this itself raises the overall threshold of the conflict.

The third aspect relates to vital operational details. In regard to an incoming missile there is no method of knowing what the warhead would be tipped with. So people take the assumptions of the worst-case scenario and initiate a response accordingly. The only way to avoid a miscalculation is to have a credible capability backed by a clearly articulated doctrine with rules of engagement issued by a rational regime.

Maj Gen VK Saxena, VSM: BMD in the Indian Context

Maj Gen Saxena began his presentation by emphasising that BMD was required as an umbrella against a multi-dimensional threat. Missile proliferation in India's immediate and external neighbourhood makes it imperative for us to safeguard our strategic vulnerabilities. The endeavour is to build a missile defence system having strong teeth (warheads) and a credible command and control mechanism. He elaborated on the deterrence value and reach of Pakistan's Missile Programme. China has developed tremendous strategic capabilities along all the triads with missiles having ranges of more than 12,000 km. It has emerged as a world missile power with cutting edge technology in reconnaissance and surveillance.

Ballistic missile proliferation also continues unabated in the region. Keeping this backdrop in mind, India has to protect against limited ballistic missiles threat including accidental and unauthorised launches. The mission is to field a BMD system that is able to detect launches, intercept, engage and destroy the incoming missile. The trend is towards development of ballistic missiles in the layered and tiered stages.

India's 'Programme Air Defence' is to be developed in two phases:-

- Phase I consisting of missiles with ranges less than 2,000 Km: to be ready for deployment by 2012, and

- Phase II: consisting of missiles with ranges above 2,000 Km: to be ready for deployment by 2016.

Apart from the range, the missile defence systems also include features such as Internal Navigation with multi-function radars, communication bricks and Auto Command transmission. In Phase I, the Prithvi Air Defence (PAD) will be exo-atmospheric based while the Agni Air Defence (AAD) will be endo-atmospheric. In the year 2006, PAD successfully intercepted a Prithvi ballistic missile while in the year 2007, the AAD intercepted a target missile in 15 Km range. A Dhanush missile fired from INS *Rajput* was intercepted within a range of 1,500 Km by the PAD. The way ahead lies in developing kill vehicles based on laser technology. The DRDO and

LASTEC can play significant role towards developing this end. Space based systems will also be developed in the future.

The General concluded by stating that missile proliferation continues unabated and that we will have to match capability against capability. India is on track to develop an indigenous BMD system with a credible command and control mechanism in place to meet our strategic needs.

Dr Rajiv Nayan, IDSA: Ballistic Missiles: Emerging Paradigm

Dr Rajiv Nayan analysed the trends in Ballistic Missile development across the world. The trend is towards developing solid propellants and a shift from silo based to mobile platforms. There is also increased focus on improving navigation with satellite based tracking systems. He affirmed that ballistic missiles provide credibility in terms of both soft and hard powers. Third world countries are rapidly developing ballistic missiles to give them an edge in their regional politics. Iran and North Korea are developing ICBMs to target continental United States. The focus for these countries is not just on range, it also gives them deterrence to meet their strategic objectives. For example, any country developing cluster weapons or warheads may state that they are conventionally tipped, but their adversaries believe that the missiles could also be nuclear tipped. Developing countries also abandon their missile programmes once they feel that their objectives have been achieved or they have developed alternative means to meet their objectives. The United States was rattled when Latin American countries like Brazil, Argentina and Cuba had developed missile capabilities.

China’s defence modernisation programme is rapidly progressing and its has already developed ICBMs. It is the only country to possess anti-ship, submarine launched ballistic missiles such as the JL-1 and JL-2. It wants to maintain its regional hegemony over Asia and keep the world multi-polar. China is developing anti-access/area denial weapons. However, much of China’s present focus is towards Taiwan. Whether or not it is able to develop safe and reliable weapon systems is debatable. It lacks tankers, refuellers and a trained manpower which are essential means to build power projection capabilities.

If an assertive China emerges in the international horizon, there will be more pressure on Japan and other US allies to develop missile capabilities. Although China would not like to stick to a no-first-use (NFU) doctrine, it may not officially alter its doctrine lest it leads to a re-alignment of forces in the region.

China continues to play a leadership role in the international clandestine network of missile proliferation. It has an opaque and unstable alliance with Pakistan which poses an immediate threat to India. In this backdrop, India has no option but to build a deterrent second strike capability. India should endeavour to develop its nuclear programme indigenously.

Discussion

- The focus of China's Ballistic Missile system is Taiwan centric. It endeavours to build power projection capabilities with development of ballistic missiles. Is the Chinese modernisation in tune with its concept of non-contact war? China's 2nd Artillery Division has a conventional command and control system.
- Interception of Ballistic Missiles is fraught with great risks. Collateral damage in the case of a missile tipped with even conventional warhead would be immense.
- We should change the target doctrine from counter-force to counter-value. Defending a huge population with a no-first use doctrine is debatable.
- There is less appreciation of what India has achieved technologically.
- There should be increased focus in areas of cyber warfare and Electro-Magnetic Pulse (EMP) which could cripple communication networks in times of conflict.

Valedictory Address: Air Chief Marshal FH Major, PVSM, AVSM, SC, VSM (Retd)

The former Chief of Air Staff enunciated that the ownership of India's Air Defence assets is an important issue but the armed forces should focus on a synergetic approach towards the defence of the skies. The key lies in command and control as Air Defence is a hugely complex system with a number of projectiles in the skies. Today even field guns have become a flying body with shells reaching ranges of more than 15000 ft in the skies. The thrust should be on engaging the intruding target as far away from the victim target as possible. Ideally only one agency should control air operations but the Indian Air Force and Navy have worked out an effective joint mechanism to achieve synergy between their respective integral air defence systems. The army and air force should also build such a synergy.

Identification of a likely enemy missile and deciphering whether it is nuclear tipped or with a conventional warhead continues to remain the biggest dilemma. We need to find means to overcome this dilemma. The rules of engagement in such scenarios have to be fine tuned.

Technology is available to develop state of the art combat helicopters. Role of helicopters have to be integrated in the overall plans and planning of operations. Combat helicopters can be used in many roles and not just in conventional ones. It can be used as a standalone combat system especially in low-intensity conflict situations. It can be used as a conflict domination system. At the same time, helicopters have huge vulnerabilities. It is a very difficult machine to operate and exploit. To substitute fighter aircrafts with helicopters would be wrong. Both have different roles.

Helicopters were introduced quite late in the military inventory. Although technology is available, the helicopter's agility and ubiquitous role could be exploited to the fullest only by imaginative thinking on part of the commander.

Air Chief Marshal FH Major thanked the Centre for Land Warfare Studies and *India Strategic* for organising the seminar.

Concluding Remarks: Brig Gurmeet Kanwal (Retd), Director CLAWS

The Director concluded by stating that the deliberations had been very enriching and a diverse range of issues had been thrown up for discussion. There is a need to acquire a combat helicopter for operations in super high altitude terrain, in the mountains and in the plains. It is doubtful whether a single helicopter can be developed for all terrains in order to minimise costs of acquisition. Ballistic and cruise missiles are a usable instrument of war even in conventional conflict. India and Pakistan could enter into a treaty to take out Prithvi and the Hatf missiles from the nuclear arsenals and tip them with conventional warheads. He stated that the question of ownership or command and control of our missile assets is best left to the respective service headquarters to resolve. He thanked Mr Gulshan Luthra and *India Strategic* for teaming up with CLAWS to conduct the seminar.

(Report compiled by Wg cdr Manish Girdhar, Research Fellow, CLAWS & Rohit Singh, Research Assistant, CLAWS)