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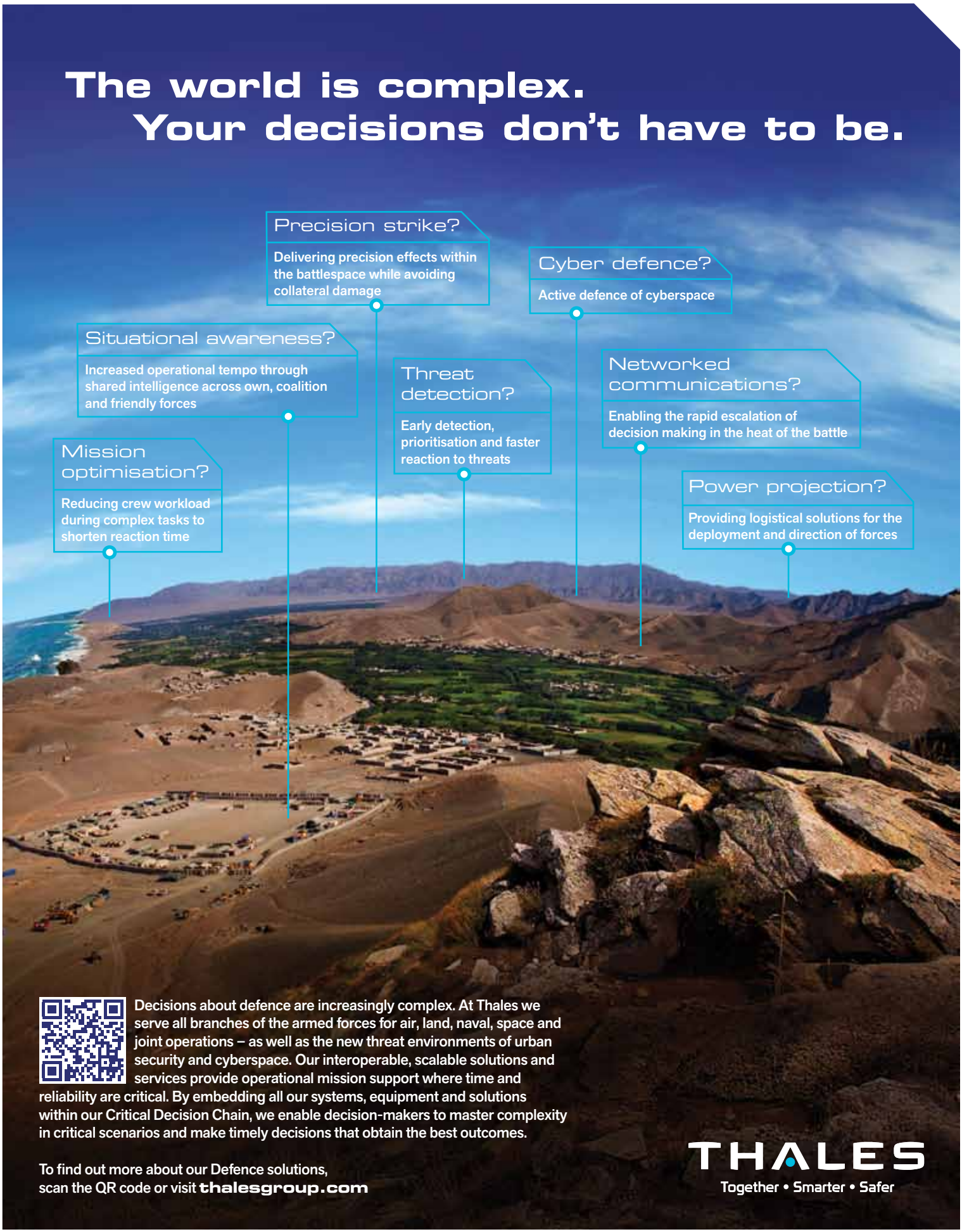
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Content

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Above: Live fire exercise of Caesar self-propelled howitzer. The gun is manufactured by Nexter.

COVER PHOTOGRAPH: AN AUSTRALIAN ABRAMS M1A1 AIM-MAIN BATTLE TANK DURING AN EXERCISE

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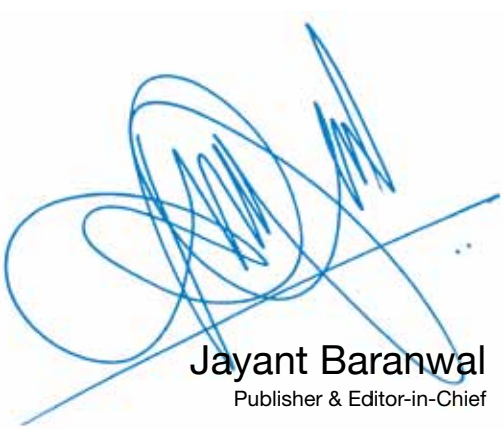
Shivshankar Menon India's National Security Advisor at Gulf Forum 2011 on 'Global Power Shifts and the Role of Rising Powers' on December 7, 2011, said that we were living in a time of unprecedented change. As far as security was concerned, he said that unprecedented change also brought with it unprecedented uncertainty and insecurity. If the centre of economic activity is shifting to Asia, the region is also becoming the cockpit of rivalries and the stage on which international competition is played out. He added that "uncertainty and insecurity usually lead powers to follow hedging strategies, each acting on their own worst fears, and thereby risking making them come true".

India's external security perceptions are mostly driven by the happenings in our immediate and extended neighbourhoods covered at the outer periphery by the arc extending from east coast of Africa to Middle East (West Asia), Central Asia, China and down to South East Asia. Internally, our security perceptions are driven by the Maoist insurgency and the activities of the large number of terrorist organisations operating in the North and Northeastern India.

Thus India has perhaps more security threats and challenges than any other region in the world which mandates an alert and dynamic political leadership which should be fully alive to the requirements of the armed forces and other security forces to create capabilities to protect the country both internally and externally. In this sphere unfortunately our political leadership has not acquitted itself with glory. Our procurement procedures and methodology is so lengthy and complicated that decision-makers shy away from taking necessary decisions lest they be involved in any controversy. Recently, the media reports had highlighted the Army Chief's letter to the Defence Minister which mentioned the delay in setting up the national counter insurgency school, shortfall of quality ammunition and ordnance, lack of potent cyber warfare units, failure to modernise T-72 battle tanks, delay in upgrade of Arjun main battle tanks (MBT), lack of modernisation in artillery and air defence capabilities and delay in procurement of infantry weapons and reconnaissance and surveillance helicopters.

This Special supplement has tried to highlight the overall capability of the armed forces required for future conflicts together with future trends and employment of some vital arms like Armour, Artillery, and Special Forces. The articles included are: "Fighting a Two-Front War"; "Armour in Future Conflicts"; "Future Trends in Artillery"; "Offensive in the Mountains"; "Special Forces for Strategic Tasking"; and "UAV Developments in South Asia".



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Fighting a Two-Front War

Indian military planners feel that the collusion between China and Pakistan which is so clearly evident in peacetime is likely to translate itself into active, mutually supporting, military operations, during conflict situations. In Indian context it would imply fighting simultaneous conflicts in two widely separated theatres of operations namely the Western theatre (against Pakistan) and the Northern/Northeastern (against China) in the future.

By Lt General (Retd) V.K. Kapoor

The Chief of Army Staff, General V.K. Singh, while delivering the inaugural address during a seminar on "Emerging Roles and Tasks of the Indian Army", organised by the Centre for Land Warfare Studies (CLAWS) on October 15, 2010, referred to Pakistan and China as 'two irritants'. In the same vein, but more explicitly, in end-December 2009, the former Army Chief, General (Retd) Deepak Kapoor had also stated during a seminar of the Army Training Command that the Indian Army must prepare for a two-front war. The statement of the current Army Chief coming close on the heels of the former Army Chief's declaration indicates that our armed forces are indeed planning and preparing for a contingency in which they may have to confront both neighbours simultaneously.

The five thrust areas of the new war doctrine as reported in the media at that time are as follows:

- **Two-front capability:** This is the anchor on which India's new war doctrine is based which means that India should be prepared to effectively meet simultaneous threats from China on the northern borders and Pakistan on the western borders.
- **Asymmetric warfare and sub-conventional threats:** Both the adversaries can be expected to use asymmetric means in the form of infiltrators and terrorists across porous borders to divide our attention and thus hope to militarily weaken our overall response. Our focus on fast-paced operations could be slowed down considerably by such threats to our lines of communications and the civil infrastructure. We therefore need to have an independent operational capability to confront such threats without diluting the main military effort. This capability is being referred to as half front capability.
- **Strategic reach and out-of-area operations capabilities:** The new war doctrine also seeks to confront future challenges by acquiring an out-of-area capability so as to militarily meet the role and aspirations of a regional power.
- **Tri-service operational synergy:** The key aspects of strategic planning and conduct of future wars will be based on interdependence and operational synergy among the three services. Therefore, joint operations, space-based capability, ballistic missile defence and airborne, amphibious and air-land operations must be addressed comprehensively.
- **Military technological dominance over adversaries:** This will be covered by acquiring capabilities for network-centric warfare, information warfare, cyber warfare, all integrated to facilitate speedy decision-making and exploitation of fleeting tactical opportunities.

GRAPHIC & PHOTOGRAPH: WIKIPEDIA & ASOCIALLYCONSTRUCTEDLIFE.WORDPRESS.COM

Indo-China border at Nathu La, Sikkim

Future Strategic Direction

From a strategic viewpoint, it seems that India has shifted to a doctrine of 'active and aggressive defence' as opposed to passive defence in the past. However, it would be wrong to assume that these capabilities show India's growing proclivity towards military adventurism. India's record on the contrary shows a matured and measured attitude towards engaging in wars. The doctrine's enunciation of a 'two-front war' and enhancement of 'strategic reach and out-of-area operations capabilities' carry immense political and strategic significance in terms of India's future strategic directions.

Speaking to the media on Army Day, January 15, 2011, General Singh for the first time publicly revealed that the Army would 'reorganise, restructure and relocate' various formations to help transform into a more agile and lethal force. "We are looking at reorganising and restructuring our force headquarters…for faster decision-making, so that it becomes slightly flattened and more responsive," he said. Essentially, the changes are aimed at strengthening the Army's capacity for fighting what a serving General had once described as a war on 'two-and-a-half fronts'—a reference to possible simultaneous confrontations with Pakistan and China at the same time as managing an internal counter-insurgency effort.

Analysts often discuss the reasoning for such a doctrine. Are we anticipating a full-fledged war among the three nuclear armed neighbours? Nothing can be farther from truth. Then what is the necessity of having a doctrine of this nature. A more pragmatic and logical explanation seems to be that by placing a 'two-and-a-half-front war strategy' as a top priority of the new war doctrine, it will henceforth provide an unambiguous political and military focus on strategic and operational initiatives to ensure readiness. At strategic levels, it would cater to strategic responses in acquiring comprehensive national power in relation to the threats, while at operational levels it would indicate the focus for capability building. Its inclusion would help in blending political, economic, diplomatic, technological and military measures to achieve the dynamism and synergy at national level that is currently lacking.

Let us also try to further understand this reasoning by focusing on our two neighbours, Pakistan and China, and then examine the nuts and bolts of the capability required.

Duplicitous Pakistan

Pakistan continues to plead pristine conduct while its internal dynamics driven by the support it has extended to the Taliban and other terrorist organisations are pushing the country to the edge of an abyss. Late Dr K. Subrahmanyam, the renowned defence analyst in his interview with Shekhar Gupta, Editor of the *Indian Express*, had stated, "They are playing with a venomous snake. And there is no doubt about it that one of these days, the snake is going to bite them. And Pakistanis are going to pay a high price, when the various jihadi organisations are going to turn on the Pakistani state and the Pakistan Army. One of them has already—the Pakistani Taliban. But it is only a question of time when others also do."

Pakistan is in the danger of being overrun and ruled by radical Islamist groups, whose ideology of death and destruction will ruin whatever is left of Pakistan society. After the killing of Osama bin Laden in Abbottabad in Pakistan on May 1, 2011, the nexus between Inter-Services Intelligence (ISI) of Pakistan and the terrorist groups stands completely exposed. While trying to deceive the whole world, they have ended up not only deceiving themselves because they perhaps forgot that terrorists have no friends and do not respect their benefactors because hatred and killing becomes a way of life and there is no room left for any other finer human trait. It is a bleak future that confronts Pakistan and unless they decide to face the problem squarely and seek both global and regional assistance, there is little hope for them as a nation-state.

Their economy is in a bad shape. A $7.5 billion (₹38,500 crore) package of civilian aid over five years was approved by the US in 2009. Since 2005, Pakistan has received more than $1 billion (₹5,000 crore) of military aid a year from the US—and received close to $2 billion (₹10,000 crore) for the last fiscal year. This year again $2 billion aid has been announced which the US says will pay for equipment needed in counter-insurgency and counter-terror operations, among other things. This is despite the belief among the US intelligence agencies that the Pakistan military is continuing to avoid military engagements that would put it in direct conflict with Afghan Taliban or Al-Qaeda's forces in North Waziristan.

Inflation in Pakistan remains the top concern among the public. The inflation rate in Pakistan was last reported at 12.91 per cent in February 2011. From 2003 to 2010, the average inflation rate in Pakistan was 10.15 per cent reaching an historical high of 25.33 per cent in August 2008. In addition, the Pakistani rupee has depreciated since 2007 as a result of political and economic instability. Devastating floods in 2010 have added to their woes. The country is being kept afloat by the donors.

The military in Pakistan continues to use the radical jihadi groups to its advantage both in its western provinces facing Afghanistan and on its eastern front against India in Jammu and Kashmir (J&K). Renewed pressure from the US has so far had virtually no results as far as India is concerned. There seems to

be a consensus among military analysts that Pakistan Army's traditional Kashmir policy and resultant proxy war is unlikely to change. Currently, their military capability against India is not threatening because of its own commitments. However, they are not likely to let go off any opportunity to take military advantage in what may be perceived as a crisis for India. In this context, their relationship with China needs a closer scrutiny.

China—An Untrustworthy Neighbour

China has emerged as a major challenge and a possible military threat in the future. The indicators are—China's self-image as a predominant power of South Asia; its aspirations to be a superpower by 2049; its fast-paced military modernisation and positioning of missiles in Tibet; its compulsive use of Pakistan to keep India engaged on her western front and off balance militarily; its dismissive and derogatory approach to India's democratic experience; its strategy of encircling India through her neighbours and confining her within the subcontinent; it's totally critical approach to India's nuclear status; it's negative disposition in allowing India to become a permanent member of the Security Council; it's duplicity in the Nuclear Supplier Group negotiations; it's unwillingness to resolve the border dispute; it's claim over the entire Arunachal Pradesh being a Chinese territory—all serve as indicators and warnings that India cannot afford to ignore.

Historically, China has negotiated border disputes with neighbours in their moment of national despair (Pakistan, Burma in 1960s and Central Asian Republics in the 1990s) or when the regional balance of power has shifted decisively in China's favour or after they have ceased to be a major threat (land settlements with Russia and Vietnam in the 1990s) but not with those who are perceived as current or future threats (India, Japan, Vietnam, the Philippines, Taiwan). No progress has been made to resolve the territorial and boundary dispute with India since the two nations fought a war over it in 1962 despite 14 rounds of talks between political interlocutors and many meetings of the Joint Working Group. Even the line of actual control (LAC) has not been clearly demarcated on military maps and on the ground due to China's intransigence.

Collusive Support to Pakistan

The following actions indicate the collusive support that China has provided to Pakistan:

- Civilian nuclear cooperation between China and Pakistan began in 1999. China has built Chasma-1 and 2 nuclear reactors in Pakistan. Now armed with the approval by the International Atomic Energy Agency (IAEA) of a safeguards plan in March 2011, China is set to construct the Chasma-3 and Chasma-4 nuclear reactors in Pakistan.
- Direct assistance for its nuclear weapons programme, including nuclear warhead designs and highly enriched uranium for at least two nuclear bombs.
- Dual-use technology and materials for the development of nuclear weapons.
- Assistance in building a secret reactor to produce weapons-grade plutonium at the Chasma nuclear facility.
- Transfer of M-9 and M-11 nuclear-capable ballistic missiles followed by the transfer of "Taepo Dong" and "No Dong" ballistic missiles from North Korea.
- Joint development of fighter aircraft, JF-17 Thunder/FC-1 Fierce and Pakistan's main battle tank (MBT), Al-Khalid, besides other military hardware.
- China has "guaranteed Pakistan's territorial integrity" and in the words of the leaders of the two countries, their friendship is "higher than the mountains and deeper than the oceans".
- China's efforts to develop port facilities in Myanmar (Hangyi), Bangladesh (Chittagong), Sri Lanka (Hambantota), Maldives and at Gwadar in Pakistan are seen by many Indian and foreign analysts as forming part of a "string of pearls" strategy to contain India and develop the capacity to dominate the northern Indian Ocean region around 2015-20.
- Gwadar port on the Makran Coast could be upgraded to a naval base for Chinese naval vessels with minimum effort.
- During the 1965 and 1971 India-Pakistan wars, China had made threatening military manoeuvres in Tibet in support of Pakistan and during the Kargil conflict in 1999 Chinese military advisers were reported to have been present at Skardu in Pakistan Occupied Kashmir (PoK).
- Recent reports regarding the large presence of Chinese military in PoK.
- Aggressive patrolling of the borders to keep India on its toes and militarily committed along the borders in the North and Northeast.
- China's denial of a visa to the former Northern Army Commander Lt General B.S. Jaswal, serving in Jammu and Kashmir on the pretext that it is a disputed territory.
- China physically occupies large areas of Indian territory since the mid-1950s. Aksai Chin in Ladakh accounts for 38,000 sq km of Indian Territory, while the Shaksgam Valley comprising 5,180 sq km was illegally ceded by Pakistan to China in March 1963. Beijing also continues to claim the entire Indian state of Arunachal Pradesh, which is more than 90,000 sq km.

Thus China's so-called "peaceful rise" at strategic levels, is entirely contradicted by the political diplomatic and military aggressiveness at functional levels against India, raising the anxiety about their intentions especially in light of their rapidly improving military capability. What is becoming clearer by the day is that with continued wrangling over Chinese activity in support of Pakistan, China's overall aggressiveness, proliferating trade disputes, hardening positions in border negotiations, and growing nationalism, Sino-Indian relations is going to become increasingly difficult to manage. Pakistan has become a vassal state of China having allowed China to even position troops on their soil in PoK. Hence, Indian military planners have rightly concluded that both countries are likely to collude with each other in any scenario that develops into active military operations in the future.

A Two-and-a-Half-Front Capability

Indian military planners feel that the collusion between China and Pakistan, which is so clearly evident in peacetime, is likely to translate itself into active, mutually supporting, military operations, during conflict situations, which in Indian context would imply fighting simultaneous conflicts in two widely separated theatres of operations namely the Western theatre (against Pakistan) and the Northern/Northeastern (against China) in the future. If we add to this the Army's commitment to simultane-

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ously fight insurgencies, it would amount to about two-and-a-half-front capability. Thus instead of waiting for adverse situations to develop, the planners feel that it would be prudent to acquire this capability involving a conventional force level for fighting limited conflicts/border skirmishes along with an independently designed and equipped force for asymmetric conflicts simultaneously in two different theatres of operations which are widely separated.

It may be recalled that the 1962 War with China was thrust upon an unsuspecting nation and an unprepared Army, hibernating under the influence of false assertions of friendship by an unwise political leadership who, prior to the war, had tried to politicise the military leadership thus weakening its moral fibre. This weak military leadership of an unprepared and ill-equipped Army was ordered to undertake active operations in the high altitude regions of the Eastern theatre. And for some strange reasons, it was decided not to use air power offensively in which India had an upper hand. Disastrous results were inevitable. India woke up to face its own weaknesses. This defeat at the hands of a deceitful opponent led to soul searching within the government and resulted in the raising of a fairly large number of mountain divisions for constant deployment in the high altitude region astride the line of actual control with China. Similarly, the air force infrastructure to position a few strike squadrons was improved considerably. Today, as per open source information, India has 10 Mountain Divisions including the two under raisings. However, mere raising of more defensive formations will only boost our defensive capability and will not add to our strike capability across LAC which is vital for conventional deterrence. Moreover, the Army in the east lacks long-range firepower, aviation resources for intra-theatre movement, air defence and electronic warfare capability, intelligence surveillance reconnaissance (ISR) resources and armour in the form of light tanks for deployment in certain sectors of our mountainous regions where the terrain allows mechanised operations.

Air power needs to be increased by four to six strike squadrons of medium multi-role combat aircraft for a strike capability in Tibet, to protect the Indian airspace and to prevent the aggressor from concentrating troops close to the border.

The required capability is not quite apparent at present even though some forces do exist and which came as a result of the 1962 War with China. The Western and the Eastern theatres of the Indian Army and the Indian Air Force and the Western and Eastern fleets of the Indian Navy are independently equipped and postured. However, large operational voids including infrastructural deficiencies exist which need to be remedied urgently. The need to prepare our forces for a two-and-a-half-front confrontation must be recognised and in turn must drive our future national and military strategy, warfighting doctrines, technology induction, force structures and equipment procurement/development.

Asymmetric Threats

India's rapid economic growth will impact favourably on its strategic capabilities and both state and non-state actors are likely to adopt asymmetric warfare means against India to achieve their aims. Such threats will tend to bypass India's conventional military capabilities as seen in J&K and in the Northeast and will need separate force structures and a doctrine for asymmetric warfare. Conventional military capabilities do not and will not deter asymmetric threats.

Areas of Reform

The security threats and challenges facing India have increased enormously. Thus Indian military stresses the need to prepare itself for the full spectrum warfare. The dilemma is only regarding the extent of emphasis that should be laid to acquire each type of capability. After years of focusing on Pakistan-centric plans mostly based on operations in the plains and desert terrain of Punjab and Rajasthan, respectively, the Army now wants to also build its capability for offensive mountain warfare with China. Transformation also entails major force accretions and modernisation for the eastern front along with the simultaneous strengthening of capabilities on the western one.

Recent Initiatives

- A new South-Western Command has been created as the Army's sixth operational command at Jaipur in 2005, to provide a greater offensive punch on the Western front. It also provides an additional command headquarters to take control of the offensive operations on the Western flank, if required. Similarly, in the Eastern flank, two new mountain divisions have now been raised at Zakama (Nagaland) and at Misamari (Assam) respectively. Other improvements are under way including ₹10,000-crore plan cleared last year for military infrastructure development in the Northeast, with a new mountain strike corps and a third Artillery Division also on the anvil.
- The Indian Air Force, much smaller than the Indian Army, is also taking steps to bridge the gaping military asymmetry with China. After Tezpur, it is now basing Sukhoi-30 MKIs at Chabua (Assam) as well as upgrading Eastern sector advanced landing grounds (ALGs) like Pasighat, Mechuka, Walong, Tuting, Ziro and Vijaynagar and helipads in Arunachal Pradesh. Plans are also under way to progressively base six surface-to-air Akash missile squadrons in the Northeast to counter Chinese fighters, helicopters and unmanned aerial vehicles (UAVs).

The above initiatives though delayed are appropriate. However, the main problem is that the Army's modernisation is lagging, with critical deficiencies in artillery, air defence, aviation, night-fighting and strategic/ tactical intelligence, surveillance and reconnaissance capabilities. India's complicated, lengthy and controversy-ridden military procurement process, coupled with the embarrassing lack of a robust domestic defence-industrial base, are enormous problems in the planned modernisation.

Capabilities Required

Our current force level and our operational posture allows for the development of a two-and-a-half-front capability. Keeping in mind our adversaries capabilities on both flanks, some of the key areas in which we will need to acquire capability are briefly discussed in succeeding paragraphs.

Strategic Level

- Nuclear deterrent to include delivery systems with a strike

range of up to 5,000-km range to cover the entire region up to mainland China.
- Tri-service network-centricity through a defence communication network to attain greater synergy between the three services on land, air, sea and space.
- Tri-service, cyber warfare capability.
- Missile and anti-missile capability at tactical, operational and strategic levels.
- Induction of unmanned combat aerial systems (UCAS).
- Induction of precision (denoting accuracy) and intelligence, surveillance and reconnaissance technologies into manned and unmanned systems.
- Establishing a National Cyber Command and a Joint Services Cyber Command.

Operational Level

- A potent offensive and defensive capability in the Eastern theatre is on similar lines as obtaining in the Western theatre against Pakistan. A mountain strike corps will be a vital addition for conventional deterrence of Eastern theatre.
- IAF's strike resources will mandate an increase of about four to six squadrons of multi-role combat aircraft in the Eastern theatre capable of striking anywhere on the Tibetan plateau thus denying the attacker entry into Indian air space and a capability of destroying concentrations of his ground forces along LAC and international border and its vital targets inland.
- The Indian Navy's Eastern fleet will require a more robust force level including one/two carrier task force(s) and additional submarines to deny intrusions and for sea control in the Southern Indian Ocean.
- Ballistic and cruise missile capability to engage targets in Tibet with conventional munitions should the adversary indulge in missile warfare.
- A Tri-Service Special Forces Command for special operations, both overt and covert.

National War Gaming Facility

Under the existing circumstances, it would be prudent to assume that the situations demanding a two-and-a-half-front capability are likely to arise irrespective of our personal convictions. War gaming at national and military strategic levels will throw up the likely situations which would mandate such a capability. Currently, this is one of our greatest weaknesses because despite having a large military force we do not have a national war gaming facility to validate our concepts, force structures and doctrines. Moreover, unlike Western democracies, we have a polity totally ignorant of matters military and a self-serving bureaucracy unmindful of operational issues and understanding of the need to modernise the forces at a much faster pace to face future challenges. The trust deficit between the services with the Ministry of Defence (MoD) can only be removed by a well-informed and competent political leadership and proper integration of the MoD with the three services. ■

T-72 (FWMP) passes through the Rajpath during the 60th Republic Day parade

Armour in Future Conflicts

AFVs will endure the changes in the nature of future wars. However, they must not be seen in isolation as stand-alone weapon systems, but as part of an all arms group enabling and sustaining decisive manoeuvre and high intensity battle at close quarters through superior survivability against precision attacks and dumb munitions.

By Lt General (Retd) V.K. Kapoor

In order to examine the effectiveness and employment of armour in future conflicts, it will be prudent in the first instance to understand the basic characteristics of an armoured fighting vehicle (AFV). The characteristics which AFVs give to ground forces enable the latter to conduct decisive manoeuvre as well as direct high intensity offensive action in order to surprise, paralyse and dislocate an enemy. In open terrain (plains and deserts), armour predominant combat forces are employed to lead the advance of offensive formations, to cut off enemy lines of communication or to occupy key terrain in enemy held area in order to dislocate the enemy and destroy him at a time and place of own choosing.

Nature of Future Wars

Analysis of current and past conflicts, emerging technologies, geostrategic environment and the emerging challenges indicate various trends in future wars. While the details of evaluation and appraisal differ in their content and quality, some shared conclusions with regard to the future trends emerge quite clearly. The main conclusion is that major state to state wars will be a rarity and low intensity conflict will prevail. Thus many professionals in the armed forces all over the world feel that the days of large-scale armour employment are over because of the focus on low intensity operations. In India, due to the heightened employment of the Indian Army in counter-insurgency and other low-intensity operations in the past two decades or so, similar beliefs are held by many officers. They are of the opinion that conventional wars of the past are unlikely to be fought due to the changed nature of future conflicts. However, most of the military analysts differ on this issue. They feel that the geopolitical and geostrategic environment in South Asia or even in the larger region which is termed as Southern Asia (the arc extending clockwise from North Africa, West Asia and South East Asia to the Indian Ocean) are such that limited conventional conflicts cannot be ruled out. They point towards the Kargil War in 1999 and the military stand-off between India and Pakistan in 2001-02, after the attack on Indian Parliament on December 13, 2001.

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India in fact is facing a dual challenge/threat, in the western theatre from Pakistan and in the eastern theatre from China and these challenges/threats cannot be ignored because of the dubious conduct of both adversaries and the obvious collusion between them.

The fallacy of the belief that conventional conflicts are unlikely has also been amply highlighted in Israeli conflict against the Hezbollah in Lebanon in 2006. David E. Johnson of Rand Corporation took stock of the Israeli response to the war in Lebanon, in 2006, in a new monograph, Military Capabilities for Hybrid War: Insights from the Israel Defense Forces in Lebanon and Gaza. He has written that the Israeli defence forces (IDF) had such difficulties with the organised and well-trained Hezbollah forces in part, because in the preceding years, the IDF focused so much of its training on countering the irregular threat presented by Hamas in Gaza. The IDF focused roughly 75 per cent of training on "low-intensity conflict" and only 25 per cent on combined arms and manoeuvre—a decision that had grave consequences in the valleys of southern Lebanon. This resulted in the Israeli Army's lack of coordination in joint combined arms fire and manoeuvre. The IDF failed to properly integrate its air, ground and fire assets when encountering organised Hezbollah units. After these, the IDF reversed its training ratio to focus more on combined arms tactics, while scaling back on irregular skills.

In view of the foregoing, there is a need to discuss and debate the issue of employment of armour in the future, in general terms, in the Indian context, so as to enable professionals to appreciate the future of armour which could also result in some useful deductions regarding the design features of future tanks.

Geographical Realities

Fortunately, most of the senior hierarchy in India's armed forces is more pragmatic in this regard keeping in mind our likely adversaries, Pakistan and China, their equipment pattern, and the geographical realities of the subcontinent. Our borders with our two major adversaries comprise of varying terrain patterns. In the Western theatre against Pakistan, we have glaciated terrain in Siachen area, mountainous terrain in Jammu and Kashmir and Ladakh, plains in Punjab and semi-desert and desert terrain in Rajasthan. Thus extensive armour employment is possible in the Jammu region, in Punjab and in Rajasthan. In the eastern theatre, the terrain opposite Tibet Autonomous Region of China comprises of high mountains where limited employment of armour is possible in certain sectors only. However, in the mountains also, innovative employment of armour, where terrain so allows, can result in gaining advantages which are out of proportion to the force employed.

Transformation of the Army

Recently, Exercise Sudarshan Shakti was held in the Rajasthan desert. The aim it seems was to test the transformational concepts of the Indian Army and integrated theatre concept of operations was practised. Military officers are aware that in any offensive operations planned on the subcontinent, the aims would either be to capture territory or destroy enemy forces or a combination of both. Any territory captured across the international boundary would invariably have to be returned, though it could temporarily be used for post-conflict bargaining. The territory captured across disputed border like the line of control, may be retained, though in the present global environment that too would be unrealistic. Hence destruction of forces would be a more important objective which would have a long-term economic impact on the adversary.

Integrated Theatre Concept

For destruction of large armoured and mechanised forces, battles will have to be planned and orchestrated according to an integrated theatre plan so that larger forces comprising more than one strike corps can be employed synchronously from one theatre or from two different theatres to cause maximum destruction of enemy forces. This would involve large-scale employment armour and mechanised forces and close synergy between strike and pivot formations of the Army and the combat aircraft of the Indian Air Force (IAF). The IAF will have to play a dominant role in the destruction of enemy mechanised and

(Left) T-90 MBT;
(Right) KMW Leopard

Merkava Mark
4 tank

armoured forces on the battlefield and therefore joint planning between the Indian Army and the Indian Air Force (IAF) will be essential. It is here that a truly integrated theatre would be very useful. The success in this battle will depend upon the synergy and close coordination achieved by the Army and the IAF; intra-theatre (within a theatre) between the pivot and the strike corps of that theatre; inter-theatre (inter-command) between the strike corps of two adjoining theatres of operations along with their IAF counterparts. Such operations can only be achieved by the armour and other mechanised components of the Army.

Characteristics of Tanks/Tank Warfare

Shock Effect: Currently, there is no method by which an all arm force can surprise and paralyse an opponent and cause dislocation on the ground without the use of armour. The modern armoured fighting vehicle is a versatile and unique weapon system which through innovative employment can achieve a lethal effect on the battlefield called "shock action", which can help in attaining strategic objectives most economically. Shock action results from a combination of mobility, armour protection, accurate and direct firepower and excellent communications, which constitute the basic characteristics of an AFV. This quality of armour also fulfills an important tenet of operational art called "operational shock", a term adopted from Russian word "Udar". Manoeuvre theory seeks to defeat enemy without destroying all his forces. Operational shock is the Soviet term for a state of disintegration of resolve. Operational shock results from depriving commanders the ability to sense their environment or exercise control over their tactical elements or both. Both physical and cognitive means are used to achieve it and the armour constitutes the physical means and is indispensable in the land battle.

Survivability: Another important by-product of these characteristics is its "survivability", both on nuclear and non-nuclear battlefields. There is currently no other weapon system which can match the survivability of an AFV. However, a new battlefield environment is emerging due to the advent of stand-off, multi-spectral sensors with real time communications that give situational awareness so that targets can be acquired, prioritised and destroyed, by day or by night, in all weathers, throughout the battlefield, with stand-off weapon systems firing precision attack munitions. This threat will extend throughout the area of operations. Hence it is being pointed out by analysts that indirect and stand-off engagements from aircraft, unmanned combat aerial vehicles (UCAVs) and long-range artillery can relieve armour from the role of destroying enemy combat elements at close quarters. Moreover, due to the high threat posed by the above systems, armoured forces may find it difficult to close in with their intended objectives without neutralising the opponents deep attack systems. In this regard, the effectiveness of the US air power in destroying Iraqi armour that manoeuvred during a sandstorm in order to meet the coalition forces is often cited. As the coalition forces closed in on Baghdad, Iraq's Medina, Baghdad and Hammurabi Divisions, counting on the cover provided by the sandstorm, repositioned them to meet the coalition forces. JSTARS and long-range UAVs detected the movement and guided B-1 and fighter-bombers to intercept them. Using IR targeting devices that could penetrate the clouds of sand, the aircraft inflicted severe damage on Iraqi armour. Will the AFV be able to survive such an environment in the future? This question is bothering military professionals and military analysts.

This dilemma in itself is not new. The experience of employing armour in an area riddled with manportable anti-tank guided missiles was first endured during the Yom Kippur War in 1973 and influenced military doctrines all over the world. But because in essence it was an omni-dimensional threat, it posed no significant problem. It was countered by a combination of technology [use of explosive reactive armour] and tactics. The threat now is far greater due to the multiplicity of systems, the ranges over which they operate, the variety of characteristics that are exploited to acquire a target and then guide munitions on to the target, multiple directions from which a platform can be attacked, the reliability of munitions and the reducing cost to achieve the effect. The above threat is likely to test the ingenuity of an AFV designer if he sets out to provide an all-inclusive counter. However, there is also a danger in overplaying the threat to the AFV at present. The current analysis does not take into account the opponents creative thinking and the fact that "a strong desire is the mother of all inventions". Experience with technology also warns us against adopting any simple equation of military superiority based on superior sensors and communications because all sensors have a problem of distinguishing energy received from targets with energy received from other sources and this provides an opponent with the opportunity to deceive, confuse and mislead. Technology will, sooner or later, provide counters to the types of sensors being used currently. Some analysts point out that unmanned sensors can be blinded by lasers, while artillery and multiple rocket batteries used for deep attack can themselves be attacked by tactical ballistic missiles and precision munitions. Attack aviation [attack helicopters] can be countered by well laid air defence ambushes while enemy air power can be countered by our own air power. In any case, no matter how good the sensor to shooter technology is, the ability of AFVs grouped together with the mechanised infantry and other combat elements to seize and hold ground, to deny its use to the enemy and to secure it for use by own troops

is currently indispensable. Moreover, the manoeuvre to dislocate the enemy, to get behind him and to demoralise him, so as to impose our will on him will continue to be an important role for armoured forces and indirect firepower alone will not be able to achieve this effect despite the advent of precision munitions.

Troops on the ground with AFVs lend an unmistakable aspect of power to a situation which cannot be fulfilled by stand-off engagements alone. Even a militarily powerful nation like the US have learnt this lesson the hard way in Afghanistan and Iraq where operations are still continuing, many months after the military campaign was won virtually against no opposition.

In view of the above rationale, many experts on tank designs are predicting that the prime characteristic of future AFVs may well be "survivability" to be able to transit through the battle zone unscathed.

Effects Based Operations

India is likely to face more complex threats and challenges in the future than ever before, but the content is likely to vary substantially and the circumstances are also likely to be different and this is where the military dilemma arises—where, when, for what purpose and how will future wars be fought? In the absence of concrete information, the answer lies in building capabilities and skills which can endow us with the potential of achieving effects that we wish to impose on the opponent on future battlefields. The western world calls it "effects based operations". Suitably designed AFVs, as a part of the combined arms formations, will continue to play a dominant role in integrated air-land operations by virtue of their survivability, speed and shock effect even in the future, in terrain which favours their employment. In this regard it may be noted that apart from the plains, riverine and desert terrain, even in the mountainous regions of our northern and western borders, there is some scope for employing AFVs innovatively and skillfully both along the "line of control" and the "line of actual control".

Part of a Combined Arms Team

Many professionals who have a fetish for attritional aspects of warfare generally fail to appreciate the unique qualities of AFVs which endow a commander with the ability to win battles against many odds. Of course, AFVs cannot function in isolation. Any system whether it operates on land, sea or air must be integrated with other systems within a service to form a Combined Arms Team along with the weapon systems of the other two services in order to achieve operational synergy against an opponent. Failure to realise this important wider context will result in sub-optimisation of our fighting capabilities. Employment of AFVs as part of combined arms combat teams and groups could result in obtaining advantages which are disproportionately higher as compared to the effort employed. This requires "out of the box" thinking.

New Technologies

The next important issue with regard to employment of armour is that of new technologies. There is no doubt that technology will play a predominant role in designing the conduct of future wars and should be combined with innovative operational art, to win these wars. India is facing an entirely new technology era and needs to integrate new technologies as warfighting systems for which the requirement is to first decide upon a new joint warfighting doctrine and then evolve weapons and other systems to suit the former. Large-sized holding and strike formations of the Indian Army, whose roles are a product of an environment which is fading away, will have to give way to smaller, more agile, more responsive and rapidly deployable formations in which armour will play a very significant role. Employment of fully integrated brigade and divisional-sized task forces in the future would require, introduction of three key technologies which are: intelligence, surveillance and reconnaissance (ISR) system that will keep track of enemy and own forces movements through advanced sensors and platforms like aircraft, UAVs and satellites assisted by global positioning systems (GPS) for an up to date "situational awareness", an integrated command, control, communications, computers, information, intelligence (C4I2) system to view the entire battle space as one composite whole so as to deal with targets in a coordinated and coherent manner, and long-range precision firepower by the most appropriate means (ground/air/naval) or a combination thereof.

Integration of the firepower resources of the three services will ensure optimum effect on the target while the choice is left to the integrated force commander to use the most appropriate and the most effective weapons. India lacks such technology and such capability currently. In fact, this technology is not available in the South Asian region. India would have to acquire and develop these technologies with assistance from its strategic partners. She would do well to invest in these technologies at the earliest so that we are ready for future wars when we are required to fight them.

Focus on Protection and Survivability

By virtue of their unique characteristics, AFVs will remain the pivot around which battle groups are formed and arranged on ground. The focus of future tank designers may shift to protection and survivability as compared to firepower and mobility and this may be achieved through a combination of technologies. While signature reduction to avoid detection is one possible area to explore, once detected, the AFV will have to be equipped with active and passive means, including the destruction of the threat to avoid acquisition. If acquired, the AFV would have to have a higher degree of responsiveness by resorting to hard and soft kill mechanisms built into the vehicular system. There is also a school of thought which advocates survivability of an AFV being achieved through a collective system rather than being platform based, which could be activated as per requirement. This could include unmanned platforms for high risk functions such as reconnaissance.

Enduring Changes

In conclusion, it can be stated that the AFVs will endure the changes in the nature of future wars. However, they must not be seen in isolation as stand-alone weapon systems, but as part of an all arms group enabling and sustaining decisive manoeuvre and high intensity battle at close quarters through superior survivability against precision attacks and dumb munitions. ■

The author is former Commandant of the Army War College who has commanded an independent armoured brigade and armoured division

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Future Trends

To be successful in a full spectrum conflict, there is a need to modernise, have a balanced profile and upgrade our defence industry to achieve a reasonable degree of indigenisation thereby enhancing our capabilities in a two-front war

By Major General P.K. Chakravorty

Modern technological advancement and revolution in military affairs has necessitated a transformation in strategic thinking with a paradigm shift in conduct of operations. As a consequence, military doctrines, force structures and weapon systems are also under constant review. Accordingly, the vision of the Indian Army for the 21st century has been to have a well-equipped and optimally structured force, enabling it to respond effectively to varied situations and demands while continually adapting to meet future challenges.

In the current battlefield environment, artillery plays a predominant role by providing firepower in a combined arms battle. The present milieu focuses on accurate stand-off strikes in a network-centric arena against a nuclear backdrop.

Requirement of New Generation Weapon Systems

The Artillery needs to be well-equipped and optimally structured to meet the challenges of future battlefield. The requirement of new generation weapon systems in our context emerges from the following:

- Potential target areas and fieldworks are heavily reinforced with concrete fortifications.
- Expansion of mechanised forces underscores the need for large calibre self-propelled artillery systems with higher rates of fire.
- Development of better roads and tracks in mountains will enable employment of towed artillery.
- The Artillery will also be needed to cater to airborne /heli-

PHOTOGRAPHS: US ARMY & PIB

copter-borne operations and out-of-area contingencies.

- Upgraded acquisition capability is required for detection, identification and location of a target so as to indicate the best suited weapon coupled with the most effective means for target destruction.
- Domination and degradation of enemy in depth with beyond the horizon kill capability of long-range rockets and missile systems assumes importance.
- Standardisation of calibre is important to ensure ammunition compatibility and reduce logistic complexities.

Future Gun Systems

In view of the above, 155mm gun systems should meet our requirements. However, it is essential to have a judicious mix within the calibres to suit diverse terrain conditions, operational requirements and to cut down dependence on a single source. Hence, certain variants of 155mm guns have been planned for induction to suit local terrain conditions. Earlier the 155mm calibre was referred to as a medium gun, but now it is planned to have this as the standard calibre.

Mediumisation of artillery will improve the overall firepower qualitatively. The various aspects of qualitative improvement are discussed below:

Increase in gun densities: Longer ranges are a derivative of mediumisation and this will also improve the gun densities. It will also enable regiments to be deployed in a concentrated manner and yet cover the required frontage and depth.

Depth and degradation capability: Mediumisations of artillery coupled with availability of long-range rockets will result in viable degradation in-depth areas, which would assist in reducing enemy combat potential. Consequently, the enemy's comb power during contact battle would be proportionately reduced.

Enhance lethality: Heavier weight of shell will improve lethality. Enemy defences which hitherto fore could not be destroyed by smaller calibre shells which will now be tackled more effectively.

Logistics capability: A standard calibre would result in standardised ammunition system for all guns. Our operational logistics will be simplified. Moreover, the 155mm family of ammunition is also available in a palletised form.

Flexibility in engagement: Increased range due to larger calibre will enhance flexibility to engage targets by concentrated fires.

Mortars: In future, major portion of artillery will be based on 155mm guns. However, it is desirable to retain mortars in the inventory due to their high angle capability, ability to engage targets on reverse slopes and flexibility of deployment, especially in the mountains and in other difficult terrain conditions. They can also be transported on mules and by helicopters. In order to make them more effective, it would be worthwhile to have long-range mortars with versatile ammunition.

Missile and Rocket Systems

BrahMos missile, Smerch and Pinaka rocket system have been introduced recently in our equipment. BrahMos is a supersonic and a highly accurate missile. This offers the advantage of virtually no collateral damage, thereby obviating any negative repercussions. The rocket systems introduced have very high accuracy and low dispersion when equipped with special ammunition. Smerch is a long-range and accurate, multi-barrel rocket system which is ideal for engagement of targets in the intermediate zone which are beyond the capability of conventional artillery. Its long-range and lethality, effectively covers the tactical and operational depth of the tactical battle area.

Battlefield Transparency

Ensuring battlefield transparency and having effective surveillance and target acquisition capability will have a huge impact in future conduct of operations. Thus dedicated surveillance resources for each formations are desirable to assist the decision support system of the formation commanders. Each formation such as a division or corps has therefore a requirement of a tailor-made unit with the correct mix of SATA resources. These resources need to be scaled as per their operational roles i.e. mountains, plains, holding, strike and so on. Resources like weapon locating radars (WLR) and sound ranging systems are primarily employed for locating targets which are to be engaged by guns. Other sensors like (UAVs), battlefield surveillance radars (BFSR) and longer-range reconnaissance and observation system (LORROS) are also used for target acquisition. However, these sensors essentially provide inputs for battlefield transparency. To that extent, it can be said that SATA units are not only performing artillery related tasks but are also employed to provide surveillance for the entire formation. A major qualitative upgrade is being undertaken for purposes of improving battlefield transparency.

Future Technological Challenges

Technological challenges for modernisation relate to platforms, munitions and SATA equipment. Weapon platforms are concerned with characteristics such as enhanced range, autonomous capability, high rate of fire, automatic laying system, the ability to shoot and scoot as also the capabilility for firing tactical nuclear munitions. The scope for ammunition is to reach a maximum range of about 40 km and have a greater variety of munitions. In addition, we need ammunition which has a high degree of precision; which could be trajectory corrected, termi-

Smerch Multiple Launch Rocket System at the Republic Day Parade

nally guided (or designated) and sensor fuzed munitions. While guns could cover ranges of about 30 km to 40 km, which would be in the tactical space, we would need rockets to cover the operational battle space between 40 km and 120 km and missiles to cover the strategic space from 90 km to 300 km. Thus there is a need for SATA equipment to provide surveillance for these ranges. In this we could consider UAVs and aerostats for long-range surveillance which at some point of time could be supplemented with low earth orbiting satellites. For the contact battle we would need BFSRs, WLRs, sound ranging system and LORROS. In addition, we would need modern survey equipment which would comprise electronic theodolites, inertial navigation systems (INS), differential global positioning systems (DGPS) and laser range finders (LRF). Induction of modern technology with suitable equipment profile would meet our operational needs.

Weapon Profile

The Artillery equipment needs to be correctly profiled in accordance with terrain and operational role of the concerned formation to which it is affiliated. According to the current technical and operational needs, Indian Army has decided that 155mm would be the basic calibre for their Artillery. Variants such as self propelled (SP) (track), SP (wheeled), mounted gun systems (MGS), ultra-light howitzer (ULH) and mortars would be inducted in formations based on their roles and the terrain conditions in which they are required to function. While all these gun systems would serve as close support weapons, there would be a need to reinforce them with rockets and missiles.

Force Multipliers

Our force multipliers in the field of SATA devices have been optimised. We have stabilised our UAV platforms comprising of Heron and Searchers which are playing a stellar role in the field of spot surveillance. Our BFSRs and LORROS are operationalised. For our SATA regiment, we shall also require intermediate-range and long-range sensors. This will include weapon locating radars, sound ranging systems, aerostats and UAVs for which procurement process has been initiated. These systems will also require some other support equipment like electronic theodolites, inertial navigation system, etc, the procurement of which is also in the pipeline.

Operationally, we are always trying to achieve first salvo effectiveness. An accurate meteorological (Met) system is an essential ingredient of the same. Our digicora Met systems have been provided with SATA units to ensure that accurate Met data is available to ensure that the first round lands on the target. The biggest force multiplication which has commenced in recent past has been the introduction of Artillery combat command and control system (ACCCS) which has automated the computation and passage of data from the observation post officer to the command posts up to the Corps level.

Destroying Opponent

Artillery is the primary provider of firepower and needs to have state-of-the-art guns, rockets and missiles to deter our adversaries from undertaking any misadventure. Further, our SATA equipment must provide us surveillance, reconnaissance and target acquisition to destroy the opponent's war-waging capabilities. Induction of variants of 155mm gun system and new generation surveillance systems will add to the capabilities of artillery. If modern technology is inducted quickly and suitably, the lethality of artillery fire will change the dynamics of warfare. ■

The writer was an the Additional Director General of Artillery at the Integrated Headquarters of the MoD (Army) before retirement.

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A patrol in the mountains

Offensive in the Mountains

The decision on the Mountain Strike Corps is not only about the capability and the implications. It is also about the message that India is, by its raisings, sending to China. The message is one of deterrence and resolve. It is not an aggressive one, but the second prong of India's strategy.

By Colonel (Retd) Ali Ahmed

The Cabinet Committee on Security has recently approved the raising of a Mountain Strike Corps (MSC) along with two independent mountain brigades. The MSC is to be located in the eastern theatre with its headquarters at Panagarh and the two independent mountain brigades would be at Ladakh and Garhwal Himalayas.

It will take time to set up the MSC as it involves an expansion by 86,000 troops, reportedly the largest since mechanisation in the 1980s. Even as the organisation busies itself with the personnel, acquisitions, budgeting, logistics and infrastructure details; there is a necessity to also concentrate on the very purpose of the MSC, in the interim. What will it be deployed for and employed to do? How will it deliver on its objectives? What are the implications in terms of the 'two-front' rubric? The nuclear backdrop cannot be lost sight of either. This article attempts to set the stage for discussions by attempting an outline of the implications of the capability from a public information point of view. It first discusses the reason why an MSC is to come about and then on what operational task it would be required to undertake.

The Necessity

The logic behind the proposal is that there needs to be an offensive component to deterrence. Currently, India's is a defensive deterrent posture with respect to China. The philosophy subscribed to is deterrence by denial. The idea is to make any ingress so costly that the attacker would have to pay costs out of proportion to the gains made, even while making any such gains a questionable proposition. However, in relation to the nature of the adversary and its strength, it is assessed that such deterrence lends itself to being tested by the adversary. In light of China's military modernisation, it requires reinforcing.

China has been creating the requisite infrastructure and rapidly increasing its deployment of force capacity. The resources for operations will require placement over the preceding summer seasons and subject to perma-frost, etc over the duration. Besides, the figures that find mention in the media is of the need for half a million troops to be placed in perspective. The operations will be at the very end of a long line of communications, where the terrain will dictate deployment levels.

If 'teaching a lesson' is intended, then it would suffice for India to give a 'bloody nose' in emulating Vietnam. For this, defensive deterrence is adequate and is being further strengthened by the two divisions under raising. These will not only thicken defences, but also provide sectoral reserves for counter attack and hold lines in depth in case adverse situations develop.

However, given the Chinese depth it has in military resources, both manpower and material, it would be able to pay a formidable price for the gains it seeks. Territorial gains will be tangible, but political ends are the more consequential. Learning from the 1979 lessons, China may be prepared to pay a higher price. This means that even if there are formidable defences, effective defence will be difficult, all things being equal.

With the MSC, India is catering for expansive war aims not impossible to visualise, such as may be the case when a hegemonic war is forced on it. China is after all the only challenger to the offshore balancer, the US. India, due to its own power trajectory, has become a player and may on that account need to be 'fixed'. The capability for fighting back needs to be on hand from before. The MSC therefore helps decrease the possibility of the 'more likely', even while enabling coping with the 'less likely', but in the 'worst case' scenario.

From the approval of the MSC, it appears that a switchover to deterrence by punishment has been deemed desirable. The raisings of the two divisions currently under way in Nagaland and Assam will ensure that deterrence by denial is not neglected. Supplementing this with deterrence by punishment

PHOTOGRAPH: INDIAN ARMY

will only reinforce deterrence. Therefore, the raising of the MSC is as much the creation of a capability, as also an exercise in deterrence in demonstrating resolve. It shifts India's posture from defensive deterrence to offensive deterrence.

Anticipated Missions

The Kargil War has proven that it takes considerable force levels to retake the lost territory. This owes to higher force ratios for attack in mountains of the order of 9:1. Multi-directional attacks, attacks in echelons, holding of firm base, infiltration manoeuvres, securing lines of communications, recreating reserves, etc are all tasks that consume troops. This implies that offensive capability even of the order of an MSC will be fairly meagre in mountains. The operational ambition must be tailored accordingly. An offensive capability gives the theatre commander an ability to respond as also to be proactive, but the objectives must be 'doable'.

A template for thinking on strike corps valid for strike corps in the plains sector can be adapted for the MSC. In terms of response options, there is the counter attack mode in which the territory taken is to be recaptured through a corps counter attack. This would be reactive and would be dependent on the nature and location of the enemy attack. The aim would be to retrieve the territory and restore the status quo ante. Since Kargil has proven that retaking territory can prove costly in terms of casualties, there is a case for a counter stroke or a corps level 'riposte'. This must aim at slicing off the territory lost by targeting the launch pad or base area, thereby enabling retaking of the territory in the long haul.

The second option is in launching a counter offensive. This could be at a place and choice of own choosing, other than in areas in which enemy forces have made significant headway. The aim would be to take at least an equivalently valuable territory so as to arrive at a trade off on the negotiating table. It will help in political face saving by presenting the enemy with a military quid pro quo. The more significant capability that the MSC confers is the ability for proactive offensive. This enables wresting of the initiative at the very outset, thereby keeping the enemy reactive. The prerequisite for this is a timely political go-ahead, predicated on political will. This is not infeasible in light of the national interests in a given strategic circumstance. Proactive offensives may also be in the context of an ongoing conflict in another theatre requiring response in the theatre of location of the MSC. The latter is more likely to be the case since India's strategic doctrine is not compliance but deterrence.

A pre-emptive offensive, based on situational awareness of imminent enemy attack, is a possible variant. Since retaking territory is a difficult exercise, preventing loss of territory may prove alluring. However, this would entail prior preparedness, the levels of which are difficult to sustain over a long duration. Preemption strategies can also lead to misperceptions, resulting in a competitive 'cold start' scenario. This undercuts crisis stability with its unwelcome strategic implications.

The MSC need not necessarily be employed as a whole. It must be capable of induction and employment in its constituent force levels, be it in its divisions and brigade sized forces. Mountains make firepower provision and sustenance of large forces difficult. Therefore, the MSC must be exercised for employment not only as a whole but also in its constituent parts. The nature of the ongoing conflict may be such that it may not be employed as an integrated fighting formation, but employed piecemeal. If the Kargil War is taken as precedence, in case there is territory that has been lost to enemy action and there is an over-riding strategic need for limiting the area of conflict, then the MSC may find action only in part.

The ability for recreation of reserves must exist so that even if partially employed, the MSC has the ability to recoup its capability by absorbing either forces inducted into the theatre or preexisting reserves located therein. The corps must be capable of taking under command additional forces.

The MSC must be versatile enough for moving out of the theatre for tasks elsewhere. The possibility of diplomatic action keeping one of the possible two fronts quiet cannot be ruled out in light of the precedence. In such a circumstance, the MSC is unlikely to sit out of a war. The familiarity with the 'other' front must be equally high, given that the likelihood of outbreak of conflict to the west is higher in the middle-term.

The MSC will, in such circumstance, be committed to an operationally happening situation. The employment therefore could well be directly in operations with telescoped preparatory procedures due to time pressure or for posturing. In the latter role, its very movement would be of significance, implying that a certain transparency may accompany the move. Therefore, demands on situational awareness, flexibility, resilience and leadership at all levels will be exponential. Of considerable importance would be the manner it is able to retrieve, reel in, reform and relaunch. The transit will involve multiple modes of transport over great distances.

Even as the MSC is IT enabled, it would be fighting in underdeveloped terrain. This will entail being Spartan, self-reliant and have the ability to work with traditional movement methods such as with porter, pony and man-pack. High fitness levels, especially to transit to high altitude warfare in early timeframe, would be sine qua non. As a costly national resource, the MSC would require having an elite ethos. Its psychological conditioning must be of an equivalent order as its material preparation. All things being equal, the MSC may have little else to rely on.

Politically Right

The decision on the MSC is not only about the capability and the implications. It is also about the message that India is, by its raisings, sending to China. The message is one of deterrence and resolve. It is not an aggressive one, but the second prong of India's strategy. The strategy of engagement is well-known. The announcement prior to the Defence Secretary level talks between the two countries, suggests that India wishes it to be made known, that it is not negotiating from a position of weakness but of equivalence. This is not only a message for China, but also for India. Since the negotiations will eventually entail a 'give and take', India would be unwilling to be dictated on this. If it has the requisite military power, then it would be making concessions if any, as the sovereign's decision and not as something forced upon. Therefore, the MSC raising has to be seen as fulfilling the political purposes too. But insofar as the military is concerned, India would require giving the military such a fine shape that China knows that half century on since 1962, it faces an India with a difference. ■

For Strategic Tasking

Special Forces have a major role to play in coping with asymmetric and non-traditional threats. We need to integrate our Special Forces and optimise their potential to face the 21st century challenges in requisite manner. Initiatives in this regard need to be taken both by the government and the military.

Special Forces on the job

By Lt General (Retd) P.C. Katoch

Indian Special Forces are over three decades old. However, their trans-border employment awaits outbreak of a conventional war. This is an archaic concept, ill suited to present-day non-traditional challenges especially when both China and Pakistan are subjecting us to serious asymmetric threats. We have a large number of Special Forces that need to be integrated and their combat potential optimally utilised by using them proactively. This will also require defining a national policy for employing Special Forces and providing them the highest command and control framework for strategic tasking.

Nature of Conflict

Recent years have witnessed a paradigm shift in the nature of conflict, irregular and asymmetric forces having emerged with greater strategic value over conventional and even nuclear forces, with geographical boundaries rendered irrelevant. Sub-conventional conflicts characterised by intra-state strife, have gained ascendency over traditional conflicts, which used to be mostly conventional inter-state wars. The transnational nature of these threats and the increasing involvement of state actors in using sub-conventional conflicts have increased their complexity. Non-state actors have added a new dimension to low intensity conflicts and they are increasingly acquiring conventional capabilities that were earlier exclusive preserve of nation states. Technology empowers the terrorist to cause severe damage through cyber, financial and kinetic attacks. Likelihood of them acquiring weapons of mass destruction (WMD) is a major concern. The spectrum of conflict could, therefore, range from conflicts between states to conflict with non-state actors and proxies. Conventional conflict could either be preceded in conjunction or succeeded by a period of irregular conflict, which would require low-intensity conflict and stabilisation operations.

Threats & Challenges

India borders the Afghanistan-Pakistan region in the seat of global terror where ideological fuel and wholly religious motivating platform for extremism is centred. There is increasing evidence of radicalisation in Pakistan. Circumstances of assassinations of Governor Salman Taseer, Minister Shahbaz Bhatti and the aftermath provide further proof. Feeble calls within Pakistan to strengthen democracy indicate the stranglehold of the ISI-Military combine in governing Pakistan, which is unlikely to loosen. Lashkar-e-Toiba (LeT) being the covert arm of Inter-Services Intelligence (ISI), its nexus with Al-Qaeda is significant. Wikileaks reinforce Pakistan's duplicity and unwillingness to act against Pakistani terrorist organisations operating in Afghanistan and India. Focus of the US, EU, NATO and the world in general on Al-Qaeda, Taliban and not on Pakistan per se encourages Pakistan to continue a devious policy including covert support to Taliban and Al-Qaeda. Erstwhile Afghan refugee camps along the international highway have been converted into terror havens hitting NATO supply lines. Future US thinning out in Afghanistan embolden Pakistan more. A stronger Taliban will look further into Afghanistan, CIS countries and India.

PHOTOGRAPHS: SP GUIDE PUBNS, INDIAN ARMY & INDIAN NAVY

Having advised Pakistan more than half a century back to raise a militia force to fight India, China now provides tacit support to Pakistan in its jihadi strategy including direct protection at UN as part of her own strategic ambitions to keep India in check. Chinese strategic footprints in Pakistan Occupied Kashmir (PoK), support, training and arming of insurgent groups in India's Northeast (ULFA and NSCN (IM) in particular), claims to Arunachal Pradesh and increased belligerence coupled with the unholy China-Pakistan nuclear nexus bodes more evil. Their increasingly discernable efforts to establish links with the Maoist insurgency in India through Maoists of Nepal, insurgents in Northeast and radicals in Kerala are a cause for worry. Nepal's Maoist insurgency having been spawned by China, what future turn it takes requires monitoring. Nepal and Myanmar have taken a turn for the better in recent months but continue to be unpredictable. Assumption of power by Maoists in Nepal can have direct bearing on the Maoist insurgency in India. Bangladesh is clamping down on terror but the Jel, the JMB and the Harkat-ul-Jihad-al-Islami Bangladesh, currently dormant, need watching. The LTTE in Sri Lanka may be defeated but is not dead. Within India, there are some 30-odd terrorist organisations, the Maoist insurgency having developed into the largest fault line with our adversaries' intent on exploiting all of them.

Faced with multifarious threats and challenges related to terrorism, border management and maritime security, demographic assault from failed/failing states aside from conventional and nuclear threats, India is already amidst asymmetric wars waged by our adversaries. There is an urgent need to address these non-traditional challenges. The scope of these scenarios is large with limitless employment possibilities for Special Forces. In our case, conventional wars will overlap ongoing asymmetric wars. Though windows of conventional conflict remain under the nuclear backdrop, conventional wars will be subject to intense global pressure for early termination fearing nuclear breakout. Both the attack on the Indian Parliament and 26/11 Mumbai terror attacks indicated that India is at distinct disadvantage, relying merely on conventional response coupled with politico-diplomatic manoeuvrings rather than creating requisite deterrence to asymmetric threats.

Indian Special Forces

Indian Special Forces came into being from year 1965 but there is considerable confusion in some cross sections including in the military between 'Special Forces' and 'Special Operations Forces'. Wikipedia lists out some 20-odd Special Operations Forces in India, all of whom get generally categorised as Special Forces by the media. Indian Special Forces actually comprise Special Forces of the three services (Army being the major contributor), Special Action Groups (SAGs) of the National Security Guard (NSG) and Special Groups (SGs) of the Special Frontier

Force (SFF). The SAGs and SGs are manned completely by army personnel on deputation. Ignoring the four globally acknowledged Special Forces truths (humans are more important than hardware, quality is better than quantity, Special Forces cannot be mass produced and competent Special Forces cannot be created after emergencies arise), we have gone in for rapid expansion diluting their combat potential including manning, equipping and training. Non-Special Forces Colonel of the Parachute Regiment in the past have managed to prevail upon Service Chief's to convert more and more Parachute units into Special Forces units–in one case four units worth Special Forces were created within a span of just three years. Post-26/11, the NSG has expanded many times albeit with much less contribution from the Army, particularly against enormous demand of provisioning additional officers. In contrast, the expansion has been very deliberate in case of foreign Special Forces. Post-9/11, the US expanded its Special Forces only by 750. UK went in only for an addition of a 650-strong "Special Forces Support Group". Pakistan has added a fourth SSG unit only recently. Even during peak period of Special Forces deployment in Iraq, only 90 x Operation Detachments Alpha (ODAs) were actually used (each ODA is 10-12 strong). Incidentally, SOCOM is only 13,000 strong of which Psychological Operations Teams and Civil Affairs Teams are not fighting men.

A peculiar situation exists in our Army, wherein, the Parachute (Special Forces) units and regular parachute units are clubbed into the same regiment. This aberration at times leads to senior Paratrooper officers, who have never served in Special Forces, holding appointments dealing with Special Forces issues. They merely concentrate to somehow establish parity between the tasking of Special Forces and normal Parachute units, example being the current efforts to assign Parachute units role of independent small team actions, guerrilla warfare, sub-conventional operations in unconventional scenario and hostage rescue, significantly discarding their primary role of ground holding. Such pseudo specialisation efforts leads to Parachute units clamouring for the Special Forces allowances and insignia rather than concentrate on their own primary task. The Special Forces concept relevant to Special Forces gets sidetracked. The fact that Parachute units, which are Infantry units with airborne capability, must continue to be mandated with tasks that are in support of a formation in their ground holding role strangely gets obfuscated periodically.

Employment Patterns

Historically, Indian Special Forces have been used for direct action type of roles during conventional wars. The hierarchal understanding of trans-border employment of Special Forces in India is short distanced physical or direct type of actions executed on a unit/sub-unit basis to achieve battlefield victories. There is no concept of their being used abroad other than conventional war. While globally Special Forces are employed to nip asymmetric threats at the source, we are content to use this strategic force domestically for counter-insurgency and counter-terrorism only, roles that can well be accomplished by regular infantry as well. Other than limited trans-border employment during conventional war the only overseas employment other than UN missions was of the then three Special Forces units being employed with the IPKF in Sri Lanka. Talking of UN missions, India is perhaps the only country that sends whole Special Forces units on UN missions rather than deploying these forces abroad for strategic surveillance. What a shame that *New York Times* has to tell us that 11,000 Chinese are working on 14 projects in PoK. Special Forces should actually be central to our asymmetric response, which does not imply operating in units/sub-units. In fact, such response through employment of Special Forces does not automatically imply physical attack. A physical attack is only the extreme and potentially most dangerous expression of asymmetric warfare. The key lies in achieving strategic objectives through application of modest resources with the essential psycho-

Marcos in action

logical component. Pakistan's SSG has been operating in Jammu & Kashmir, Afghanistan, Iraq, Nepal and Bangladesh. They understand that Special Forces do not create resistance movements but advice, train and assist resistance movements already in existence. What the Chinese Special Forces are up to is anybody's guess but considering that Chinese use the PLA for development projects like road construction and PLA is spearheading the massive cyber warfare programme of China, covert presence of Chinese Special Forces including by proxy in PoK, Nepal, Myanmar, Bangladesh, Sri Lanka and even India should not be ruled out. Apprehension of Chinese nationals with fake Indian pan cards may actually be the tip of the iceberg. If China aims to stir up the NSCN(IM), ULFA and Maoist insurgencies and claims Arunachal, how can one rule out involvement of their intelligence agencies and Special Forces? Ideal response to asymmetric threats is adoption of a proactive strategy ensuring prevention of an attack. Asymmetric war is a dirty war, to which conventional response is inadequate. Special Forces have wide application across the entire spectrum of conflict, more so as a controlled response along the escalatory ladder in the emerging strategic environment.

Concept of Employment

The concept of employment of Special Forces in the Indian Army instituted in 2001 says that "Special Forces should be employed to continuously 'shape the battlefield from conven-

tional wars in nuclear backdrop to asymmetric and fourth generation wars. Their employment should be theatre-specific and as force multipliers to complement tasks performed by conventional forces, entailing high risk, and high gain missions having minimum visibility with desired effect". Shaping the battlefield is a continuous process covering the entire spectrum of conflict including asymmetric war that implies shaping in peace time as well and virtually every conceivable task is possible under 'covert operations', 'special missions' and 'special operations'. Our Special Forces are potent tools that possess the 'strategic punch' to achieve our security objectives. They must primarily look beyond our borders (with exception of the NSG) to nip asymmetric threats in the bud and to control the fault lines of our adversaries. Such a concept can well suit all Indian Special Forces but the million-dollar question is why the Army has not implemented it? The reasons are many, ranging from absence of a national doctrine or philosophy for employment of Special Forces despite 36 years of existence of Special Forces in the country, no integrated Special Forces set up, little joint training and no institutionalised network for real time national intelligence. More significant is the question of national/political will and military will as well, voids of which have led to the failure of defining a National Security Strategy and National Security Objectives even 64 years after independence. Flawed policies of total reliance on technical intelligence (TECHINT) over the years have dried up human intelligence (HUMINT) completely. Whether we fight China or Pakistan individually or together, we will definitely be combating asymmetric forces concurrently. Hence, the importance to muster national will to go for proactive Special Forces employment. It should be a matter of grave national concern to us that the organisations like LeT and JeM conduct open meetings with complete state support in Pakistan, that individuals like Hafiz Syed (LeT) and Masood Azhar (JeM) continue to be at large after causing tremendous damage in our country, that China is fuelling dissent in our Northeast and in the Maoists with apparent intentions of preparing grounds for a full-fledged fourth generation war in the Indian heartland.

Optimising Potential

Lack of integration of Indian Special Forces has not permitted optimisation of their potent combat capabilities including in creating a deterrent against irregular/asymmetric warfare. Belonging to different organisations with different chains of command, there is little commonality by way of ethos, training, equipping and capabilities. Our areas of strategic interests need to be kept under surveillance including through HUMINT, to which Special Forces can be major contributors. The fact is that there is an urgent need to establish an Integrated Special Forces Command (ISFC). Options are to either establish the ISFC under the CDS (COSC in the interim) with a Strategic Special Forces Cell (SSFC) in the Prime Minister's Office (PMO) or establish it directly under the existing Tri-Service Strategic Forces Command with SSFCs in the PMO and Office of the NSA. Yet another option is to establish the ISFC directly under the PMO. Establishment of a SSFC functioning as the 'brain' in PMO is vital. In the emerging explosive strategic environment, the requirement is to develop both publicised overt capabilities and deniable covert capabilities in order to create necessary deterrence against irregular/asymmetric, fourth generation warfare launched by our adversaries. Strategic deployment and strategic tasking of Special Forces will require the express sanction of the PM, akin to the President's sanction in countries like the US and Pakistan. The SSFC in PMO will also be central to evolving and implementing the National Philosophy/Doctrine for Employment of Special Forces. The main difficulty in establishing the ISFC will be the reluctance of organisations and agencies currently controlling them viz the Services, MHA, Cabinet Secretariat but this is an essential exercise, akin to ongoing effort to integrate our nine major intelligence agencies. We need integration of our Special Forces for better response to modern-day challenges. A central agency must oversee their strategic tasking, capacity building, manning, equipping, training, consolidation, operations, intelligence inputs, inter-agency synergy and the like. Military Special Forces and the SFF must primarily look across borders in response to transnational asymmetric/fourth generation threats and for strategic surveillance. Diplomacy and conventional capability by itself cannot contend with asymmetric wars of Pakistan and China. Fortressing one's house is no answer either and actually amounts to cowardice besides earning the label of a 'soft state'. We need a well thought out coordinated proactive approach. Development of national will can perhaps also be assisted by factors like appointing a CDS, setting up of an institutionalised body within the Ministry of Defence (MoD) for strategic thinking, appointing a National Security Advisor with Service background, true integration of HQ IDS with MoD unless of course if the hierarchy gets jolted with major enemy action/acceleration of asymmetric/irregular war. Today's asymmetric wars are laced with unprecedented treachery, deceit and denial. On the question of proactive employment of Special Forces, the fear of being labeled aggressor is fallacious and amounts to covering up the lack of strategic thinking especially since coping with non-traditional challenges does not equate automatically to physical attack. Special Forces provide us the tools to address non-traditional challenges to our security by providing a silent but effective medium. We need to develop the necessary political will to contend with emerging strategic challenges. Their tasking should include asymmetric warfare, unconventional/fourth generation warfare, special operations, strategic reconnaissance, psychological operations and the like. We need to get a handle on the fault lines of our adversaries in order to achieve requisite deterrence. There is a need to go proactive on the issue lest we permit our economy and security to be weakened.

Coping Asymmetric Threats

The security situation surrounding us is volatile with complex non-traditional threats that can turn ugly at the drop of a hat. Not only do we need to monitor the areas of strategic interests, we also need to develop deterrence against expanding asymmetric threats. In order to deter our opponents from exploiting our fault lines, we need to get hold of the fault lines of our adversaries. Special Forces have a major role to play in coping with asymmetric and non-traditional threats. We need to integrate our Special Forces and optimise their potential to face the 21st century challenges in requisite manner. Initiatives in this regard need to be taken both by the government and the military. ■

Developments in South Asia

In the future we may face scenarios in which countries may use armed drones to settle scores. China could dominate South Asia, South East Asia and Central Asia while countries like Pakistan and India could carry out strikes across disputed borders. India could use it to carry out "hot pursuit" strikes across the line of control against terrorist groups in PoK.

By Lt General (Retd) V.K. Kapoor

Unmanned aerial vehicles (UAVs) are remotely piloted or self-piloted aircraft that can carry cameras, sensors, communications equipment or other payloads. They can be used for reconnaissance, intelligence-gathering, real time imagery, surveillance of a designated area and attack. More challenging roles include combat missions with specialised platforms. Such UAVs are known as unmanned combat air vehicles (UCAVs). They are designed to deliver weapons (attack targets) without an onboard pilot. Currently, operational UCAVs are under real-time human control, but future version may enable autonomous operation, for example with pre-programmed route and target details.

US and Israel

During the last three decades or so, US and Israel have been at the forefront of UAV development in the world. Israel is largely responsible for much of the development that has happened in the UAV defence sector. The Hunter and the Pioneer, which have been used extensively by the US military, are direct derivatives of Israeli systems. The Pioneer was used in the Gulf War to good effect. Unmanned aerial vehicles are a huge growth industry for the US and its closest allies, and the source of one of America's greatest military advantages. Starting in the mid-1990s, the unarmed Predator drone helped the US build an unprecedented, persistent surveillance system, capable of spotting targets around the clock. Later, armed with missiles, the Predator became an aerial hunter, picking up hundreds of insurgents in Iraq, Afghanistan and Pakistan every year.

The Reaper, which is a bigger and more powerful Predator, has proved its worth as a spy and as a more lethal killer. The secretive RQ-170 added a measure of stealth. To further improve the drones' bombing prowess, the US military and industry are developing no fewer than three stealthy, jet-powered UAVs. Northrop's X-47 killer drone, which will also be capable of flying off aircraft carriers, flew for the first time in early October 2011.

The United States has a huge lead in the number and sophistication of unmanned aerial vehicles (about 7,000, by one official's estimate, mostly unarmed). The US Air Force (USAF) prefers to call them remotely piloted aircraft and not UAVs perhaps to acknowledge the human role. It seems that

Killer drone: An MQ-9 Reaper sits in a hangar during a sandstorm at Joint Base Balad, Iraq

PHOTOGRAPHS: US ARMY, DRDO, SP GUIDE PUBNS & WIKIPEDIA

From DRDO's stable:
Rustom and Nishant UAVs

the USAF is now training more pilots to operate drones than fighters and bombers.

Developments in Asia

China's Drones

China has made the fastest progress. It introduced its first drone at the Zhuhai International Air Show five years ago and is now running UAV research centres at all defence companies in the country. *The New York Times* on October 8, 2011, reported that at the Zhuhai air show in south-eastern China, in November 2010; Chinese companies unveiled 25 different models of remotely controlled aircraft. Among the 25 drones, China exhibited at the Zhuhai show, the WJ-600 unmanned bomber is believed to have the most formidable firepower. Visitors were shown a video of the WJ-600 drone finding and transmitting targetting information on something that looked like a US aircraft carrier fleet near an island that looked like Taiwan. A video animation of a missile-armed drone taking out an armoured vehicle was also shown. The entire presentation appeared to have pitched more marketing purposes than military threat. This is the biggest event as far as China's aviation market is concerned, drawing both Chinese and foreign military buyers. While it cannot be said with any certainty that China has state-of-the-art technology for armed drones, what was evident was that the days of United States' near monopoly on armed drones was coming to an end, with far-reaching consequences for global security, international law and the future of warfare.

China's Major UAV Systems

Apart from the "Harpy" UAV sold to China by Israel Aerospace Industries (IAI) in 1994, China has indigenously developed and manufactured a number of unmanned systems during the past 30 to 40 years, often based on western, primarily US-built UAV and UCAV concepts. China also has a number of man-portable mini-UAVs (such as the ASN-15), which are generally propeller-driven models for short-range tactical reconnaissance of ground troops. The following is the list of systems which focuses on some of the larger reconnaissance and combat concepts:

- WuZhen-5 (also ChangHong-1)
- Xianglong ("Sour Dragon", Chengdu)
- WuZhen-2000 (also WZ-9, Guizhou Aviation Industry Group)
- ASN-206/ASN-207 (Xi'an ASN Technology Group Company)

However, it is by no means a comprehensive list. Some systems such as the ASN-104/105 and ChangKong-1 or a newer concept called "Combat Eagle" of the X-45 and Dassault Neuron UCAV variety have not been included.

Indian UAVs

Asia Times Online has reported that if everything goes as planned, within the next few years, India should possess a fleet of at least 25-30 attack UAVs compared to fewer than five now with such capabilities. Until now, India has never admitted to using the armed UAVs. Sources say that the moves to acquire attack UAVs gained momentum after the Mumbai terror attacks in November 2008, with India's Defence Chiefs pressing for their procurement as they have been used by America in the Afghanistan-Pakistan region to very good effect.

Reports suggest that some surveillance UAVs may have been deployed in Maoist-infested areas, following the deadly attacks by the Maoists on the Central Reserve Police Forces in Chhattisgarh that have killed scores of security personnel. However, the ability of the reconnaissance UAVs to penetrate jungle foliage is questionable. In the case of Afghanistan-Pakistan region, Predators and Reaper UAVs equipped with Hellfire missiles and satellite tracking facilities, have caused much damage and have been used to assassinate known Taliban leaders.

India has been procuring unmanned drones since the India-Pakistan Kargil conflict in 1999, having inducted over 100 UAVs in the decade that followed. These include Searcher I and II tactical UAVs and Heron, medium altitude long endurance (MALE) UAVs, mainly for reconnaissance and surveillance purposes. It seems that a few Harpy II (Harop) killer drones have been bought that function like cruise missiles. In Sep-

tember 2009, the Indian Air Force announced the induction of 10 Harop systems purchased for $100 million (₹500 crore). The Harop was publicly unveiled to the world for the first time in India, in the lead-up to the Aero India 2009 show. Unlike the fully autonomous Harpy, however, the Harop is controlled in flight by a remote operator. The IAI Harop (or Harpy II) is an UCAV developed by the MBT division of Israel Aerospace Industries. The drone itself is the main munition. This hunter-killer is designed for loitering the battlefield and attack targets by self-destructing. IAI developed the Harop for suppression of enemy air defence (SEAD) missions. But what makes them more advanced is that they also have electro-optical sensors to make them capable of even hitting important enemy military installations like missile sites.

It is learnt from the media reports that India's Ministry of Defence (MoD) has briefed Israeli arms suppliers that future UAV fleets to India should have a larger number of attack UAVs. Integration issues are not expected to be severe as the UAV technology is considered relatively simple and does not require complementary hardware installations. The Indian defence forces already have dedicated satellite links and channels that can be used by the attack UAVs.

India's Defence Research and Development Organisation (DRDO) has undertaken development programmes for a smaller UAV, the "Nishant". With its "Rustom" programme, however, India hopes to offer a UAV in the Heron/ Predator/ Watchkeeper class of MALE UAVs.

Pakistan UAVs

A large variety of UAVs are manufactured by Integrated Dynamics at their facility in Karachi while some have been procured from abroad. These include:

- Tornado is a target and decoy UAV with a range of over 200 km. It can reach a speed of up to 300 knots and can emit false radar signals to confuse enemy air defences.

Hunter-killer:
Harpy II UCAV

- Shadow is also a surveillance UAV that has a speed of over 200 km per hour and can operate within a 200-km range. The United States has provided Pakistan RQ-7 Shadow UAV to support their counter-insurgency operations. Shadow UAVs are extremely popular within the US Army, providing warfighters better situational awareness in their operations.
- Rover is a civilian UAV typically used for electronic news gathering and rapid information relay.
- Nishan MK-II has a wingspan of over nine feet and is considered a high-speed aerial target or decoy. Its range is limited to 35 km.
- Explorer is one of the two advanced civilian UAV systems offered by Integrated Dynamics. It has a 20-kilometre range and is equipped with sensors suited for scientific research programmes.
- Border Eagle is a surveillance UAV that comes equipped with both a still and video camera along with a chemical monitoring module.

Integrated Dynamics also features ground station units that are used in combination with the UAV systems.

Pakistan has been pushing for multi-utility drones, apart from big armaments such as F-16 fighter jets from America, as part of its military aid package in exchange of taking on Al-Qaeda and now the Taliban in Afghanistan. However, so far, Washington has apparently limited the supply of tactical unarmed Shadow UAVs for intelligence-gathering purposes to its ally, while also withholding killer Predator drones.

Armed UAVs—Future Settings

The qualities that have made armed UAVs so attractive to the US military and the CIA for counter-terrorism and counter-insurgency, appeal to many countries and conceivably, to terrorist groups and non-state actors too. The characteristics which make it so attractive are its capacity for surveillance and precision strikes, modest cost, and most importantly, no danger to the operator, who may sit in safety thousands of miles from the target. High-performance drones such as the US-made Predator cost between $10.5 million (₹52.5 crore) and $20 million (₹100 crore) each, far cheaper than an F-22 fighter jet available at $150 million (₹750 crore).

The proliferation of armed UAVs may result in this weapon system being available to the terrorist and insurgent groups in the future and this would prove to be a nightmare for security planners' world over. In Pakistan, according to American officials, strikes from Predators and Reapers operated by the Central Intelligence Agency (CIA) have killed more than 2,000 militants; and the number of civilian casualties is hotly debated.

In the future we possibly will face scenarios in which countries may use armed drones to settle scores. China could dominate South Asia, South East Asia and Central Asia while countries like Pakistan and India could carry out strikes across disputed borders. India could use it to carry out "hot pursuit" strikes across the line of control against terrorist groups in Pakistan occupied Kashmir (PoK). Russia could send drones after militants in the Caucasus. Given the type of disputes that exist internationally, the likely settings for use of armed drones is endless. ■

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