ABSTRACT

India's nuclear capabilities to meet the threats arising out of rapid proliferation of nuclear weapons and missiles in its immediate neighbourhood, particularly in view of availability of nuclear weapons with Pakistan and China assume significance from strategic and national security points of view. It is because it entails an understanding of the nature of threats emanating from nuclear weapons, India's nuclear doctrine, types of strategic threats arising from China's nuclear weapons and missiles for India's security as well as nature of Pakistan's nuclear weapons and missiles' programmes and their resultant impact on India's security. As a sequel to this comprehension of full gamut of issues involved that India's nuclear and missile capabilities are to be analyzed.

It is in this backdrop that the present research work has been divided into seven chapters. The first chapter is in the form of an introduction which incorporates review of literature, research design, hypotheses, research methodology adopted in the present research study and chapterization.

The question of rationale for nuclear weapons vis-à-vis national security has been examined in the second chapter. An attempt has been made in this chapter to review nuclear proliferation incentives for the purpose of examining the adequacy or inadequacy of the existing literature to explain the proliferation propensities of protracted conflict states. The intent has been twofold: to show the underdeveloped state of the proliferation literature in terms of theory-
building, and to demonstrate that security motivation--though important--needs further clarification and specification for a more comprehensive understanding of proliferation in the protracted conflict states.

An appraisal of India’s nuclear doctrine forms the subject matter of analysis of third chapter. India has declared its nuclear doctrine after having become a state with nuclear weapons in order to make its nuclear policy clear and devoid of ambiguity. India’s nuclear doctrine entails the notion of minimum credible nuclear deterrence. While enunciating the strategy of no-first-use, the doctrine also talks about maintenance of survivable nuclear force and violent retaliation in the wake of a nuclear attack. It is further revealed from the appraisal of third chapter that the nuclear doctrine of India envisages maintenance of a posture of recessed deterrence in consonance with the doctrine. Another notable characteristic of this doctrine is that the command and control of nuclear weapons is vested in the political executive head of the country.

It becomes further discernible from the analysis of the third chapter that the nuclear doctrine espouses for a cooperative approach to arms control within the framework of national security interests and as transparent interim measures pending abolition of nuclear weapons. The doctrine also envisages notion of strategic stability to ensure that risk of accidental or unauthorized use of nuclear weapons is minimized and confidence building measures are to be strengthened. Emphasis is stressed on improving political relations with China and Pakistan on priority basis to minimize the potential conflict while maintaining high level of
conventional capability to raise the nuclear threshold. Keeping in view the strategic environment in India’s immediate neighbourhood and India’s strategic security related requirements, the study suggests the need for redefining India’s nuclear doctrine.

Fourth chapter examines strategic threats to India’s security emanating from China’s nuclear weapons and missiles. While asserting that China’s nuclear assets are comparatively much larger than India’s, the chapter demonstrates that there has been phenomenal growth in China’s strategic nuclear force in recent years. Maintaining that China’s security considerations are different from that of India, the chapter suggests that the Chinese nuclear build-up should not be seen solely in terms of India alone, because China’s threat perceptions are governed by the nuclear arsenals of United States, Russia and other nuclear powers and their nuclear postures as well. However, China remains a major determinant of India’s security concerns and some China’s strategic nuclear weapons are capable of destroying India. It is in the wake of this scenario that India has to develop its nuclear deterrence to face Chinese threat and ensure its security.

While making a pointed reference to growth of friendly relations between New Delhi and Beijing in recent years along with increased interaction in economic, political, cultural, science and technology fields and setting-up of a Joint Working Group to oversee the ways and means of resolving the contentious border issue, the analysis of fourth chapter cautions that this does not mean that threat to India from China is either minimized or reduced, especially in the wake
of China's continuous support to Pakistan's missile and nuclear programmes, apart from making inroads into Myanmar, in India's neighbourhood. Asserting that the Indian Territory is conveniently under the target range of Chinese nuclear-tipped missiles, it suggests that India has to build up a credible deterrence vis-à-vis China.

Threats emerging from Pakistan's nuclear weapons and missiles to India's security are analyzed in the fifth chapter. While conceding that even a decade after conducting nuclear tests, India and Pakistan are slowly but steadily moving toward building operational nuclear forces, analysis reveals that India and Pakistan also continue to resist international entreaties to join the nuclear nonproliferation regime. It is further observed that in the post-May 1998 period, both India and Pakistan have initiated a series of intended steps at the technological, organizational, and doctrinal levels to transform their symbolic capabilities into operational and hence usable forces.

The appraisal of fifth chapter makes it discernible that Pakistan's nuclear weapons programme is exclusively India-specific. However, India's deterrent is aimed at both Pakistan and China. As a result, the scale and scope of India's nuclear weapons effort is much larger, as manifest not only in its efforts to develop more advanced weapon designs. However, there are no indications in open-source literature of any Pakistani programmes to rival or match India's efforts.
It can be discerned from the analysis of the fifth chapter that Pakistan is reportedly further along than India in the evolution of a nuclear command and control system and operational planning involving the use of nuclear weapons. This development is the result of the differences in civil-military and inter-military relations in the two countries. The Pakistani Army enjoys a position of unrivaled supremacy in addressing command and operational issues associated with nuclear weapons, in accordance with its own organizational preferences. In India however, civilian domination of the professional military and control over the nuclear weapons effort have made it difficult for the military to stamp its organizational preferences on the direction of country’s nuclear weapons-related planning.

While examining the confidence-building measures (CBMs) between India and Pakistan, which inter alia include hotlines between army commanders and prime ministers, a joint India-Pakistan Military Commission (created in 1990), agreements to provide prior notification of troop movements and ballistic missile tests and the agreement signed in 1991 whereby both sides agreed not to attack nuclear facilities, the trends emerging from the analysis show that implementation of these measures, however, has been sporadic.

Progress was reported in discussions between the two countries on missile notification but the question of Pakistan’s support to terrorist outfits perpetrating terrorist violence in India and India’s request to Pakistan to stop support to such outfits operating from Pakistani side of the Indo-Pakistan border led to the
stalling of talks designed to normalization of relations between the two countries. Even the advent of civilian administration in Pakistan in August 2008 has not made any difference in breaking the ice. Emerging trends show that Pakistan’s missile and nuclear programme is bound to be a matter of concern for India. It is through peaceful means that outstanding issues between the two countries, especially the issue of Jammu and Kashmir, are resolved that the danger of nuclear threat can be minimized.

India’s nuclear and missile capabilities form the subject-matter of analysis of sixth chapter. The success of the Prithvi and Agni programmes has encouraged India to embark on new missile programmes, which include both defensive and offensive missile systems. The defensive systems include ATBM s designed to provide ‘point defense’ for India’s nuclear command and control centres and high-density population targets. Offensive weapon systems include an intermediate-range version of the Agni ballistic missile, the BrahMos cruise missile, and the Avatar programme that would theoretically be capable of launching nuclear strikes from outer space.

Development of a limited ATBM capability by India has been instrumental in producing a historic shift in India’s position on ballistic missile defence; from opposition, India has resorted to outright support for the U.S. programme. The flip side, of course, is that India's missile coalition expects technological assistance from the United States and its allies to build a limited ATBM system capable of intercepting short-range ballistic missiles. In the meanwhile, however,
India hopes to integrate Russian S-300 SAMs or the Israeli Arrow-2 with the indigenous Rajendra phased-array radar system. In this context, India has also acquired the Green Pine radar system from Israel for purposes of detecting long-range ballistic missile launches.

It is further observed from sixth chapter that India's futuristic Avatar reusable space launch vehicle could theoretically be used as a nuclear delivery system with a global strike capability; it could also serve as an asset to strike enemy space-based surveillance and communication targets, or for ferrying civilian and military payloads into space. It is also revealed that India is developing sea-launched versions of the Prithvi ballistic missile and by planning to configure the BrahMos cruise missile for launch from submarines and ships. The current version of the BrahMos has an anti-ship capability, but future systems will incorporate a land attack capability.

The current sea-based version of the Prithvi (Dhanush) is limited by its short-range (350km) and liquid-fueled engine. The missile's short range and the dangers associated with liquid fuel on board submarines and surface ships make it unlikely that the Navy will accept the Dhanush for active deployment. However, the development of the Dhanush will most likely enable the Navy to stake a claim in India's emerging nuclear deterrent. India is also reportedly developing an SLBM capability. India's draft nuclear doctrine, which should be read as a statement of ambitions and future intent, does envisage a sea-based nuclear capability for reasons of operational flexibility and survivability. Recent
success of India in launching indigenous nuclear submarine has enhanced the prospects of augmenting India’s sea-based nuclear capability.

The centrality of strategic missiles in India’s priority of interests, potential nuclear threats from Pakistan and China, and the growth and expansion of India’s missile coalition have ended the technological fragmentation within India’s high-tech nuclear, missile, and civilian space sectors. Further changes in India’s missile development process are taking place wherein the emphasis will now be on serial production of the missiles developed under this program. Crucially, some specific projects might involve foreign collaboration, although strategic projects will be developed ‘in house.

India’s guided missile programme has now assumed a self-sustaining character and is now guided by a clear strategic vision and buttressed by a diverse coalition with strong organizational stakes in politically and strategically determined technological outcomes. In retrospect, the guided missile program has not only become central to India’s proposed ‘minimal deterrent,’ but more significantly, it has emerged as the symbol of an independent, self-reliant, and strategically autonomous India capable enough to safeguard its national security and territorial integrity, from both Pakistan and China.

The final seventh chapter is in the form of conclusion which provides summary of the findings of each chapter. It also deals with testing of the different hypotheses in the light of the present research study. Suggestions based on the trends emerging from this study are also incorporated in it.
TESTING OF HYPOTHESES

The first assumption that the ‘nuclear weapons will enhance India’s security’ has been authenticated by the trends emerging from this research study. Availability of nuclear weapons with India is prone to serve as a deterrent both for Pakistan and China to launch a nuclear attack on India for fear of retaliation and ensuing destruction.

The second assumption that ‘India’s nuclear doctrine is vague and ambiguous’ is also validated by the findings of this research study. India had declared its nuclear doctrine in haste in order to avoid misconceptions about India’s nuclear policy. However, the strategic complexion in the vicinity of India has been transformed in view of rapid strides made by Pakistan and China in their nuclear and missile arsenal. These developments warrant urgency for redefining India’s nuclear doctrine.

The third assumption that ‘India as a State with nuclear weapons can espouse the cause of total abolition of nuclear weapons and nuclear disarmament more convincingly’, though does not form the part of analysis of present research work, but this presumption seems true. Ample evidence can be had from India’s statements in international fora with regard to India’s strong advocacy for nuclear disarmament and its unconditional support for international measures designed to reduce nuclear weapons. Another assumption that ‘nuclear weapons do not diminish the importance of conventional weapons’ is found true by the trends emerging from this research study. The fact that
nuclear weapons have not been used since the tragic events of Hiroshima and Nagasaki in 1945 despite the fact that many countries now possess these weapons also supports this logic because there has been more craze for sophisticated conventional weapons even among the nuclear powers.

Another assumption that ‘qualitative improvement in India's nuclear weapons along with numerical superiority over its neighbours will serve as effective deterrent’ is a normative assumption which cannot be proved on the basis of present research study. However, the available evidence shows that both qualitative and quantitative superiority of nuclear weapons available with the United States and Russia serve as a strong deterrent for other nuclear powers to even think of attacking either country.

The other assumption that ‘nuclear weapons alone are no sure and sole guarantee for security’ is validated by the emerging trends of present research work. Despite the possession of nuclear weapons, Pakistan resorted to ‘low-intensity conflict’ in the Kargil sector against India in 1999. For fear of retaliation, one nuclear power is afraid of using nuclear weapons against its rival because such an eventuality will cause destruction of immense magnitude on both sides.

The final assumption that ‘India's emergence as a State with nuclear weapons has enhanced its prestige and stature in the international comity of nations’ is partially corroborated by the emergent trends discernible from this study. It has helped India to try to have access to Western nuclear technology for harnessing the same for promoting economic development. Signing of Indo-
US civil nuclear agreement in July 2005 and its implementation in the near future will benefit India. However, countries like Japan and Germany do not have nuclear weapons but they still enjoy enviable position in the international comity on nations. Similarly, it is essential for India to build up a strong economic base.

**SUGGESTIONS**

Following suggestions, based on the trends emerging from the present research study, are offered for augmenting India’s conventional as well as nuclear security:

- The present notion of ‘credible minimum nuclear deterrence’ is vague. Pakistan and China are engaged in rapid production and qualitative-cum-quantitative improvement in their nuclear arsenals. So India’s response should be matching;

- India’s present ‘Nuclear Doctrine’ is vague and ambiguous. It should be redefined in view of geopolitical and strategic developments taking place in India’s immediate neighbourhood;

- Well-concerted efforts should be made to develop indigenous nuclear and missile technologies in order to minimize dependence on external sources and ‘arms-twisting tactics’;

- Equal priority and emphasis should be accorded on conventional weapons to ensure adequate security;

- Priority should be accorded to manufacture nuclear submarines indigenously and induct them into the Indian Navy;
Acquisition of second aircraft carrier should not brook further delay because the present aircraft carrier is nearing its decommissioning period. Rather India should procure two more aircraft carriers and equip them with latest conventional as well as nuclear weapons.