

# **Seminar Report**

## **NATIONAL SEMINAR ON CONDUCT OF OPERATIONS IN NUCLEAR ENVIRONMENT**

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## EXECUTIVE SUMMARY

The equation between India, Pakistan and China acquired a different dimension after they developed nuclear weapons. India has adopted the policy of No First Use (NFU) and unambiguously maintained the capability to deter the nuclear aggression against itself. China's nuclear doctrine is quite ambiguous. Although the official Chinese stand on NFU appears to be similar to ours. As far as our western adversary is concerned, it sees tactical nuclear weapons (TNWs) as a means to deter India, not only in the realm of nuclear sphere but also in the conventional sphere.

The possible unauthorised or early use of the TNWs by Pakistan cannot be ruled out, and therefore, the need for the preparation of our forces to operate conventionally in a nuclear environment. Broadly, the area of preparations would include improving the survivability factor of our forces, training for offensive and defensive operations, addressing command-and-control structures, capability development, development and harnessing of operational intelligence, space and cyber expertise.

India's doctrine is based on nuclear deterrence and not nuclear warfighting, yet, armed forces, being the last resort of this nation, should be prepared to undertake operation under all eventualities, including those in a nuclear backdrop and under the threat of TNWs, however remote is the possibility.

This involves taking both requisite passive measures to mitigate the impact of TNWs on Indian offensive forces and active measures to intercept delivery vehicles aimed at Indian targets or to destroy them when deployed in the TBA.

The most credible way to signal India's resolve is through the requisite build-up of active and passive chemical, biological, radiological and nuclear (CBRN) defence measures. The passive measures include capability to monitor, detect, communicate and delineate the contaminated areas. Fortunately, our mechanised forces are nuclear capable. The need is to ensure that all the capabilities and equipment are fully functional and are at their operational best. As far as active

CBRN measures are concerned, there is a need to develop a counter-capability to take out Pakistan's TNWs and their delivery means at a particular moment in the TBA when its control has been delineated. Active measures involve specific targeting that involves reconnaissance, intelligence and also interception. Both the Russians and the Americans have some inbuilt capability to intercept TNW.

There is little evidence to show that Pakistan's TNWs have been merged into Pakistan's military strategy. Pakistan's continuous focus on its capability development also suggests that Pakistan is serious about fighting the conventional battle and all the nuclear posturing they have involved themselves into, is actually, brinkmanship.

Pakistan's use of TNWs is a nuclear ambiguity that has been deliberately created to deter India. Therefore, we should be prepared to call the Pakistan bluff.

We must continue to prepare our forces to be able to fight in combat environment. This would require conduct of operation in nuclear conditions as part of war gaming and discussions at formation level; equipment required have to be made available and their serviceability should be maintained; build capabilities such as command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR), joint operations capabilities, precision capabilities in terms of precision manoeuvre, capabilities in terms of the vertical envelopment and vertical forces, cyber capability and force management capabilities; stabilising our CBRN protocols and training and integration at national and tri-services levels; enhancing simulation and test capabilities; integrating sea capability with the present Air Force structure system; investments in the Special Forces and Para forces and, jointness, integrity and interdependability between services and for this, combined defence services (CDS) should be very much in place.

Indian Air Force's (IAF)s defensive considerations for achieving the above would entail capability-building and demonstration contributing to deterrence, early warning and attack assessment network of radars, sensors and processing stations; a fail-safe communication system to link the surveillance, early warning, command-and-control systems with the nuclear forces (C4ISR); ability of air elements to absorb the enemy's first strike through dispersion as well as redundancy and remain operationally efficient; provide air defence to the IAF, surface

forces and national VAs/VPs; and anticipating how electromagnetic pulse (EMP) will affect the communications equipment, fly-by-wire and other on-board computers and electronics and evolve counters.

IAF's offensive considerations for operations in a nuclear environment include integrated satellite, aerial and ground-based surveillance system to gather data for 'targeting'; adequate processing facilities for rapid re-targeting based on event templates, current intelligence and higher inputs; prepositioned nuclear warheads, including nuclear free-fall bombs, air-launched missiles and modified aircraft; and relevant nuclear command, control and communication (NC3) support systems.

IAF would support Indian Army's offensive and defensive operations under nuclear environment by creating air superiority in TBA, providing air umbrella to surface strike forces, through interdiction missions, by providing logistic/replenishment support and mass casualty evacuation/medical evacuations in case of a nuclear attack.

Indian Navy can operate in a dispersed fashion with more stress on dislocations than simply on formations and this is part and parcel of nuclear signalling which is part of the nuclear deterrence. Carrier operations are worst affected in actual fighting. Every ship has the ability to operate for a protracted time in a nuclear-contaminated area and this is rehearsed on a regular basis. The retaliation in a nuclear triad is best handled by the navy and submarine forces, in particular.

India's Ballistic Missile Defence (BMD) programme dates back to 2002. The programme is divided into two parts. In the first phase, we have designed missiles to engage at 1500 km and in the second phase, up to 5000 km. India going for BMD does not mean that we are trying to change our policy or doctrine.

The C4ISR is the requirement for the BMD systems. The same command-and-control structure is required when a nation declares itself as NFU. The entire issue can be concluded in three main points. One, we need BMD systems for our own defence; two, the NFU systems require us to work more on the BMD systems, absorb the first strike and react; and three, our policy of NFU is a very balanced policy and despite the BMD systems, we are not planning to change this policy.

Having a BMD system helps India to negate the nuclear blackmail by the opponents. It was found that a successful BMD system could preserve the nuclear systems, command-and-control structures and could also augment the second-strike capability of the nation.

In keeping with the effectiveness and cost involved, there is always a debate on the need for acquiring BMD system for the nation. Among the various deployment options we have, India is exercising its BMD options of 'protection of nuclear structures, command-and-control structures and important metropolitan centres' or just going for the 'protection of the political leadership'. However, whichever option we exercise, we need to identify technologies for the future, research and development and development of advanced technologies, technological cooperation in areas and to address technological competence in critical areas for BMD.

## DETAILED REPORT

\*The aspects enumerated as part of this report are exclusively based on the deliberations by panellists. These do not necessarily conform to the views of the Centre for Land Warfare Studies (CLAWS) or that of the Indian Army or the Ministry of Defence, Government of India.

The CLAWS conducted a National Seminar on the ‘Conduct of Operations in Nuclear Environment’ on 13 February 2018. Important issues highlighted at the seminar are given below.

### *Inaugural Session*

During the inaugural session, Lt. Gen. BS Nagal, Param Vishisht Seva Medal (PVSM), Ati Vishisht Seva Medal (AVSM), Sena medal (SM) (Retired), Director CLAWS gave the welcome address and the background, rationale and objectives for selecting the seminar topic. Referring to the speech at Carnegie Endowment in 2016, where Gen. Kidwai said, “Pakistan’s TNWs are for deterrence across the entire spectrum of conflict, whether it is strategic, operational or tactical”, and Gen. Nagal highlighted the Pakistani misbelief that TNWs can deter India from carrying out full or limited conventional operations. It believes in nuclear warfighting for deterring different forms of conflict which even the latest US Nuclear Posture Review (NPR) has denied and said that nuclear weapons cannot deter each and every conflict. On the other hand, India has NFU policy which has been linked to massive retaliation. He added that when we examine this in the nuclear context, it is not easy to decide on the tipping point or the point at which the nuclear weapons will enter into the battlefield. Therefore, it is very important that Indian Armed Forces are trained to conduct operations in any environment, including nuclear environment, implying preparations in terms of doctrinal, material, force structure, tactics and training for the armed forces. India must demonstrate this capability that will convey a resolve that nuclear weapons do not deter India from carrying out conventional operations. For this, the psychological conditioning of the armed forces is very important and that can only happen if we build the environment and train armed personnel for it. Speaking about the second part of the seminar on the

issues related to BMD systems, Gen. Nagal highlighted the inherent linkages between BMD and the First Use Policy because when a state creates BMD systems, it creates an infrastructure and systems which can also be used in carrying out first strike, and therefore, analyst and practitioners will question the intentions of the state developing a BMD system.

***Keynote Address: Admiral Sunil Lanba, PVSM, AVSM, Aide-de-camp (ADC), Chief of Staff Committee (COSC) and Chief of Naval Staff***

Admiral Lanba, while delivering the keynote address, emphasised on the relevance of conduct of conventional operations in a nuclear environment and efforts made towards this end on acquiring the requisite capabilities and skills meant for it. He highlighted the long history of conflicts between India and Pakistan since the inception of the latter owing to its flawed foreign policy and internal politico-economic instability. Pakistan has used the issue of Kashmir's settlement to legitimise terrorist activities and terrorist organisations have been used as an instrument of the state for carrying out a proxy war in Kashmir.

India's other neighbour, China, is pursuing global leadership aspirations and sees the integration of some of the northern and north-eastern states of India as transgression of its own territory. In the last decade, the deepening Chinese and Pakistan relationship alignment has further affected the security calculus. The gradual disengagement of the United States from the Afghanistan–Pakistan region has renewed the relationship of China and Pakistan.

The equation between all three countries will acquire a different dimension after they develop nuclear weapons. India has adopted the policy of NFU and unambiguously maintained the capability to deter the nuclear aggression against itself. The intended response strategies are also made clear with the use of term 'massive retaliation'. The stance of other nuclear weapon states is different. China's nuclear doctrine is quite ambiguous. Although the official Chinese stand on NFU appears to be similar to ours, the recent developments with respect to technological advances and force restructuring indicate a move away from approach of deterrence towards a more calculated strategy of assured retaliation by fielding capability by a nuclear deterrent force. As far as our western adversary is concerned, it sees TNWs as a means to deter India, not

only in the realm of nuclear sphere but also in conventional sphere. This is in stark contrast to how India views its nuclear capability. The use of tactical weapons by Pakistan in case of the conventional advances of our forces would not automatically mean suspension of conventional operations. Indian Armed Forces need to identify their objectives despite the nuclear escalation.

The Admiral highlighted the factor of ‘unpredictability’ which is often associated with the threat of use of TNWs, possible flexible command-and-control structure of these units, limited political control over military in the country and radicalisation of armed forces. He appreciated that the possible unauthorised or early use of the TNWs cannot be ruled out, and therefore, the need for the preparation of our forces to operate conventionally in the nuclear environment. He alluded to the areas of preparations to include improving the survivability factor of our forces, training for offensive and defensive operations, addressing command-and-control structures, capability development, development and harnessing of operational intelligence, space and cyber expertise.

Addressing the issue of nuclear proliferation and Pakistan’s history in the field of proliferation, the Admiral cautioned about the possible collusivity between state and non-state actors. He added that it may be worthwhile to consider how to react in a situation where a nuclear attack is carried out by the terrorist groups and Pakistan denies to take responsibility for such an attack.

### *Session I: Conduct of Operations in Nuclear Environment*

**The North Atlantic Treaty Organization (NATO)—Warsaw Pact Policy and Preparations for Tactical Level Nuclear Warfighting during the Cold War and Pakistan’s Policy of Nuclear Warfighting at Tactical Level**

#### *Analysis of Russia and Its Preparation at the Height of Cold War*

During the Cold War era, all the experts in United States had the opinion that Union of Soviet Socialist Republics (USSR) had no desire to precipitate in a nuclear war. However, when deterrence failed and it came to nuclear war, the Russians were determined that even in a demolished world they would emerge victorious. Above-mentioned desire and conviction in approach was the basis of their preparation.

Soviets had a very elaborate organisation for nuclear, biological, chemical (NBC) protection and this was one of the best and clear signals to their opponents that they were prepared for all eventuality. America's limited nuclear options were based on the belief that USSR would act rationally and respond in time. As per declassified information, the Soviet wanted the United States to believe that USSR would retaliate on a massive scale against any US deployment of nuclear weapons. The US and Russian views on nuclear weapons differ fundamentally. In the last 20 years, nuclear ambitions of the United States and Russia have evolved in the opposite direction which is exactly opposite to what they were during the Cold War. Reducing the role of nuclear weapons in the overall security strategy is US' objective, while Russia is pursuing new concepts in the capabilities for expanding the role of nuclear weapons because it now lacks conventional superiority which it had at the height of the Cold War, and here, we can draw some similarities between the case of India and Pakistan.

### *Analysing Pakistan's Nuclear Threat and Strategy*

The backdrop for Pakistan's nuclear doctrines is that Pakistan's nuclear arsenal is designed to counter India's conventional and nuclear response strategy. Pakistan's analysts oppose acceptance of any NFU pact with India as they feel that any such acceptance would negate their deterrence capability against India.

Professor Stephan Cohen further elaborates and terms the strategy Pakistan has as an 'Option Enhancing Policy' or some even call it 'Escalate to De-escalate'. This envisages a stage-by-stage level of advancement in which the nuclear threat is increased at every step to deter India from attacking or bringing the offensive attack to a halt. This has been further classified step by step by him as follows:

- Public or private warning to India by Pakistan.
- Demonstrating an atomic test from a small atomic device on its own soil or even in a weapon-testing lab.
- The use of nuclear weapons on Pakistani soil against the attacking Indian Forces.
- Use of nuclear weapons against India on critical military targets, probably on less populated areas of desert or semi-desert causing the least collateral damage.

The problem with this assessment is that India is predicted to not be following through its declared nuclear doctrine. And in some forms is a gamble that an irrational leadership of Pakistan is supposed to take.

As is evident from the experience of the NATO and Warsaw Pact, the term-limited nuclear exchange is an oxymoron. Given the low casualty rates and minimum material damage on the battlefield against the mechanised forces, Pakistan Army's faith in TNW, in bringing the Indian offensives to halt, is questionable. If the combat divisions of the Indian Army enter Pakistani territory to about 10–20 km and in retaliation, if Pakistan goes on to use 5–6 TNWs of suppose 8 KTS, 25–30% of the armoured division of the Indian Army will be destroyed in that eventuality. Even this estimate of losses and casualties can be minimised if we manage our deployment and movement in a particular way depending upon the situation, thus negating the drastic impact of Pakistan's TNWs.

Pakistan is convinced that no Indian Prime Minister would go for a massive retaliation if Pakistan goes on to use few TNWs on offensive Indian forces on its soil. Although this is the mainstream narrative in Pakistan, there are shades of differences in this regard. Moreover, on examining and minute reading, one could decipher three shades of differences in the opinion of Pakistani decision makers. These three differences are as follows:

- Larger majority said that they could be tempted to use the TNWs in the hope that the Indian leadership will be very logical and rational and will not respond with massive retaliation.
- The other view said no to the use of TNWs, terming it as gambling and it would be brinkmanship of the greatest disaster in making.
- The third view says that we have not analyse the effect of TNWs sufficiently to be convinced that these TNWs will actually halt the Indian offensives.

There is little evidence to show that Pakistan's TNWs have been merged into Pakistan's military strategy. Pakistan's continuous focus on its capability also suggests that Pakistan is serious about fighting the conventional battle and all this nuclear posturing they have involved themselves into is actually brinkmanship.

Pakistan's use of TNWs is a nuclear ambiguity that has been deliberately created to deter India. Therefore, we should be prepared to call the

Pakistan bluff. However, to remove any doubts from its minds, India needs to do extensive and credible signalling. We must continue to prepare our forces to be able to fight through combat environment.

India's doctrine is based on nuclear deterrence and not nuclear warfighting, yet armed forces, being the last resort of this nation, have to be prepared to undertake operation under all eventualities, including those in nuclear backdrop and under the threat of TNWs, however remote is the possibility.

Pakistan has been rather fond of flaunting its nuclear capability to nullify India's conventional response options, especially based on the strength of having acquired a TNW. However, India is not without options and can undertake steps to overcome such perceived challenges. Since Pakistan's nuclear red lines are rather ambiguous and deliberately kept so, India may find itself facing one of the options, either abandon or limit the offensives or two, be prepared to call on Pakistan's nuclear bluff during any conventional response. This involves taking both requisite passive measures to mitigate the impact of TNWs on Indian offensive forces and active measures to intercept delivery vehicles aimed at Indian targets or to destroy them when deployed in the TBA.

Pakistan has deliberately kept its threshold/red lines ambiguous to keep the Indian strategic and operational planners in a dilemma. However, through orchestrated leaks/statements, thresholds in the form of spatial, military destruction, economic strangulation and political destabilisation have been talked about. However, none of these thresholds is clearly defined and Pakistan's adoption of a nuclear option is questionable as Indian retaliation as per its stated nuclear doctrine would inevitably follow and there can be no doubt about it. The most credible way to signal India's resolve is through the requisite build-up of active and passive CBRN measures.

The passive measures include the capability to monitor, detect, communicate and delineate the contaminated areas; fortunately, our armoured as well as the mechanised forces are nuclear capable. The need is to ensure that all the capabilities and equipment are fully functional and are at their operational best. We also have the limited capability to fight dirty which means, at the level of the theatres, strike corps or in some case the pivot core, we have dedicated forces based on brigade groups, such as armoured brigade supported by the infantry brigade which will be fully kitted and will be able to operate within the vicinity

of the contaminated areas and fight with them for limited durations. This is a very important capability that we have and it is being further progressed to the substantial level. This is the most potent signal to any adversary that we are prepared to undertake operations under any eventuality. Combined with this, is the decontamination capability and nuclear-hardened command-and-control system.

With this passive capability, we need adequate training and this training comprises general awareness among all the sections and ranks of troops. We also need specialised training for engineers, command-and-control elements, staff training for specialised staff work in a nuclear environment and also periodic training exercises.

As far as active CBRN measures are concerned, there is a need to develop a counter-capability to take out Pakistan's TNWs and their delivery means at the particular moment in the TBA when their control has been delineated.

Active measures involve specific targeting that involves reconnaissance, intelligence, and intercept. Presently, we lack this capability, and at best, we can target subsonic missiles but have no capability to target an incoming ballistic missile or any other system which could be used to deliver.

We should acquire the latest air defence weapons. This is a capability that we should concentrate on and induct as soon as possible. Both the Russians and the Americans have some inbuilt capability to intercept TNW.

### **Offensive and Defensive Operations by Indian Army in the Nuclear Environment: Preparations, Training and Conduct**

Strategic relationship between Pakistan and India is best defined by the strategic triangle defined by nuclear deterrence, proxy war or jihad as they may call and conventional asymmetry. To achieve strategic stability, we have to look for the deterrence stability, crisis stability and the arms race stability between the two nations.

Pakistan intends to deny India any conventional response with nuclear blackmail by supposedly lowering the nuclear threshold. Pakistan has built up its conventional and nuclear deterrence capabilities including TNWs which are essentially meant to counter India's response. However, India needs to understand that it is not necessary that Pakistan will go nuclear at an early stage. It is also not necessary that Pakistan will go

nuclear (as 'only' response) as it has raised many new formations in the last few years, which give it the capability to fight conventional warfare at a greater level.

India's nuclear policy is of nuclear deterrence, NFU and massive retaliation. As far as army operations are concerned, be it conventional/offensive or punitive operations, they have to be planned and won under nuclear threshold. In case Pakistan escalates to a nuclear level, then we have to be prepared to fight dirty.

Here comes the issue of preparations. The first thing to question is how prepared the army is for the conflict? Where exactly Indian Army stands? There is always an ongoing conflict of priority that is, whether to equip and modernise forces for conventional operations, assuming no nuclear threat owing to nuclear deterrence or equip and train the forces holistically to fight in the nuclear environment.

Conduct of operation in nuclear conditions must be included as part of war gaming and discussions at formation level. If we have to be prepared to fight dirty, then the equipment required have to be made available and their serviceability should be maintained. We need to build capabilities like C4ISR, joint operations capabilities, precision capabilities not just in terms of precision fire but in terms of precision manoeuvres to be taken, capabilities in terms of the vertical envelopment and vertical forces, cyber capability and force management capabilities as well.

We seek a punitive deterrence against Pakistan and, to this end, a proactive operation strategy aim at pre-emption, dislocation and destruction of fleet. Its characteristic is essentially defined by short notice and intense, proactive, escalatory and operational. Over the period of time, offensive operations in a nuclear environment have matured in terms of force capability, thought process and operations. The capabilities in terms of offensive as well as defensive measures and training have been addressed. The key features of CBRN defence are much into place.

The training which is being carried out is in the right direction in which you have an individual training and collective training to that extent, you have each formational level from the division to command, various structures consisting of NBC platoons and company and training establishments at school coming at central training establishments. We need to do more. We need to stabilise our CBRN protocols and

training and integrate at national and tri-services levels. We need to address our deficiencies in information produced by entity (IPE) and generate adequate indigenous capability to this aspect. We also need to enhance stimulation and test capabilities as such. Sea capability is very important and must be integrated with the present air force structure system. Moreover, we need to invest in Special Forces and Para Forces. Finally, if we have to fight future wars under such an environment, we need to have jointness, integrity and interdependability between services, and for this, CDS should be very much in place. Moreover, we are weak in execution, that is, we demonstrate capability but it must match with the execution.

### **Air Operations in Nuclear Environment**

IAF Chief, Air Chief Marshal BS Dhanoa recently said, “the IAF has the capability of locating and striking nuclear and other targets in Pakistan....We have a draft nuclear doctrine. It is answered in that—what happens when the enemy decides to use nuclear weapons on us? As far as IAF is concerned, it has the ability to locate, fix and strike and that is not only for TNWs but for other targets across the border (as well)”.

### ***India's Macro-Level Nuclear Reality***

India is very much engaged in protracted counter-insurgency operations—attention diversion—and therefore, the leadership is not concentrating on nuclear war scenarios. Therefore, we as military planners as well as the experts from the strategic community should be prepared for any unpleasant eventuality.

India has stated its position of NFU and massive retaliation.

It can continue to exercise the option of conventional offensive below nuke threshold. There is enough space and scope for us to launch significant conventional operations even with the nuclear threat of Pakistan. We need to manage escalation and de-escalation control. If attacked, we need to intercept a few nukes, if not all, keep critical elements intact, take a quick decision for response and if the political executive dithers or delays accelerate conventional offensive under NBC environment.

There is a need for repeated training and education of nuclear operators and a decision chain for such a scenario because they are changing at

a very fast pace. We need to repeatedly revisit the nuclear operational doctrine.

### *Military Considerations*

A powerful nuclear-capable military is the best deterrence. And for that, we need to modernise. However, the defence allocation is just not enough to meet the requirements. Nuclear detonation is followed by a very powerful blast, fire and radiation. The free electrons emitted affect radio waves, especially at lower frequencies in the range of radar, very high frequency (VHF), ultra-high frequency (UHF). EMP generates high voltages that can destroy unshielded electronics. There is a need to war-game actions under EMP effects. For the military, operational nuclear effects are in the context of force protection and the ability to respond.

### *Pakistan's Tactical Nuke Approach*

Pakistan hopes that a limited nuclear strike offers a quick tactical victory through speed and penetration against critical targets. Pakistani HATF 9 or *Nasr* is a solid fuel, low-yield, subsonic surface-to-surface, tactical missile with 60-km range and a 500-kg warhead. It is used like an artillery system with four missiles fired simultaneously at the target area because of the low yield of the weapon at any given time. Indian equivalent is *Prahaar* which is a replacement for *Prithvi-I*. India needs area denial (AD) capability to intercept these slow-moving missiles. Pakistan hopes that a quick strike could induce delays in the Indian decision-making cycle.

### *IAF's Defensive Considerations*

- Capability-building and demonstration contribute to deterrence.
- Early warning and attack assessment network of radars, other sensors and processing stations.
- A fail-safe communication system to link the surveillance, early warning, command-and-control systems with the nuclear forces (C4SR).
- The ability of air elements to absorb the enemy's first strike through dispersion as well as redundancy and remain operationally efficient.
- Survival of decision makers and other support services through active and passive means.

- Provide air defence to the IAF, surface forces and national VAs/VPs.
- Anticipating how EMP will affect the communications equipment, fly-by-wire and other on-board computers, electronics and evolve counters.

### *IAF's Offensive Considerations*

- IAF resources for nuclear mission—earmarked, disbursed and secured.
- Integrated satellite, aerial and ground-based surveillance system to gather data for 'targeting' in place.
- Adequate processing facilities for rapid re-targeting based on event templates, current intelligence and higher inputs.
- Prepositioned nuclear warheads, including nuclear free-fall bombs, air-launched missiles and modified aircraft.
- Relevant NC3 support systems.
- Plan to kill the enemy's second strikeability by targeting higher direction centres.
- Simultaneous deep operations to disrupt the enemy's preparation and movement. Inhibit or deny vital enemy-operating systems (C2, logistics, air defence).
- Targeting transportation networks and the Lines of Control (LoC) to slow the forward movement of enemy armoured forces.

### *IAF's Offensive Capability*

- Nearly 50 per cent fighter fleets have nuclear weapon carriage capability—adequate numbers modified.
- Free-fall nuclear bombs, supersonic BrahMos (450 km), *Nirbhay* long range (6 m, 1500 kg) (1000 km), subsonic cruise missile (nuclear warhead 300 kg). Tree-top flight and loitering capability supplements BrahMos.
- Strategic weapon-carrying aircrafts would need air defence fighter escorts and electronic warfare (EW) escort aircraft, and airborne early warning and control system (AWACS) back-up.
- Simultaneous attack on many targets for massive response to nuclear tactical attack without dithering.

- Target enemy airfields and silos from where nuclear and other major offensives can be launched.
- Other most appropriate targets include the enemy's centre for political and military power, NBC capabilities, communications, command, control and intelligence (C3I) facilities and air defence facilities.

### *Army's Nuclear Operation Considerations*

- A TNW can threaten the employment of mass formations and forward fixed operating bases.
- Field commanders may be forced to ensure dispersal, survivability and force protection.
- Isolation of units, mass casualties and loss of command, control (C2) capabilities will necessitate semi-independent operations and decentralised control. It may add functional stress.
- A TNW can alter terrain and create obstacles such as fallen trees, fires, craters, rubble and radiation. Creation of obstacles will deny terrain and slow the counter-attacks.
- The striking force may have to cross areas contaminated by fallout and initial radiation.
- The army may have to replace units in case of tactical nuclear attack in TBA.
- Only disciplined, well-trained and physically fit units can function well in NBC environment.
- Commanders who understand this must provide soldiers with a strong, positive leadership, instil aggressiveness and ensure good mental and physical preparation. Train junior leaders to think and operate independently.
- In a nuclear environment, decisive battles must be greatly compressed and campaigns accelerated.

### *IAF Support for Army*

- IAF would support Indian Army's offensive and defensive operations under nuclear environment.
- Create Air superiority in TBA.

- Air umbrella to surface strike forces.
- Interdiction missions.
- Fixed wing and rotary wing logistic/replenishment support.
- Mass Casevac/Medevac in case of nuclear attack.

### ***Humanitarian Assistance and Disaster Relief (HADR)***

- IAF will support nuclear disaster relief operations at the national and tactical level.
- Move disaster management teams, NBC equipment and medical supplies.
- Set up rapid air mobile hospitals.
- Casevac / Medevac handling of contaminated patients.

### **Maritime Operations in Nuclear Environment**

The substantial difference between the conventional operations under the nuclear overhang and nuclear operations stand to get blurred in naval operations, especially those involved in mature naval forces with reasonable capacities. Our naval operational thinking, therefore, consists of five temporal faces in the nuclear environment. First is a dissuasive operation where you try to dissuade or discourage the others to possess nuclear weapons. Second is deterrent operation; here, the main issue involved is with the nuclear signalling and the national resolve to follow on the nuclear doctrine. Third is the issue of preparedness which can show that our army, navy and air force is ready to shift from the contingency of conventional to nuclear conflict. It involves capacity, capabilities, stressing the difference between the capabilities and capacities, command-and-control mechanisms, and demonstrations—demonstration through exercises, strategic communications and think tanks. India is particularly hopeless in leveraging track two and this is the area we need to build upon. Fourth area is of curative actions wherein the warfighting area is concerned with stressing on joint operations. Submarine operations tend to dominate in terms of warfighting and in fact, the entire spectrum of nuclear warfighting. Underwater operations are operations of choice. What we will do as a navy is to switch over from concentrated operations to dispersed operations.

Indian navy can operate in a dispersed fashion unlike the earlier case. Much more stress should be on dislocations than simply on formations. This is a part and parcel of nuclear signalling which is part of the nuclear deterrence. Carrier operations are worst affected in actual fighting. Support infrastructure in terms of dockyards, maintenance, and so forth are extremely vulnerable and this vulnerability needs to be addressed in some serious fashion. The next point of concern is about survivability. Every ship has the ability to operate for a protracted time in a nuclear-contaminated area and this is rehearsed on a regular basis. The next is the question of retaliation. The retaliation in the nuclear triad is best handled by the navy and submarine forces, in particular. It is comforting to know that Indian Navy is progressing in this direction; however, there is some debate regarding the budget allocation.

## ***Session II: Nuclear First Use Policy and BMD: System and Structure***

### **Conceptual Aspects**

The first question which is important to ask is whether Pakistan has TNWs or not. The answer is yes but there is a problem in operationalising and militarising them. China is continuously helping Pakistan and there is no reason why they have not given this technology already to Pakistan. Therefore, as planners, we must plan for the worst-case scenarios. The worst case is that Pakistan does have TNWs in the form of *Nasr* and HAFT 9. These are based on the Chinese vehicles.

The second question is will Pakistan use them? The answer to this is that Pakistani army is a very professional army and they understand the repercussions of using the threshold. It is nothing more than nuclear brinkmanship. They will not use TNWs until and unless they are pushed into the corner. This is the reason why we must not shy away from conducting the operations. It is important to leave the job of reading nuclear red lines to strike corps commanders and above. If the people in the armed forces feel that India is pushing Pakistan towards that red line, the plan can always be modified. The purpose should be to plan for conventional operations and nuclear escalation to be dealt by the higher command.

BMD is a system which protects from ballistic missiles, that is, basically having some weapon system into space, which can knock down the incoming ballistic missiles. The establishment of India's BMD

programme dates back to 2002. It was questioned initially that if the United States is not able to develop Strategic Defense Initiative (SDI) what are we trying to achieve? However, we have come a long way.

India going for BMD does not mean that we are trying to change our policy or doctrine. When the United States went for the Star War programme, the Russians felt that they have to do something or else the United States will launch the first strike against them. The fears were genuine because when you have a protection, you feel that now you can hit the opponent and he cannot hit you back. However, that also means that the opponent has to find ways and means to defeat the adversary's advantage. There are two or three ways of doing it. One is to go for the BMD itself. Two is to increase the number of missiles in its arsenal and three is to have technological improvement in the missile so as to defeat the BMD system.

The Indian system has been Pakistan-centric. The question to ask is that what we are looking for from the BMD systems. Is it for ballistic missiles or for first use or for positioning of assets in case of NFU or raising the alert status of one's own assets or for prepositioning or raising the alert command forces?

For targeting the enemy's strategic assets, we need to find out where the strategic assets actually are, and for this, we need surveillance and human intelligence. The C4ISR is the requirement for the BMD systems. The same command-and-control structure is required when a nation declares itself as NFU.

The entire issue can be concluded in three main points. One, we need BMD systems for our own defence; two, the NFU systems require us to work more on the BMD systems, absorb first strike and react; and three, our policy of NFU is a very balanced policy and despite the BMD systems, we are not planning to change this policy.

### **Technological and Deployment Aspects**

When India began its quest for the BMD programme, it had a background of the ballistic missile which proved to be helpful. It was started as a technology demonstrator programme that aimed to identify how to kill missiles in endoatmospheric and exoatmospheric regions.

Having a BMD system helps India negate the nuclear blackmail by the opponents. It was found that a successful BMD system could preserve the nuclear systems, command-and-control structures and could also

augment the second-strike capability of the nation. For that, we needed to have a BMD structure.

In keeping with the effectiveness and cost involved, there is always debate on the need of acquiring a BMD system for the nation. Deploying multidimensional systems to safeguard our country from ballistic missiles would increase the public and government confidence. It also generates an impression in the minds of the adversary that nuclear weapons' first strike may not result in the intended result or destruction. Following are the deployment options available:

- Option 1: Total protection of land and sea against all kinds of threats. However, the system is too expensive.
- Option 2: Protection of critical infrastructure, major economic cities, and so forth. Again, the cost involved in it is very much.
- Option 3: Protection of nuclear structures, command-and-control structures and important metropolitan centres.
- Option 4: Protect the political leadership.

India is exercising its BMD options in third and fourth point. It is trying to develop the capability to engage ballistic missiles in an adaptive manner. The programme is divided into two parts. In the first phase, we have designed missiles to engage at 1500 km and in second phase, up to 5000 km. For this, we need to identify technologies for the future, research and development of advanced technologies, technological cooperation in areas and to address technological competence in critical areas.

# CONCEPT NOTE

## *General*

The former Director General of the Strategic Plans Division (SPD) and the then Adviser to the National Command Authority as well as the Inter-Services Public Relations (ISPR) justifying the development of TNWs by the country stated that Pakistan seeks deterrence across the entire spectrum of conflict, that is, at the strategic, operational and tactical levels. This full-spectrum deterrence leads to the fundamental summation, that of Pakistan believing that it can, in effect, deter India and, if required, control nuclear exchanges after the TNWs have been detonated in the battlefield. It also presumes that Pakistan can continue its 'proxy war laced in terror policy' against India after threatening India's conventional military advances with retaliation by nuclear escalation, forcing New Delhi to not react in order to preserve its sovereignty.

## *Pakistan's First Use Nuclear Doctrine and TNW*

It is well established that Pakistan has a nuclear policy of 'first use', nuclear warfighting, offensive deterrence linking conventional conflicts with nuclear escalation, brinkmanship with calibrated instability of nuclear deterrence. It has repeatedly reiterated the India-centric approach of Pakistan's nuclear weapons and reasoned the requirement of TNWs to negate India's 'Cold Start' strategy. It believes that at some point in the conflict spectrum, it will have to confront the Indian Armed Forces on Pakistani soil and will need TNWs to block the offensive. However, India maintains its nuclear doctrine of NFU and massive retaliation, and reiterated that the use of nuclear weapons against India or the armed forces anywhere will invite massive retaliation.

## *Nuclear Environment*

Since Pakistan is unlikely to relent on the use of terror against India and the tipping point can neither be predicted nor stated, there is a need for the Indian Armed Forces to prepare to wage war in support

of political goals if and whenever deemed necessary. The strategic art should aim to keep the war below nuclear escalation, the genius lies in conceptualising objectives and targets that do not allow Pakistan to use nuclear weapons. However, the planning cannot be based on the assumption that war will not escalate to nuclear.

### *Ready to Fight Dirty, if Required*

There exists a strong international public opinion against war between nuclear weapon states on account of the attendant risk of triggering a nuclear weapons exchange. To counter Pakistan's policy of nuclear First Use and the use of TNWs, Indian Armed Forces must prepare with appropriate doctrine, material, force structures, tactics and training directed towards a demonstrated capability to conduct successful military operations in a nuclear environment. This will also convey our resolve to undertake conventional operations even against the backdrop of a nuclear threat.

### *Operational and Tactical Facets of Operations in Nuclear Environment*

Operations under nuclear attack should be conducted relentlessly in spite of casualties. Measures must be put in place to overcome the effects of nuclear weapons and continue offensive and defensive operations. The operational preparations would require consideration of the geography, topography and climate in the likely areas of nuclear weapon employment by the adversaries. Survivability in any battlefield environment is achieved by the combined application of sound protective measures and operational practices that reduces a force's vulnerability to detection. Rapid and effective post-strike reconstitution of combat power is essential for the conduct of both, the defensive and offensive operations in the nuclear environment.

### *Ballistic Missile Defence*

India is developing BMD based on survivability in the NFU context. Building a BMD system clearly provides valuable benefits of intelligence, reconnaissance, surveillance, detection, tracking and situational awareness. Some argue that BMD can change the nuclear order as well as alter strategic stability and can encourage states with BMD to engage in offensive actions or even first strike on the premise that they are invulnerable to retaliation. They point that the system and

infrastructure in support of BMD are also the prerequisites for a nation embracing first-strike posture. Therefore, an adversary may be tempted to strike first given the fact that technology for BMD can be applied to first-strike strategy.

### *Conclusion*

India clearly recognises that nuclear weapons are strategic deterrence weapons. However, Pakistan's acquisition of TNWs and its threat to use them as weapons of warfighting necessitates us to evolve a clear and unambiguous strategy. TNWs cannot halt the Indian Forces from conducting operations as they are equipped and trained for this, which has blunted Pakistan's full-spectrum deterrence strategy.

### *Aim and Scope of the Seminar*

The seminar seeks to evaluate the requirements of preparations, training and conduct of operations in nuclear conditions. The BMD creates an infrastructure which overlaps the infrastructure required for a First Use policy. The major issues for discussion during the seminar were:

- The NATO–Warsaw Pact Policy and preparations for tactical level, nuclear warfighting during the Cold War.
- Pakistan's policy of nuclear warfighting at tactical level.
- Conduct of operations (offensive and defensive) by Indian Army in nuclear environment. Training and preparations required.
- Air operations for strategic objectives and in support of the Indian Army in nuclear environment.
- Maritime operation below the nuclear threshold.
- Comparative analysis of BMD and nuclear first-strike requirements.

***Programme***

The proposed programme and session details are attached separately.

***Participants***

The participants will be from the three services, strategic community, veterans, academia and media.

***Venue***

Room No 129D, South Block, New Delhi.

***Seminar Coordinator***

The coordinator for the seminar is Col. Akhilesh Kumar, whose e-mail address is [akhileshk854@gmail.com](mailto:akhileshk854@gmail.com) and contact number is 9811685877.

## PROGRAMME

Time	Event
1030–1100h	<b>Tea and Registration</b>
1100–1105h	Welcome Remarks: Lt Gen BS Nagal, Param Vishisht Seva Medal (PVSM), Ati Vishisht Seva Medal (AVSM), Sena medal (SM) (Retired), Director, CLAWS
1105–1130h	Keynote Address: Adm Sunil Lanba, PVSM, AVSM, Aide-de-camp (ADC), Chief of Staff Committee (COSC) and Chief of Naval Staff
1130–1320h	<b>Session 1 : Conduct of Operations in Nuclear Environment</b>
1130–1140h	Opening Remarks by Chair: Lt Gen AK Singh, PVSM, AVSM, SM, Vishisht Seva Medal (VSM) (Retired)
1140–1155h	The NATO–Warsaw Pact Policy and Preparations for Tactical Level Nuclear War-fighting during the Cold War and Pakistan’s Policy of Nuclear War-fighting at Tactical Level : Lt Gen AK Singh, PVSM, AVSM, SM, VSM (Retired)
1155–1225h	Offensive and Defensive Operations by Indian Army in Nuclear Environment (Preparations, Training and Conduct): Lt Gen Philip Campose, PVSM, AVSM**, VSM (Retired) Lt Gen A B Shivane, PVSM, AVSM, VSM (Retired)
1225–1240h	Air Operations in Nuclear Environment: Air Marshal Anil Chopra, PVSM, AVSM, VM, VSM (Retired)
1240–1250h	Maritime Operation in Nuclear Environment: Vice Admiral Pradeep Chauhan, AVSM**, VSM (Retired)
1250–1320h	Interaction including Comments by the Chair
1320–1410h	<b>Session 2 : Nuclear First Use Policy and Ballistic Missile Defence, System and Structure</b>
1320–1350h	Nuclear First Use Policy and Ballistic Missile Defence, System and Structure: Lt Gen Amit Sharma, PVSM, AVSM, VSM (Retired) Dr S Vasudeva, Ex-Defence Research and Development Organisation (DRDO)
1350–1410h	Question and answer
1410–1415h	Vote of Thanks : Lt Gen B S Nagal, PVSM, AVSM, SM (Retired), Director CLAWS
1415h	<b>Lunch and Dispersal</b>