

LT.GEN (RETD) PRAN PAHWA COMMAND AND CONTROL OF INDIAN NUCLEAR FORCES

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While the Indian nuclear tests at Pokhran in May 1998 gave a new dimension to the “strategic culture” it also posed new challenges of devising a command and control system to ensure their effective use and safety. India has made considerable progress in missile development programme but not much has been written about the subject of nuclear command and control. It has been government policy to focus on “hard kill” weapons rather than expend funds on “soft kill” systems like command and control whose benefits are intangible and difficult to quantify. A command and control system is however, of vital importance as it enables the leadership to analyze the threat, plan responses and above all achieve “deterrence”. Apart from this it helps to guard against accidental or inadvertent launch of nuclear weapons by laying down foolproof procedures and safety measures. Notwithstanding the cardinal importance of command and control systems, this subject remains abstract and very little material is available to researchers. The author has therefore relied mainly on the US and Russian the USSR nuclear command and control systems and has based his knowledge of the Indian command and control systems largely on assumptions and conjectures.

Since nuclear warfare is an unexplored field in the annals of Indian war history, the Indian Joint Services glossary of Military Terms does not include the definition of “Command and Control”, the US department of Defense however defines “Command and Control” as the exercise of authority and direction by a purposely designated commander over assigned forces in the accomplishment of the mission. Command and Control functions are performed through an arrangement of personnel, equipment, communications, facilities and processes employed by a commander in planning directing, coordinating and controlling forces and operations in the accomplishment of the mission.

Since Command and Control is a new terminology which has assumed greater significance in the nuclear environment it warrants some elaboration. While “command” implies assigning a task to one’s forces, “control” involves monitoring and laying down certain constraints on their functioning through doctrine, standard operating procedures (SOPs) and software equipment called C4I2 in military parlance (command, control, communications, computing, intelligence and information).

Some distinctive features in formulating a nuclear command and control policy have been described by the author:

Political Control

In a conventional war, the political leadership sets the objectives of the war and leaves it to the military to prosecute the war. However, in nuclear war the decision to employ the nuclear weapons cannot be left to the military alone, thus political leadership becomes an integral part of the nuclear command and control structure.

Short Reaction Time

In a conventional war, even when taken by surprise, the forward elements engage the enemy while the rest of the country mobilizes the apparatus for the higher direction of the war. In nuclear warfare there may be no time to mobilize the nuclear forces to launch a retaliatory strike and hence the “second strike capability” assumes crucial importance. This requires standing organizations integrated with the political leadership through various means so that they respond immediately in a crisis.

Complex Hierarchical Structure

In conventional warfare, the chain of command is vertical while in a nuclear command and control system the classical military hierarchical system is bypassed. Procedures are so tailored that order can be passed from the highest level to the weapon crews simultaneously through sensors and other intelligence sources, making the structure complex and more technology dependent. This also poses the challenge of formulating foolproof checks in guarding against accidental or wrongful use of the weapons.

Vulnerability of Command and Control System

It is difficult to destroy all of the enemy’s nuclear weapons, but the accuracy of precision nuclear missiles and warheads have made the complex command and control systems vulnerable to destruction, resulting in decapitation of nuclear command centers and communication nodes. High yield nuclear explosions will generate strong electromagnetic pulse (EMP) waves that would knock out all the communications, electrical systems and computers, paralyzing the command and control systems. The competent authority for authorizing a retaliatory strike may also be killed or incapacitated. With the collapse of communication centers the commanders at various

levels would be left on their own, who may act independently. After this even if the political leaders of the countries manage to establish contact and agree to terminate hostilities, they may not succeed in ending the war.

Protection of Nuclear Command and Control System

In view of the importance of command and control systems the US in 1980 had allocated 7% of its defense budget to strengthen and update it. Following measures are recommended to ensure continuous and smooth functioning of the command and control system. The command centers should be located in underground shelters designed to withstand a nuclear attack. As nuclear war heads can destroy structures down to a depth of approximately 1000 feet, alternate underground command centers can be constructed. Where ever possible air borne, ship borne and mobile command posts should also be installed. Communications should have the ability to withstand EMP and the physical effects of nuclear blast.

Need for Decentralization

If the highest nuclear authority is incapacitated, the delegation of authority should be clear and predetermined as there would be no time for devolution of authority at the crucial time.

The US and Soviet Nuclear Command and Control System

Although very little information about the Indian nuclear command and control system is available, the US command and control policy is comparatively open. The Soviet Union, of course no longer exists but lessons can be drawn from a study of its systems. US nuclear systems do not serve as models for India as they comprise costly early warning reconnaissance and surveillance infrastructures, they can however provide some broad guidelines.

US Strategic Imperatives

The US nuclear policy was based on the premise that the retaliatory attack would be launched after enemy weapons impacted their targets. This was termed “prompt launch” and it included both launch on warning (LOW) and launch on attack (LOA). Prompt launch had a fundamental effect on the country's nuclear command and control system in the following ways:

- Sophisticated sensors became necessary to provide timely early warning. The time from the receipt of warning to the launch of retaliatory attack had to be compressed to 30 minutes.
- There was no time to make any significant changes in the predetermined plans after an attack had been launched .

- Authority had to be delegated and controls reduced to ensure that the response was effected on time.
- The National Command Authority (NCA) comprising the President and the secretary of Defense lays down the guidelines for the selection of nuclear targets. The joint strategic targeting planning staff (JSTPS) in consultation with the Joint Chiefs of Staff (JCS) make the war plan. There is very elaborate and complex attack warning and assessment system linked directly to the various nodes along the nuclear chain of command from the NCA downwards.

The Aerospace Defense Command receives warning of a nuclear attack and after it is confirmed by more than one source a teleconference is conducted with the National Military Command Center (NNCC) at the Pentagon. The President is then informed and a decision requested. If he decides to launch a retaliatory strike, he sends an Emergency Action Message (EAM) to the NNCC along with authentication code. The crews match the code with the code in their possession and after checking it with another crew gain access to the firing circuits. A policy of decentralization is followed and there is a predesignated order of succession to the presidency in the US.

The Nuclear Threat to India

India perceives a military threat from its two immediate neighbors China and Pakistan. While the threat from Pakistan is more visible and immediate, it is China that poses the larger security threat to India in the long term. The annual report of India's Ministry of Defense 2001 says that China is working towards achieving super power status. Besides the border dispute, which remains unresolved, China sees India as its only rival to match it in size, strength and numbers. It has therefore, taken all possible actions including transfer of nuclear technology and missiles to Pakistan through a third party.

As an emerging super power, China's perceived strategic frontiers now include the Indian ocean and the Malacca straits in the southwest, the South China Sea and the East China Sea in addition to the territorial boundaries and the claimed territories. China has already obtained a foothold in the Indian Ocean by establishing a commercial and military presence in the Hyunghai and coco Islands of Myanmar.

China's Nuclear Capability

China has a little over 400 nuclear warheads of varying yield and a triad of delivery systems comprising land based ballistic missiles, bomber aircraft and SSBNS. The nature of the Chinese threat to India can be summarized as follow

- The range of its missiles and the acquisition of SU-27 aircraft enable it to engage targets anywhere in India.

- The current threat is only to counter- value targets with known fixed locations. China does not have the capability to obtain the locations of mobile targets in real-time.
- China does not have any earth-burrowing nuclear warheads that can penetrate deep into the earth. The yield of its nuclear warheads is from 200-300kt to 3.3mt and the depth to which they can penetrate the earth will have to be calculated.
- China would be able to engage targets with accuracy with the use of GPS and the accurate launch technology obtained from Loral Space and Communications, and Hughes Electronics.
- There was no sea-borne threat from china in 2002.
- By 2010, if the modernization program proceeds as planned, China will be in a position to implement its changed nuclear doctrine. The threat will then be more potent and multifaceted, as under:
 - ◆ Chinese missiles will be able to engage targets with greater accuracy W-88 technology will enable China to carry multiple warheads and thus, bring to bear greater explosive power on targets.
 - ◆ Reconnaissance satellites will provide China with more detailed information about targets
 - ◆ The threat to Indian from the sea will increase with the induction of type 094 SSBNs equipped with the JL-2.
 - ◆ The total number of its nuclear warheads may increase.
 - ◆ Cruise missiles may have been developed and inducted into the nuclear forces.

Threat from Pakistan

Pakistan has had a strained relationship with India ever since it came into being in 1947. Pakistan has 40 nuclear warheads. The yield of its warheads is likely to be between 15-20kt. It is reported to have received from China demonstrated nuclear weapon design of warhead small enough to be delivered by missile. Pakistan has only about 40 frontline aircraft at present and all of them may not be capable of delivering nuclear bombs. Pakistan does not have any access to military satellite imagery at present. Pakistan has developed the Ghouri-3 missile with a range of 3000 km, which will be able to cover the whole of India effectively. Pakistan's nuclear doctrine is believed to revolve around a first strike against India to neutralize the latter's superiority in the field of conventional warfare. Pakistan would rely mainly on missiles as delivery vehicles considering that it has only a few frontline aircraft and the chances of their penetrating deep into the Indian air space are poor.

Indian Nuclear Doctrine and its Implications

The National Security Advisory Board published a draft Indian Nuclear Doctrine (NID) in mid 1999. After the nuclear tests in 1998, the prime minister declared that India would never be the first to use nuclear weapons. This clause has also been included in the Nuclear Doctrine and forms the cardinal principal of this doctrine. However to quote James Schlesinger “Doctrines control the minds of men only in periods of non emergency. In the moment of truth, when the possibility of major devastation occurs, one is likely to discover sudden changes in doctrine”. Hence from Pakistan’s point of view this pledge of “ No First Use” should never be taken at face value. NID states that any nuclear attack on India shall result in punitive retaliation with nuclear weapons to inflict unacceptable damage on the aggressor. Inflicting unacceptable damage has been generally interpreted to mean a massive attack on enemy cities. Such punitive retaliation in all cases will have following consequences for India:

- India’s own command and control system will be an important target for the enemy while its command and control system would not be a worthwhile target for India after it has already undertaken first strike
- Since Delhi will in most cases be one of the targets of the enemy attack, some parts of India’s command and control system are bound to be affected adversely. From the command and control point of view, four things are called for
- Regardless of the “ punitive retaliation in all circumstances” policy laid down in the NID, other options must be considered and the command and control system organized to handle them.
- Procedures must be laid down to see that the political leadership moves into the NCP in good time.
- The NCP should not be too dependent on the communication nodes in the national capital for communicating with the rest of the country. There should be direct and survivable communications between the NCP/ANCP (Alternate National Command Post) and the State capitals. The essential civil power

The policy of punitive retaliation even against a small attack on military target has a dangerous undertone as it gives the enemy a justification to launch a full-scale nuclear attack on Indian cities rather than on any specific target. In the final analysis, it is “communication” that will decide whether a command and control system works or not. All nuclear weapon states recognize that communications are the most vulnerable part of the command and control system and are reconciled to the fact that a nuclear attack will result in their degradation to some degree. Communications therefore need to be safeguarded against physical damage environmental effects like EMP and interception. Terrestrial links including buried cables unless buried very deep would be destroyed. Only long-range communications through satellites would be possible provided the sets and the antennae are not damaged. Hence communications storage, handling and safety measures assume cardinal importance in the command and control system of any nuclear state.

The book gives an elaborate and clear exposition of the essential requirements of nuclear command and control system. While it gives some details of US command and control system, it fails to give specific details of the Indian command and control system.

The author has very vehemently supported a propagated India's "No First use" doctrine, But we should realize that this commitment has been made more for political consumption Pakistan should never be misguided by this proclaimed NFU declaration of India and we should base our strategic planning on the worst case scenario i.e. to be able to withstand the first nuclear attack and initiate a timely retaliatory attack. The book has been written in a very simple and forthright style and provides some food for thought for our nuclear planners. Some of the crucial factors which need the attention of our planners are: secured communication networks, devolution / delegation of authority, procedures for launching nuclear weapons, storage and handling of nuclear weapons and above all early warning and assessment. The book makes an interesting reading for strategists, defense experts, policy makers and research scholars.