

Nuclear Related terms and Theories

India became the sixth state with nuclear weapons in May 1998. After the explosions, the Draft Report of the National Security Advisory Board was released with the intention of encouraging public debate. This document outlines the broad principles for the development, deployment and employment of India's nuclear forces. Since the next chapter focuses on India's emerging nuclear strategy, which would obviously be in synchronization with the nuclear doctrine, the two key factors of minimum credible deterrence and no first use along with other nuclear related terms are explained in this chapter.

The theory of deterrence, which is the basis of nuclear thought, which has evolved over two decades will be analysed first. While most nuclear philosophies and strategies have evolved in the west after the advent of the nuclear era, the nuclear related terms will be explained with particular reference to India and Pakistan in the South Asian setting. The nuclear related terms, which have been explained, are listed below:

- ➔ Massive Retaliation, MAD (Mutually Assured Destruction) and Flexible Response.
- ➔ Deterrence Theory.
- ➔ Deterrence by Punishment.
- ➔ Deterrence by Denial.
- ➔ Minimum Credible Deterrence & Recessed Deterrence.

- Counter value and Counter force targets.
- First and Second Strike.
- Nuclear Reaction Threshold.
- NCA and NCP (Nuclear Command Authority and National Command Post).
- Nuclear Triad.
- All Horizons.

Massive Retaliation, Mutually Assured Destruction and Flexible Response:

The above three terms are products of the Cold War era and the US-USSR changing nuclear equations of that era and have little relevance to the Indo-Pak-South Asia scenario. However since these are terms related to the evolution of nuclear strategy, it is essential to understand the terms in their correct perspective.

The term 'massive retaliation' came about from the US realization in the early 1950s that USSR must be deterred from any conventional adventurism in Europe. This was done by maintaining overwhelming nuclear superiority both, in the number of warheads and in the range, extent and spread of nuclear systems and by surrounding the USSR with airbases under NATO. The aim was to convey to the Soviets that if they threatened Europe, the US would have no option but to use nuclear weapons on the Russian heartland. The Soviets were disadvantaged because of the great imbalance that existed between the US and Russian nuclear arsenals upto the 1960s. Hence 'massive retaliation' was US nuclear policy against USSR at that time.

In 1960, the USSR developed the capacity to threaten the US mainland through land based ICBMs. It was only by the mid 60s that USSR had sufficient members to constitute and assured second strike capability. It then became clear to the US that 'massive retaliation' would not work because a response by the USSR would result in MAD (Mutually Assured Destruction), where at the end of nuclear war there would be no winners. This gave rise to the theory of flexible response.

Flexible response was the reaction to the changed nuclear equation. Flexible response meant that US nuclear response would be more measured and limited. In 1962, the Secretary of Defence Robert McNamara first proclaimed the 'no cities' doctrine, implying that US would not attack Soviet cities with nuclear weapons. Due to improvement in nuclear technology it became possible for the US to carry out precision strikes on Soviet missile launch centres. Therefore US expected, that since it would have attacked only military targets, USSR would respond accordingly. The US also attempted to be one up in every stage of gradual escalation and its response could be flexible as per the developing situation. This concept came to be known as the theory of flexible response and escalation dominance. The veracity of this theory was questioned by many experts and eventually strategic parity between USSR and US forced the US into the realm of arms control.

The theories have been listed to bring out the folly of excessive stockpiling of arms and to illustrate that large nuclear arsenals do not necessarily mean strategic stability. The shift from massive retaliation to mutually assured destruction to flexible response is a useful background to understand and to illustrate what

India's emerging nuclear posture is likely to be, which the focus of the next chapter is.

Deterrence Theory :

The concept of nuclear deterrence has dominated international strategic theory during the past two decades. According to Robert Jervis, deterrence theory is probably the most influential school of thought in the American study of international relations. Deterrence is simply the persuasion of one's opponent that the costs and/or risks of a given course of action he might take will outweigh its benefits.¹

It is not intended to carry out a detailed analysis of the deterrence theory, which is a subject of study, by itself only to bring out the broad parameters, to enable an understanding of other terms related to deterrence in the south Asian context.

The advent of the nuclear weapons changed the manner in which civilian analysts looked at military strategy. The first of the great perceptive strategists of the nuclear era was Bernard Brodie, who in 1946 published an article on nuclear strategy that was accepted and followed only 15 years later. One of the major predictions made by Bernard Brodie was that the only defence against the nuclear bomb would be the ability to retaliate in kind. Its only role would be to deter war.² this went totally against conventional strategy, which used weapons and

1. Frank C. Zagare. 'The Dynamics of Deterrence', Chicago & London, University of Chicago Press, 1987, p. 7.

2. Brodie. 'The Absolute Weapon, Atomic Power and World Order', New York, Harcourt Brace & Co., 1946.

munitions for termination of war. Upto the 60s, with an overwhelming superiority in nuclear weapons and delivery systems, the West was sure that nuclear weapons deterred a conventional arms aggression by the USSR in central Europe. The word 'deterrence' was therefore first used to mean deterring, with nuclear forces, a superior conventional force bent on aggression.

However, deterrence as is commonly understood today and is applicable in the South Asian context and as articulated in India's nuclear doctrine is the mutual stand off between two powers who have a latent or openly hostile relationship and who both possess nuclear weapons. In such a relationship deterrence is supposed to work at the nuclear level but no such claims are made at the low intensity conflict level. The Kargil episode that happened after both India and Pakistan has nuclearized is an apt example. K. Subrahmanyam, Chairman NSAB (National Security Advisory Board) has precisely summed up deterrence in the Indian context. "The core of deterrence especially for a country which commits itself to no first use is its ability to carry out punitive, unacceptable retaliation. This is not cold war language but to communicate to the nuclear warriors who believe in the use of nuclear weapons first. Unless one opts to allow his nation and society to be destroyed in a cold-blooded first strike by the adversary and not do anything to deter him, it is logical to make it clear to such nuclear adversaries, the consequences of his resorting to a first strike. The word unacceptable damage does not carry today the connotations of the MAD (Mutual Assured Destruction) era of Robert McNamara. Therefore those who believe in wielding nuclear weapons to intimidate other nations and in the first use of nuclear weapons have to be deterred by spelling out the consequences of their actions."³

3. K. Subrahmanyam. 'The Logic of Nuclear Deterrence', Times of India, Oct. 4, 1999.

Deterrence by Punishment:

Deterrence by punishment seeks to prevent aggression by threatening unacceptable damage in relation, by the threat of punishment. Though a western concept, this first view of deterrence by punishment as espoused by Bernard Brodie is what is alluded to in India's draft nuclear doctrine. India in the South Asian context is the status quo power Vis a Vis Pakistan, which is viewed as the revisionist power which wants to alter the status quo existing in Kashmir. The general theory holds that the status quo power has no desire to go to war, but in response to the revisionist power's aggression, which being nuclear, the status power is prepared to absorb and then inflict catastrophic punishment in reprisal or revenge. The notion by which use of nuclear weapons would be deterred has come to be called deterrence by punishment and has some logic since it has been accepted world wide actual use of military weapons cannot be harnessed to any meaningful military objective.

Deterrence by Denial :

The notion of deterrence by punishments was challenged by an opposing view that suggested nuclear deterrence could work only if nuclear weapons are mated with a strategy that seeks victory in such a war. The theory was applicable only in the context of USA, erstwhile USSR, but is of relevance depending upon the future course of nuclear weapon deployment in South Asia.

Briefly analysts assume that deterrence can fail and they insist on the need to prepare for that eventuality. The devastation of nuclear war makes deterrence the first choice but not an alternative to defence. Preparing for defence, even in the context of nuclear war makes sense because good defence reinforces deterrence

because it accounts for the possibility of deterrence failure.⁴ The logic of deterrence by denial, being the US capability to go through 'Nuclear war fighting' and emerge winner. Denial strategies assume importance in the South Asian context because of the Chinese factor. Rajesh Rajagopalan writing in Strategic Review states "Denial Strategies have become more important because denial is now the central purpose of American, Russian, British and French arsenals, and it is also becoming increasingly central in Chinese strategic thought. Beginning in 1987, Chinese thinking as moved from a limited deterrence doctrine, which falls between minimum and maximum deterrence doctrine and includes a limited nuclear war fighting capability. This has serious implications for India's emerging nuclear posture, which is discussed in detail in the next chapter.

Other related deterrence terms:

The other types of deterrence which range from collective deterrence, which is at the lowest rung of the ladder to maximum deterrence which is at the highest rung is outlined in the deterrence ladder below:

DETERRENCE LADDER

<u>TYPE OF DETERRENCE</u>	<u>STRATEGY</u>
Maximum	Massive retaliation
Mutually Aggressive	MAD (Mutually Assured Destruction)
Finite	Maximum deterrence with lowest finite arsenal
Limited	Defined arsenal including tactical nuclear weapons

4. R. Rajagopalan. 'Nuclear Deterrence', Asian Strategic Review 1998-99, p. 151.

Minimum	Lowest level of weapons that can cause such destruction which if imposed on the adversary would deter it
Existential	Credible nuclear arsenal, not necessarily country specific
Recessed	
Collective	Non-weaponised with option to weaponise, committed to no first use
response	No nuclear arsenals under national control. Multilateral Collective to rogue nuclear threat.

Source : Jasjit Singh, 'A Nuclear Strategy for India' in 'Nuclear India' (New Delhi: Knowledge World, 1998), p. 310.

Minimum Credible Deterrence and Recessed Deterrence:

The above terms are discussed a little more in detail since India's draft nuclear doctrine has opted for a 'minimum credible deterrence', while many leading analysts including Air Cmdre Jasjit Singh, Director IDSA, advocate recessed deterrence as an alternative. Minimum credible deterrence means the ability to retaliate with confidence and credible capability by a country, after an adversary has used his nuclear weapons against that country. Survivability of the nuclear arsenal therefore becomes a crucial characteristic so that an aggressor is not tempted to believe that his first strike will seriously degrade his opponent's ability to retaliate. The doctrine of minimum credible deterrence is based on the concept that the nuclear policy, strategy and posture would be based on the minimalist principle. The minimalist principle is in relation to the capability sought, size of the arsenal, the costs involved, the level of retaliation required and the nuclear posture to be adopted.

Recessed deterrence, on the other hand may be defined as “credible nuclear weapons capability, which a country is able to draw upon for political and diplomatic purposes and is able to deploy a nuclear arsenal within a defined time frame and effectively use it physically for military purposes”. In the Indian context Air Cmdre Jasjit Singh is of the opinion that a recessed deterrence posture itself would provide a fire-break in escalation of tensions beyond a certain level, whereas Rear Admiral Raja Menon holds a diametrically opposite view. According to him, “Recessed deterrence is a folly which does not differentiate between first and second strike, between vulnerable and invulnerable arsenals, between maintaining the stability of the status quo and the disadvantages of disturbing it.⁵ the size of India’s nuclear arsenal, its policy and nuclear posture will depend on whether it finally adopts minimum deterrence or recessed deterrence.

Counter Value and Counter Force Targets:

These terms relate to targets for nuclear weapons and also have their background in the post II World War era. In 1948, the Joint Chief of Staff of US prepared a war plan Called ‘Half Moon’ which was aimed at crippling the Soviet Union industrially using nuclear weapons. Seven targets were chosen and three atomic bombs per target. Each of these was termed counter value targets. It was in 1962 that Robert McNamara, US Secretary of Defence first proclaimed the ‘no cities’ doctrine, the aim being to pinpoint Soviet missile launch centers and military targets instead of industrial centers. These targets were termed counter force targets. In today’s nuclear terminology also, counter value refers to non-military targets and counter force to military targets.

5. Raja Menon, *A Nuclear Strategy for India*, (New Delhi: Sage 2000), p. 173.

First and Second Strike :

The terms first strike refers to a country launching its nuclear weapons first, either in a pre-emptive strike or to restore an unfavourable situation caused by the adversary's superiority in conventional forces. Prior to discussing the meaning and implications of the second strike, the different kinds of first strike are explained below.

Minimal Demonstrative First Strike :

This implies a small yield nuclear weapon fired at a pre designated target after warning and in an area where there is likely to be minimum damage to life and property. The aim of the strike is to warn the adversary that any further escalation would mean a more serious response. In the Indo-Pak scenario, this would be the first step in the nuclear escalation ladder by Pakistan in response to a conventional Indian thrust either in the plains of Punjab or the desert sector in Rajasthan.

First Strike on Tactical Battlefield Target :

This implies use of one or more weapons on a battlefield target. In the Indo-Pak scenario, this would occur after the demonstration strike in case there has been no response from India. The targets could be an Indian Armour concentration as depicted in an imaginary battle setting by General Sundarji in his book 'Blind Men of Hindoostan' or even airfields or important armed forces communication centers. In a strike of this kind collateral damage in terms of civilian casualties will be more as compared to the demonstration strike but less in comparison to a counter value strike.

Disarming First Strike:

This term implies that the devastation caused by the strike is such that the adversary is totally disarmed. In actual fact, the term 'disarming' is misleading. Whatever be the nuclear capability of a country, even if it releases all its nuclear weapons in one spasm, it can at best, severely degrade but never disarm its opponent. The point at issue is that in a 'disarming' first strike, a large number of targets will be counter force targets; the logic being to take out the adversary's capability to launch a riposte and destroy completely his nuclear capability, while restricting civilian casualties to a minimum. Even an attempt at a disarming first strike requires highly sophisticated weapons with low circular errors of probability and fairly large arsenals, both of which are presently non-existent in South Asia. But the temptation, especially by a smaller state like Pakistan to try and equip itself for such a strike is to set off an arms race in the South Asian Region.

Decapitation First Strike:

This term has also undergone a different interpretation today as compared to what it meant in the cold war era. During the earliest years of the cold war, when nuclear strategy and forces were unstructured, both sides planned to destroy everything possible, including the capital and the leadership. McNamara, in his first posture statement, in a speech at Anu Arloor, Michigan, on 16 June 1962, had implied that it was infructuous to target the enemy leadership as this would lead to a loss of control. Leaders of military missile systems had by then developed the theory that in the event of the loss of state leadership, all weapons would be fired at one go, a possibility that McNamara wished to avoid. Decapitation then became unfashionable. In the late 1970s, the US began to fear

decapitation partly because Soviet submarines operating off the east coast could destroy east-coast cities with very short missile flight times, and partly because the numbers of Soviet missiles made such targeting a possibility. In retrospect, it would appear that a surplus of missiles and warheads to essential target requirements is the one factor that might lead a country to look at a decapitation strike. This background is necessary to understand that small arsenals in the Indo-Pak scenario are unlikely to lead to such thoughts. Not so in the Chinese case, where the number of missile and warhead systems are luxuriously abundant as compared to the number of Indian targets. Could a decapitation strike be considered a possibility in the Indo-Chinese scenario? The answer is yes. However, in the year since McNamara, the meaning of decapitation has shifted significantly. Today, decapitation attempts to separate the command from the missile sites and this could be done largely by attacking the communication links. As stated earlier, a decapitation strike is a declaration of intent to wage all out nuclear war, and a step likely to be taken by the large nuclear power that could, in theory, launch a decapitation strike and yet retain sufficient superiority to cow the victim state into not retaliating. This is the position China would find itself in by 2010 when its arsenal modification is complete.⁶ An Indian command and control system would need to be built to withstand a decapitation strike.

Second Strike:

The term second strike does not mean just a nuclear response to an attacker's nuclear strike. A second strike capability implies not only a second strike, but also a residual capacity to launch an attack inflicting unacceptable damage to the

6. Raja Menon, *Ibid.* p. 256.

enemy. The second strike must take into account the loss, which would be suffered due to enemy's first strike, the losses which would be suffered after launch of own second strike, be it due to enemy's ABM capability or own aircraft carrying nuclear weapons being downed and account only for nuclear warheads which are expected to arrive at the adversary's target and inflict unacceptable damage. This capability is termed second-strike capability and is particularly relevant to India, which has adopted 'no first use; as part of its nuclear policy.

No First Use:

The term 'no first use' in nuclear terminology refers to the nuclear policy of a nuclear weapon state that it would not use its nuclear weapons first but would reserve the right to retaliate in kind, were it attacked with nuclear weapons. India and China are the only two nuclear weapon states, which have a policy of 'no first use'. USSR, which had been pursuing a 'no first use' policy, withdrew its pledge in June 1993 due to the changed realities in Europe.

India's 'no first use' policy has been criticized since it puts India at a disadvantage. Logically viewed, it is not so. A country would retain a first use policy only if perceived it weaker conventionally against its adversaries or harbors hegemonistic ambitions. In the Indian context, according to Gen. Sundarji, "the first reason does not apply to India apropos China in so far as deployable forces are concerned because China cannot deploy more forces in Tibet than what it can maintain there; as far as Pakistan is concerned there is no inferiority. The second reason does not apply to India since India neither wants to play regional policeman nor does it harbor any hegemonistic ambitions. Therefore, a sober mature status

quo power like India, a unilateral decision of 'no first use' is in keeping with its declared policy of endeavouring for peace in the region and global disarmament".⁷

Nuclear Reaction Threshold:

This is a term that has assumed increasing importance, especially in the nuclear stand off between India and Pakistan and the Kargil episode and its implications on nuclear deterrence between India and Pakistan. The meaning of the term and the implications in the South Asian context is explained below.

Notwithstanding nuclear deterrence between two states, if a conventional war breaks out between them and is being waged with nuclear capabilities not being used but with nuclear threat lurking in the background, it would be the endeavour of both sides not to push the other to a limit where the use of nuclear weapons in desperation becomes highly probable. This assessed limit is what is calling the NRT (Nuclear Reaction Threshold).

The Kargil crisis brought out some very valuable lessons regarding the nuclear reaction threshold for both India and Pakistan. According to Rear Admiral Raja Menon, "The disparity in the Indian and Pakistan views on where the South Asian nuclear threshold lies was plainly seen during Kargil crisis. It is obvious that Gen. Musharraf assumed the threshold to lie at an absurdly low level. Reports emanating Islamabad seem to indicate that they believed the nuclear threshold to lie very slightly beyond any Indian response. This, according to them, was a practical demonstration that nuclearisation had nullified India's conventional warfare advantage. India, blithely unaware of these beliefs, mobilized for full-scale war.

7. Sundarji, 'India's Nuclear Weapon Policy', 'Nuclear Rivalry and International Order' (Sage Publications, New Delhi, 1996) p. 180.

India had obviously assumed that the nuclear threshold lay at some distant point where Pakistan's vital national interests were affected. India was proved right. The Kargil crisis has demonstrated that the sub-continental nuclear threshold lies territorially in the heartland of both countries and not on the Cease Fire Line".⁸

The concept and practicality of the nuclear reaction threshold is of paramount importance to both, crisis stability and nuclear stability in the Indo-Pak equation.

The nuclear related terminologies explained above related to what has happened and has been happening recently in the Indo-Pak setting in South Asia. The terms, which are going to be explained, fall in the realm of the future. These terms will be related to the subject of the next chapter, that is, India emerging nuclear posture and the likely shape it is to assume. In that sense, though the terms are old, they are associated, as far as India is concerned, with what is to happen in the future. The explanation of the terms follows.

The NCA & NCP (National Command Authority & National Command Post):

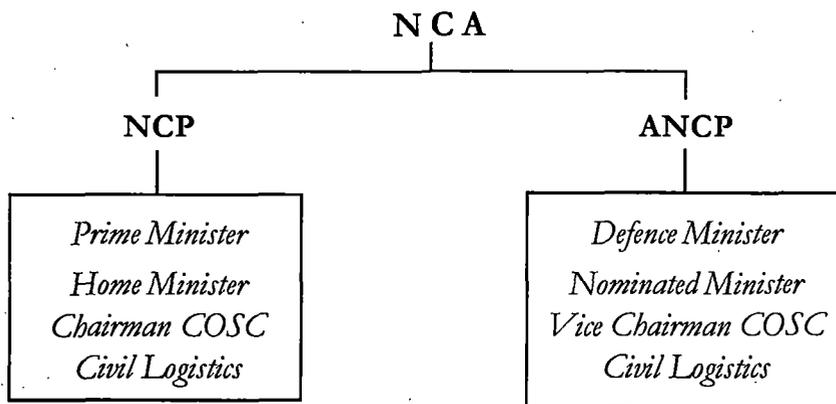
The NCA is the apex political body for making nuclear decisions in crisis, as well as after hostilities break out. In the Indian context the Prime Minister will head it. It will have a group for rendering necessary advice to the decision makers, which will consist of strategic, technical and civil service experts. It will also have the Responsibility for converting the political decision regarding nuclear response into executive action.

The NCP is the facility that enables the NCA to function effectively and communicate its decisions and monitors progress. It is essentially a robust

8. Raja Menon, Ibid. p. 116 & 197.

underground communication centre with ability to receive information and intelligence and disseminate these along with orders and instructions. If the NCA is the brain, the NCP is the nervous system including the sensory functions.

It stands to logic that the NCA would have to be split into two, one headed by the Prime Minister and another by a different political head. These two would perforce have to be physically separated to ensure security. This would entail location of the Prime Minister's party in one command post and the other party, to whom authority would have been delegated, in case of destruction of the Prime Minister's party, in an alternate command post. The suggested composition and division of the NCA into the NCP and ANCP (Alternate National Command Post) along with its functional objectives are given in the next page.



{Source: Raja Menon, 'A Nuclear Strategy for India' (New Delhi: Sage, 2000), p.270}.

Functional Objectives of a NCP:

- ➔ The ability to collect information of own and enemy forces unhindered during and after a nuclear attack.
- ➔ Continued safety of the personnel and equipment necessary to direct nuclear war.

- ➔ The ability to maintain uninterrupted communication to our own nuclear launch centers during and after nuclear attacks.

Nuclear Triad:

A nuclear triad implies a strategic nuclear force that has delivery capabilities that are simultaneously based on land, at sea and in the air, each leg of the triad having its own particular logic of existence and utility. Historically, air systems were the first to be developed in the form of bomber aircraft. The biggest disadvantage was that unlike the delivery systems that comprise the other two legs of the triad, it carries personnel on board. That, however, is also its biggest advantage since it is the only leg of the triad, which can be recalled after a launch. Land based delivery systems (SRBMs, IRBMs and ICBMs) which were developed next are the least expensive leg of the triad, but also most vulnerable to a first strike. The final leg of the triad is based at sea and consists of nuclear propelled fleet of ballistic missile submarines armed with Submarine Launched Ballistic Missiles (SLBMs). Easily the most expensive leg of the triad, this component is also most secure from a pre-emptive attack. Since nuclear submarines are mobile, and can remain submerged for months, they are virtually invulnerable. Therefore they are the most appropriate delivery system for an assured second-strike capability. The aspect of a nuclear triad assumes importance in the Indian context since the draft doctrine has spelt out that Indian nuclear forces will be based on the 'triad' concept.

‘All Horizons’:

An ‘all horizons’ nuclear capability, as the name suggests, is one that could strike anywhere on the planet. The nomenclature is derived from ‘four azimuths’, the targeting, and doctrine of the French Nuclear Strike Force, ‘the force de frappe’. No policy maker or analyst in India except Bharat Karnad has ever publicly advocated an ‘all horizons’ nuclear capability for India. The merits and demerits of the triad and all horizons will be discussed in the next chapter.