Nuclear Command and Control Systems: Pakistan and India

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Introduction

The role of a country's nuclear command and control (C2) structure is important as it plays pivotal role in the management of nuclear weapons. An effective command and control system is so designed that chances of an unintended or accidental nuclear explosion are eliminated. A nuclear command and control system has to fulfill two conflicting requirements. It has to ensure the preparedness and prompt availability of nuclear weapons at the time of need. On the other hand it must also guarantee that they are never used unless required by the political leadership.[1]These should include a setup for information acquisition and verification, which means early warning mechanism in case of a nuclear or pre-emptive attack, a decision making body which can formulate a course of action on the basis of available information, robust and secure communication channels between the decision making body and the nuclear forces. All these actions should be backed by sound technical and procedural measures to ensure safety and security of nuclear arsenal during storage, transportation and deployment.

Threat perception is another important element in designing the command and control system. For instance, threat perceived by the United States during the Cold War promoted massive expansion of nuclear weapons arsenal and introduction of an elaborate and complex command and control system to support nuclear operations. Study of command and control systems of Pakistan and India are particularly important due to geographical contiguity of the two states, their bitter history and acrimonious relations of the nuclear neighbors. The paper will discuss factors that impact Pakistan and India's nuclear command and control systems. It also discusses measures taken to ensure the robustness of nuclear command and control systems by both the countries.

Factors Influencing Command and Control Systems

Several factors, such as technical considerations, geo-strategic compulsions, national strategy, and priorities determine the shape and character of a country's nuclear command and control system. Through its C2, a nuclear power institutionalizes its approach regarding employment, deployment and development of its nuclear forces.[2] In the growing body of scholarly literature on the role of C2 in nuclear deterrence stability, it is being increasingly emphasized that command and control issues give rise

to certain problems in decision making which are independent of the size or sophistication of a country's nuclear arsenal.

The factors that influence and shape the nuclear command and control systems in practical terms have been explained by Peter Feaver. According to Feaver, 'at the heart of nuclear command and control lies the always/never dilemma.'[3] The dilemma demands that weapons must be reliable and unlikely to fail at the moment when the political leaders want to use them. Safe: unlikely to detonate accidentally; and secure; resistant to efforts by unauthorized people to detonate them. Two threats exacerbate the always/never dilemma.[4]

- the potential for unwanted use (accidental use)
- the potential for decapitation (unauthorized use).

Prevention of unwanted use is termed negative control, while assurance of wanted use is termed positive control in the context of C2. A command and control system employs a variety of organizational and technical measures to deal with these twin threats. This includes rules to control, and by whom, in addition to assuring that national leaders can maintain contact with the nuclear operators even during a dire national emergency.

Delegative and Assertive Nuclear Command and Control Systems

The second dilemma involves the civil-military relations regarding control of nuclear weapons. Civilian control is dominated by two general approaches, delegative and assertive controls. In both forms the military is subordinate to civilians, but the two have diametrically different concepts of the role to be played by civilian leaders.

The command and control system that reflects a predisposition towards the positive control is called 'delegative' command system. A distinguishing feature of a delegative system is the degree of autonomy granted to the military operators charged with employing nuclear weapons. On the other hand, command and control system that reflects a predisposition towards negative control is called 'assertive' command system. The assertive system demands that the government leaders set all policy goals and then enforce compliance and coordination. This command structure constrains the autonomy of decision making and action. Thus, the assertive and delegative distinctions are useful typology and cursors for the likely challenges in the command and control system. A command and control system is dynamic and may change, from delegative to assertive and vice versa with changing conditions. However, at one point in time it is biased toward one end of the continuum. Organizations and operational

procedures with regard to a nuclear force are developed keeping in mind the problem it is required to tackle. Therefore, depending on its security environment, national style, strategic priorities and requirements, a state can institute an 'assertive' or 'delegative' system.

Political Control

In a conventional war, the political leadership sets the objectives of the war and leaves it to the military to execute the war plan. However, in nuclear war the decision to employ the nuclear weapons cannot be left to the military alone. The political leadership by necessity thus 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 war fighting apparatus for achieving strategic objectives. 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 critical importance. This requires standing nuclear organizations, uninterruptable and constant contact with the political leadership through secure communication channels enabling them to respond immediately.

Complex Hierarchical Structure

In conventional warfare, the chain of command is vertical while in a nuclear command and control system classical military hierarchical system would take up great deal of response time. Procedures in nuclear command are so tailored that orders 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 adds to the challenge of formulating foolproof checks in guarding against accidental or wrongful use of the weapons.

Pakistan's Nuclear Command and Control System

Pakistan embarked on its nuclear weapons programme in 1974 but carried out its first and only weapon tests in May 1998.It is not clear what type of command and control structure Pakistan developed for the management of its nuclear forces before the nuclear tests of 1998. Zulfikar Ali Bhutto, the Prime Minister, had reportedly constituted an inter-ministerial committee to manage the newly launched nuclear

weapons program in 1972. He later abolished the committee after the 1974 Indian nuclear test. In the 1980's another committee was created for nuclear management, which was headed by Ghulam Ishaq Khan. Pakistan pursued a policy of nuclear ambiguity and opacity in that period as Islamabad's primary concern was to protect its fledgling nuclear weapons program from external interference. Command and control in pre-test era was kept deliberately vague in order to guard against the threat of a pre-emptive strike.[5]

Establishment of a nuclear command and control system became next logical step after Pakistan's attained its new identity of an overt nuclear power. After the nuclear tests in May 1998, Pakistan took deliberate steps to strengthen nuclear controls. First phase of Pakistan's nuclear command and control system is the immediate post-test period of two years from 1998-1999 when the government began to consider formulation of a formal command-and-control system for the first time. In the second phase, General Pervaiz Musharraf, in his role as chief of army staff and chief executive of the country, implemented his initial reforms between 1999 and 2001. Fortunately compartmentalization that had contributed to a policy of ambiguity and opacity, and minimal oversight on country's nuclear weapon program during the pre-test phase also made it easier to restructure the military bureaucracy.[6] Issues with regard to management of Pakistan's nuclear command and control during this period were explained as follows by Lt. General Kidwai Director General SPD, "The Pakistani nuclear program faced three major needs: to review national security policies, institutionalize the management of the nuclear program, and develop a prudent strategy for a robust strategic force."[7] The challenges required Pakistan to have a national security apparatus capable of comprehensively analyzing national security policy in changing times. These challenges were dealt with by establishment of National Command Authority (NCA) , which comprises country's top civilian, military, and scientific decision-makers, and Strategic Plans Division (SPD) which provides institutional oversight on nuclear decision-making. [8]

Existing Structure of Pakistan Nuclear Command and Control Authority

Islamabad announced the setting up of a National Command Authority (NCA) in February 2000 and delegated "employment and deployment control over all strategic forces and strategic organizations" to this body.[9]

National Command Authority. The first tier of Pakistan's command and control structure is the national command authority (NCA). It is composed of the top civilian and military officials as well as members of scientific community. NCA is authorized to make all major decisions regarding nuclear policy, procurement, planning and use.

The principle of unanimity was affirmed by the NCA in 2003.A decision to use nuclear weapons would need "consensus within the NCA, with the chairman casting the final vote. But if consensus was impossible, a majority vote would suffice." [10] NCA is chaired by the Prime Minister, Foreign Minister and Joint Chief of Staff Committee (JCSC) are its deputy Chairmen. It has two main committees, the Employment Control Committee and the Development Control Committee.

Employment Control Committee (ECC).The Employment Control Committee, which by composition is a 'politico-military', body has the Foreign Minister as its chairman and includes ministers of defense, interior and finance as its members, besides the Chairman Joint Chief of Staff and the three service chiefs. The Director General of Strategic Plans Division (SPD) acts as the secretary of ECC. The ECC reviews strategic threat perceptions, monitors the progress of weapons development, and decides on responses to emerging threats. It also establishes guidelines for effective command and control practices to safeguard against the accidental or unauthorized use of nuclear weapons.

Development Control Committee (DCC).The Development Control Committee is in essence a military-scientific committee. The committee is chaired by Chairman of the Joint Chiefs of Staff Committee, Services Chiefs, Director-General of SPD, representatives of all other strategic organizations and, the scientific community are the members . The DCC exercises technical, financial and administrative control over all strategic organizations, including national laboratories and research organizations associated with the development and modernization of nuclear weapons and their delivery systems.

Strategic Plans Division. The second tier of command is the Strategic Plans Division (SPD).[11] It is staffed by personnel of all the three services and the civilian experts. It is the key to Pakistan's nuclear management and acts as the permanent secretariat of the NCA. SPD formulates the policy options for approval by the NCA and once the decisions have been taken oversees their implementation. SPD is organized in a manner that it can watch over all the aspects related to the management of the nuclear capability. It takes care of the administrative, budgetary, safety and security components of the programme. SPD is also responsible for elaborating policy guidelines, including those for physical security of all nuclear facilities as well as for the development and maintenance of strategic command and communication links. It makes recommendations to the government on disarmament and arms control policy as well. Nuclear strategy analysts have observed that the SPD is a well functioning organization with professional staff and has evolved as a "strategic enclave".[12] Strategic Force Commands. At the third tier, separate strategic force commands exist

in the three military services, the Army, the Air Force, and the Naval Strategic Force Commands. The three services have training, technical, and administrative control over nuclear assets available to them but operational control of nuclear weapons rests with NCA.

The Army's SFC is the most powerful of the three strategic forces since it is the custodian of all missiles in service. It is headed by a three-star general while two-star officers command the other two strategic forces.[13] In November 2000, all organizations engaged in nuclear and missile programmes were put under the control of the NCA. These include: Pakistan Atomic Energy Commission (PAEC), KRL, National Engineering and Scientific Commission (NESCOM) and the Space and Upper Atmosphere Research Commission (SUPARCO).

Additional measures taken by Pakistan NCA include the establishment of nuclear security training facility.[14] SPD has undertaken a comprehensive plan to significantly augment its existing capacity through induction of additional 8000 personnel in its nuclear security force. This comprises handpicked officers and men, who are physically robust, mentally sharp and equipped with modern weapons and equipment and are trained in technical skills to the best international standards and practices. Regular training and periodic personnel checks are carried out in order to prepare this force to meet all contingencies including the threat of terrorism.

Indian Command and Control Structure

India had evidently left the articulation of a formal nuclear command and control system in abeyance after May 1998. 'Custody' of nuclear weapons had apparently stayed with the Department of Atomic Energy (DAE), the nuclear scientific establishment that developed the weapons.

National Command Authority (NCA). Some distinctive features in formulating a nuclear command and control policy have been described by Pran Pahwa. [15] Indian NCA is a two-layered body comprising of Political Council chaired by the Prime Minister, and the Executive Council chaired by National Security Advisor. The National Command Authority works on a two-person rule for access to armaments and delivery systems. In the event of NCA being rendered dysfunctional India has created an alternate NCA. This body would then take up all the NCA functions. Details about the composition of this body however, have not been made public.[16]

The Political Council. The Political Council is the top decision making body on all matters related to strategic weapons. It comprises members of the Cabinet Committee on Security (CCS) and includes ministers of defense, home and external affairs.

The Executive Council. Below the Political Council is the Executive Council. It is headed by the National Security Advisor and includes the Chairman Chiefs of Staff Committee (COSC), the three service chiefs and C- in C of Strategic Force Command, heads of intelligence agencies and the scientific organizations engaged in the nuclear program. It provides inputs for decision-making by the Nuclear Command Authority and executes the directives given to it by the Political Council.

Strategic Forces Command (SFC). A tri-service command called the Strategic Forces Command (SFC) was created in January 2003. The official press release on January 4, 2003 described the role of SFC to manage and administer all strategic forces. In the event that the Political Council orders a nuclear strike, the Prime Minister can directly contact the SFC and not necessarily work through the Executive Council.[17] The command and control of Indian nuclear operations can be divided into four operational tasks:[18] command of the force, custody, integration and delivery.

Strategic Plans Staff (SPS).It has recently been revealed that similar to Pakistan's Strategic Plans Division (SPD) India has also created an organization as part of the Security Council Secretariat. This organization called Strategic Plans Staff (SPS) would do staff work for NCA besides ensuring reliability of weapons and delivery systems. SPS has also been tasked to gather intelligence on nuclear weapons programmes of all states with special focus on India's adversaries.

Another organization functioning within NCA is Strategic Armament Authority. This unit is responsible to review and improve procedures for transportation of all types of nuclear armament including that for the submarines. [19]

Short Range Missile Impact on Command and Control

The inclusion of short range missile- *Nasr* by Pakistan and tactical nuclear weapon- *Prahaar* by India into their strategic force have added another dimension to the execution of Nuclear Command and Control (NC2). Analysis of available information on *Nasr* and *Prahaar* offers information about the developmental trajectories, and technological limitations spin-offs of these weapon systems.

India and Pakistan have both developed their nuclear command and control systems. This new development may also complicate command and control issues. There are

indicators that Pakistan may exercise assertive control over deployment and employment of *Nasr*. The available information on the flight test of *Prahaar* leads to an important inference referred to in the Director-General (DG) Indian Artillery Lt Gen Vinod Nayanar statement which indicates that *Prahaar* may be inducted in the Indian army's field artillery formations. That opens the inherently risky proposition of this weapon system's control falling into the hands of junior commanders, and associated risks of inadvertent or unauthorized use.

Conclusion

A comparative study of the command and control structures of India and Pakistan clearly highlights certain fundamental elements that form the building blocks for any C2.The national consensus on Pakistan's nuclear programme and the institutionalized structure of its NCA and its component organizations are well established and have been functioning for close to a decade and a half. There are custodial safeguards, which render these facilities totally inaccessible to unauthorized outsiders. The facilities are kept under constant watch and the process controlling the safeguard systems are frequently updated to keep the highest possible standards.

Essential elements of Indian C2 are in place. It has a national Command Authority with its component sub-committees. While Pakistan has a functioning secretariat for NCA, India did not have one till recently. This gap has now been filled and India too has now established Strategic Plans Staff, an organization which works as the secretariat of its NCA. This being a new organization may take a few years to mature into a truly professional strategic body. But the concern that personnel screening programme is inadequate has not been satisfactory addressed in India. Most nuclear weapons states in order to ensure safety and security of the weapon systems develop some sort of "permissive action links."[20] India's measures on permissive action links are still unclear. Apart from a cryptic reference in a 1998 press release to "safety interlocks," there is no public information. Vice-Admiral Verghese Koithara, in his 2012 study of India's nuclear arsenal, concluded that Indian National Command Authority had a "lack of confidence" in its ability to exercise control over nuclear weapons through electronic means, suggesting that permissive action links are absent or rudimentary.[21]

India's arrangements for alternate NCA chain of command for retaliatory nuclear strikes in all eventualities also need clarity.[22] Alternate NCA would be activated in contingencies wherein someone other than the PM may have to, and will be able to, order the use of nuclear weapons. Such an arrangement raises more questions to which answers have yet to be provided by the Indian NCA.

Endnotes

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