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Dangers of Missile Race in South Asia: an India-Pakistan Perspective

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Abstract

Both India and Pakistan have various operational missiles in their inventories. The expanding capabilities, marked by significant improvements in payload, range, reliability and accuracy, are not only threatening to push the region towards a debilitating arms race, but also have the potential to bring the nuclear armed adversaries a step closer towards the deployment of their strategic arsenals. At regional level, the inventory and types of missiles increase an escalation of tension between the relations of India and Pakistan on the one hand, and between India and China on the other. At global level, the developments in the South Asia have serious rather negative implications on the non-proliferation regime, and encouraging the other states to pursue nuclear and missile programmes. The present paper is a moderate attempt to investigate the various security implications of missile developments by India and Pakistan on global level in general and on South Asian region in particular.

Keywords: Ballistic Missiles, Missile Defence System, Non-Proliferation, Early Warning System, Arms Race, Security Implications, Delivery Systems, Missile Technology Control Regime.

1. Introduction

After crossing the nuclear rubicon in May 1998, India and Pakistan, the two countries of South Asia, have been embarking on a journey that can only bring greater insecurity, tension, arms race and mal-development to the region.[1] Since then, both the countries have been continuously engaging themselves in revising their plans and developing their nuclear systems and delivery means, and little real progress has been made to reduce the danger. Threat making, provocative military maneuvers, display of offensive force capabilities and large military exercises on borders have been common in the region. Missile flight tests have further raised the concerns of nuclear security and stability more seriously. Though, the fragmentary information about India's and Pakistan's nuclear forces, operational capacity and elements of command and control have emerged but the numbers, readiness status, and employment plans for these nuclear delivery capabilities remain murky in many respects. Currently one can assume that India has stockpiles of 80-100 nuclear bombs while Pakistan has 90-110.[2] Besides having various aircrafts, India and Pakistan have developed numerous nuclear capable ballistic missiles as delivery systems.

2. Missile Programmes of India and Pakistan

India has an extensive, largely indigenous ballistic missile programme, including infrastructure for both solid and liquid fuelled missiles.[3] India's existing missiles for mission against Pakistan are of *Prithvi* and *Agni* series. India has *Prithvi*-I with a range of 150 km capable of having payload of 1000kg, *Prithvi*-II with a range of 250 km capable of having a payload of 500 kg and *Prithvi*-III with a range of 350 km. India's second family of ballistic missiles is the *Agni*-I, II and III. The *Agni* missiles are designed to extend the reach of Indian nuclear capabilities, particularly to China. However, one more variant of *Agni*, now officially referred to as *Agni*-I, is specifically designed for missions against Pakistan and was tested with a capacity of 1000 kg payload to a range of 700 km.[4] India reportedly intends to retrofit its *Brahmos* adaptation of Russian supplied *Yakhont* anti-ship, cruise missile so that it can be fired either from naval ships or from SU-30 MKI attack aircraft.[5] This cruise missile apparently could be used as a standoff system with either conventional or nuclear weapons.

Pakistan also has an active missile acquisition and development program since the early

1980s. This includes indigenous missile development (based in part on foreign design) as well as the reported purchase of M-11 missiles from China in the early 1990s, although, Pakistan and China denied these reports. Pakistan has several types of road mobile, nuclear capable ballistic missiles with shorter and longer ranges, solid and liquid fueled. The *Hatf*-I is an indigenous single stage solid propellant missile with a range of 60 to 80 km carrying a 500 kg payload. Then there are *Hatf*-II (*Abdali*), single stage solid fueled missile with a range of 280-300 km and *Hatf*-III (*Ghazani)* single stage solid fueled (300 km) and *Hatf*-IV(*Shaheen*) single stage solid fueled with a range of 600 km. Pakistan's longer range *Ghauri*-I, single stage with 1000-1500 km range and *Ghauri*-II, two stage with 2500 km range (still in development testing) are liquid fueled missiles that are believed to be based on the North Korean "No-Dong" and "*Taepo-Dong*" missiles, derived originally from Soviet scud technology.

3. Security Implications

These missile developments in South Asia have serious security implications on regional as well as global level. At regional level, the inventory and types of missiles increase an escalation of tension between the relations of India and Pakistan on the one hand, and between India and China on the other. At global level, the developments in the South Asia have serious rather negative implications on the non-proliferation regime, and encouraging the other states to pursue nuclear and missile programmes. Mobility of Missiles during the period of crisis in South Asia also faces various potential operational problems which may prompt escalation. The command system requires timely and accurate information. At present, the capacity to collect this information is limited. India and Pakistan rely on remotely piloted vehicles (RPVs), human and electronic intelligence. In the absence of comprehensive and accurate intelligence, there is a significant chance that an adversary will misread passive dispersal and initiate its own deployment as a result. During a crisis, India and Pakistan could enter into a spiral of escalation. One side could interpret the defensive moves by the other as threatening. Steps taken to counter the perceived threat would be matched in turn by the other, resulting in further escalation. During a condition of heightened tensions, the intelligence organizations in both countries will likely have a tendency to report the first indications of activity even if not confirmed.

Though wide and flexible dispersal is within the capability of both countries, but if exercised, it will underscore the problem of control. Dispersal of missiles during a crisis is understandable within the context of preserving survivability. The foremost dilemma facing the command authority will be retaining centralized control. Assertive negative control is desirable for stability but will undermine the effectiveness of the missile system to rapidly respond if required. Pre-delegation, on the other hand, will increase the risk of inadvertence. The command system will thus be under extreme stress if dispersal or deployment ever takes place. The principal decision-making problem is how to make an optimum trade-off between battle effectiveness and safety. The evolving national command systems will have to find an answer to this problem, which was not easily solved even during the Cold war.

However, both countries have sufficient territorial space and variety of terrain for dispersal and concealment but the road network is not well developed in both countries. Conditions for mobility are harsh and compounded by generally hostile weather. Physical security of the weapons is not up to the mark. There are multiple modes for missile deployment each having its own unique problems of safety in movement. The variety of missiles available may further compound the safety issues of mating them with the warhead – both conventional and nuclear. Greater instability results when the potential operational problems of missiles just described are linked with the deployment of nuclear weapons. At least four major considerations will play into decisions by India and Pakistan to undertake nuclear deployment.

3.1 Problem of Political and Technical Control

Firstly, there is problem regarding political and technical control. The imperative for political control is critical and deployment will pose a major control challenge. To ensure survivability, there will be a tendency to deploy a large rather than a small proportion of the national nuclear arsenal. The command and control requirements are fundamentally the same for any number of deployed nuclear weapons. Dispersal may involve different configurations ranging from prepared nuclear weapons integrated with their delivery means to separated nuclear weapon components moving independently from delivery systems. Pressure on the command system to pre-delegate authority will rise as a crisis spirals. The political release to fire nuclear weapons could be technically controlled by incorporating

permissive action links (PALs) in weapons. A PAL is a coded switch that controls the arming of the weapon. PALs require the entry of a code in order to open circuits that arm the weapon. Even if PALs are used, the decision to delegate authority and release warheads to military units in the field will be excruciatingly difficult for both India and Pakistan.

3.2 Problem of Communication

Secondly, there is problem regarding communication. The essence of command and control is to have several layers of redundant communication to ensure effective assertive control. The absence of assured redundancy and secure communication will remain a prime concern. Overcoming electronic jamming in a conventional war, and electromagnetic pulse (EMP) effects in the event of outbreak of a nuclear war, will be other critical needs.

3.4 Challenge of Physical Security of Nuclear Weapons

Thirdly, there is a Need for Physical Security of nuclear weapons. Though the possibility of nuclear weapons being stolen is remote, as multiple tiers of security will always be present, but concerns about safety and security will certainly grow during deployment. Deployment will increase the importance of physical control by the command system even if the use of control systems such as PALs is incorporated.

3.4 International Criticism

Fourthly, India and Pakistan will face international opprobrium if they opt to deploy nuclear weapons. Although the international community may have reluctantly accepted their possession of nuclear weapons, the transition to operational deployments will likely lead to sanctions and isolation. This factor is unique to South Asia and constrains the implementation of deterrence strategies by Pakistan and India. For example, during the *Kargil* conflict, reports that both countries had activated and deployed their nuclear missile forces triggered intense international pressure on both countries.[6] National actions, such as signaling, that play a role in deterrence strategy may thus be constrained by international pressure. In contrast, offensive conventional force deployments do not seem to engender the same level of concern in the international community.

4. Technical Problems

Beside the above said operational problems in South Asia, missiles themselves pose serious security problems due to their peculiar characteristics.

4.1 Geographical Constraints

Ballistic missiles represent the fastest means for delivery of weapons of mass destruction from one country to another. In a matter of few minutes, a missile can cover a distance of hundreds of kilometers (see table 1). Hence, these delivery systems themselves could become a source of tension and could by their nature and disposition increase the incentive to attack first in a crisis.[7]

In case of South Asia, short range missiles can attack on national capitals of adversaries even less than five minutes leaving little time for warning and protective measures due to the close geographical proximity. Since geography is fixed, flight times only change as the targets and launch points change. There is some potential for relatively long-range missiles to be used against short-range targets by flying in a depressed trajectory mode and decreases the typical time of flight by 2 or 3 minutes.[8] The countries, India and Pakistan, share a nearly 3000 km land boundary, and cities such as Lahore and Amritsar are only tens of kilometers from the border. Islamabad is less than 100 km from the border and New Delhi is also less than 400 km from the border. Missile flight time is short, even reduced to less than five minutes to reach the destinations. Warning times are even less due to the time required for sensors to detect the missile during flight. Response times are further reduced because of delays in communicating to decision makers, assessing information, making decisions, and finally giving orders on how to respond. It is likely that this process might not be completed before a threatening missile has reached its target. It also may result in a launch-on-warning posture in which countries respond prematurely before having time to fully assess the warning information received. Though India has declared a no-first-use policy for nuclear weapons but Pakistan has not adopted such a policy due to perceived conventional military asymmetries. While there is an asymmetry in strategic depth between India and Pakistan, the fact that each country has critical assets near the border means

that they both face potentially short response times in the case of missile attacks which may prompt any side to take a quick but wrong decision which may escalate the war.

4.2 Autonomy after Launch

Autonomy after launch of a missile is another problem which has a negative impact on stability factor in the region. Once launched missiles are fully autonomous and cannot be recalled or diverted. The lack of control once a missile is launched means that the reliability of command and control system is crucial. In contrast, there are cases of manned aircraft being recalled or diverted to other targets during flight. During period of tension, an authorized or accidental launch might precipitate a conflict and hence has a negative effect on the stability of the region.

Ambiguity regarding type of warhead mounted on a missile launched also creates the confusion among decision makers because government statements frequently describe a missile system as nuclear capable. This has resulted in the perception that ballistic missiles in the inventories of India and Pakistan have both conventional and nuclear warheads. Even if this is not the reality, the assumption on the receiving end will likely be that any missile launched against it must be carrying a nuclear warhead.[9] Aircrafts have been used in a conventional role in South Asia during wars historically while ballistic missiles have never been used in any role. Thus aircraft, even if capable of carrying a nuclear warhead do not carry the same danger of misperception once detected. Ambiguity regarding the nature of the warhead is exacerbated by the operational requirement for opaqueness regarding the number and location of missiles. Short-range, conventionally armed, ballistic missiles could quite conceivably be used within the context of limited war. A dual nuclear-conventional capable system is therefore quite destabilizing because the opposing command systems will likely have little reliable information about its mission or nature of its warhead. Therefore, ambiguity about the type of a missile warhead strongly decreases the stability.

4.3 Poor Early Warning System

Due to the lack of sophisticated and up-to-date early warning systems the missile launch data can be misinterpreted and may result in nuclear escalation accidentally. Concerns over misinterpretation of missile launch data are real. During the cold war there were a number of incidents involving accidents and misinterpretations related to nuclear weapons and delivery systems.[10] While there was a sufficient time in the context of longer range ICBM missile threats of USA and former USSR but such time would not be available with the short flight times associated with the Indian and Pakistani missiles. Moreover, there is evidence that neither India nor Pakistan has focused sufficiently on the danger that a missile test launch during a crisis could be misperceived as the start of a nuclear attack. Though, there is an agreement as part of the Lahore accords in January 1999, to provide missile test launch advance notification, but even such an agreement is not a fool-proof solution. Moreover, both Pakistan and India appear to be planning to use their missile test facilities for actual nuclear weapons launches during war which further increases the confusion regarding the missile test perceived as real attack.

5. Missile Defence

Apart from these technical issues, introduction of ballistic missile defence (BMD) in the region will pose certain other negative implications for the region. An Indian BMD system, whatever its shape and size, whatever its operational shortcomings, will have a major political and psychological impact on both Pakistan and China. Both Pakistan and China would respond to an Indian BMD by bringing quantitative and qualitative changes in their nuclear forces, deployment postures, and perhaps go for missile defence of their own. India would, in turn, be affected by a buildup of offensive weapons and technologies by Pakistan and China, and would have to enhance its own capabilities in response. This action-reaction spiral is likely to give rise to a regional arms race.

China, India and Pakistan are enmeshed in a complex three-cornered interaction with great potential for instability. China and India fought over their disputed boundaries in 1962, and India and Pakistan have gone to war three times, in 1948, 1965 and 1971 and a limited war in 1999. All three states share "lines of actual control" apart from the international borders. In this scenario, the introduction of missile defence will play a destabilizing role by disturbing existing patterns of deterrence. Although all three states pledge to minimum deterrence, leaders in all three capitals have

also said that deterrence is not a static concept; the requirements of each state would, therefore, depend on what the others are doing or might seek to do.[11]

The pursuit of missile defence system by India would increase the chances of conflict between India and Pakistan. The deployment of missile defence system, irrespective of whether it is effective or not, could create a false sense of security among political and military leadership of India and can invite military adventurism or even a pre-emptive strike against Pakistan particularly. India and Pakistan have already fought over the issue of Kashmir. In a region, where incidents like a terrorist attack on the Indian parliament in 2001 can become the reason for a massive buildup on Pakistani borders, introduction of missile defence would increase India's inclination towards a more aggressive posture with possible disastrous consequences for the security and stability of the region. Missile defence would also put Pakistan at a disadvantage in a conventional conflict, while surveillance and radar components of missile defence systems would put India at an advantage.[12] Thus, missile defence would also accentuate the conventional imbalance between India and Pakistan.

Moreover, possible changes in the deployment posture of China and an actual deployment of Pakistani nuclear arsenal would decrease the nuclear threshold between the three nuclear powers in the region. With less escalation ladders and even less decision making time, the chances of miscalculation and accidental nuclear war would increase. The chances of a calculated nuclear exchange would also increase. Missile defence system will also have a negative impact on arms control efforts. Transfer of BMD technologies from Washington to New Delhi or from Tel Aviv to New Delhi would violate Missile Technology Control Regime (MTCR) provisions.[13] Missile defence would undermine regional and global nuclear arms control initiatives and reverse the process of reducing the number of Multiple Independently Re-entry Vehicle (MIRV) warheads in nuclear stockpiles. It would generally weaken China's support for the CTBT, the MTCR, and the Fissile Material Cut-off Treaty (FMCT) negotiations. India and Pakistan would also reconsider their support for FMCT in their pursuit of increased number of nuclear weapons. Improvement of warhead designs by Pakistan might necessitate nuclear testing, disturbing the nuclear test ban between India and Pakistan, and would also lessen the chances of either India or Pakistan supporting the CTBT.[14] China's efforts to develop MIRV warheads would also require testing. The net effect would be to weaken the support for non-proliferation efforts in the region.

The effect of these developments would be to fuel an arms race between the three nuclear powers in the region. Perhaps not an arms race in the real sense of the word, but it would mean having definitely more offensive arms and technologies in the region. Moreover, New Delhi's deployment of missile defence technology is likely to jeopardize improved relations between India and China. It would also have a negative impact on the peace process between India and Pakistan. India's move to counter Pakistan's nuclear deterrent could also make the resolution of the Kashmir dispute more remote and greatly increase the chances of conflict over the issue.

The social and economic development of the region would also be affected. A region that has high rate of poverty and is underdeveloped, increased spending on offensive and defensive weapons would further retard development and increase poverty. In addition, India's social and economic development might be adversely affected if funding for missile defence is added to military expenditures. Pakistan would also have to increase its defence expenditure to compensate for qualitative and quantitative changes in its nuclear arsenal and forces. This would amount to unnecessary burden on economies of both the countries with diversion of resources from much-needed development. Hence, it can be said finally that missile progammes in South Asia have serious security implications both at regional and global level.

6. Conclusion

The proliferation of numerous missiles and related technologies in South Asia is a growing concern for world community. These missiles have brought more insecurity and tension to the region instead of positive claims by proliferation optimists. India and Pakistan, the two countries of the region, are seriously engaged in revising and refining these delivery systems. Even the public support in these both countries has been increasing in favour of accelerating the development of ballistic and cruise missiles. But these systems pose a serious risk for safety and security of the region. Lack of advanced

early warning systems and geographical proximity of these to rivals are the main sources of security threats in the region. Problem of political and technical controls of missiles during launch, physical security of nuclear weapons, maintenance of communication during launch of missiles and missile test flights during the period of strained relations are some other challenges which need to be addressed. Introduction of ballistic missile defence systems in the region by India will further aggravate the situation in a negative sense. Moreover, the social and economic development of the region would also be affected by this costly arms race. Finally, as responsible nuclear neighbors, India and Pakistan need to carefully evaluate the impact of their growing ballistic missile capabilities and their missile management practices. In addition, both countries would be wise to consider establishing a ballistic missile restraint regime in the region. Restraint measures could improve national and regional security, while retaining the deterrent value of nuclear arsenals.

End Notes and References:

[1] For details see, Bidwai, Praful and Vanaik, Achin (2002). *South Asia On A Short Fuse*. New Delhi: Oxford University Press.

[2] Shannon, N, Kile et, al. (2011). World Nuclear Forces, January 2011, *SIPRI Year Book*, Oxford: Oxford University Press, 320.

[3] For a detailed information about missile development programmes of India and Pakistan see, Dhanda, Suresh (2010). *Nuclear Politics in South Asia*. New Delhi: Regal Publications.

[4] The *Agni* missiles have been developed, reportedly with distant China as well as nearby Pakistan in mind, and have been tested in three versions, with a forth, intended to be of longer range, underdevelopment. *The Military Balance 2003-04*. London: IISS, 2003, 131.

[5] Dhanda, Suresh (2009). India's Nuclear Weapons Programme: Retrospect and Prospects. *Indian Foreign Affairs Journal*. 4, 1, 90.

[6] It has been reported that the Pakistani military had prepared their nuclear tipped missiles to fight back a possible Indian attack during the Kargil crises. The then US President Bill Clinton had conveyed this news to the then Pakistani Prime Minister Nawaz Sharif during a meeting of both the leaders. It is quoted by Hussain Haqqani in his book titled "Pakistan Between Mosque and Military" through Bruce Riedel, a special assistant to Clinton and a senior director of " Near East and South Asian Affairs" at the National Security Council during Clinton's tenure, who was present in the meeting of July 4, 1999 between the two leaders. Reidel recalls that during the meeting Clinton asked Sharif, "Did he order Pakistani nuclear missile force to prepare for action? Did he realize how crazy that was? You have put me in middle today, set the US fail and I won't let it happen. Pakistan is messing with nuclear war?" At the end of the meeting, Sharif agreed to announce a Pakistani withdrawal from Kargil and restoration of the sanctity of LOC in return for Clinton taking a personal interest in resumption of the Indo-Pak dialogue. *Times of India*, 21 June 2005. Also see, Ahmad, Samina and Cotright, David (2001). *South Asia at Nuclear Crossroad*, Fourth Freedom Forum, Joan B Kroach Institute for International Peace Studies, Managing the project at Harvard University.

[7] Talbott, Strobe (1998). *U.S. Diplomacy in South Asia: A Progress Report*,.U.S. Department of State Dispatch.

[8] The missile trajectory can be 'depressed' to a lower apogee, which shortens the range and reduces the flight time. This can be used to fly below a defensive system and reduce the warning time provided by ground-based radars. The depressed trajectory has a flatter re-entry angle and the highest re-entry speed. Ramana, M.V., et.al. (2004). Nuclear Early Warning Issues in South Asia: Problems and Issues. *Economic and Political Weekly*. 17 January.

[9] Salik, Ahmad Naeem, (2002). Missile Issues in South Asia. The *Nonproliferation Review*. 9, 2, 47-48.

[10] For details see, Sagan, D. Scott (1993). *The Limits of Safety: Organizations, Accidents and Nuclear Weapons*. Princeton: Princeton University Press.

[11] Krepon, Michael (2002). *Missile Defence and Asian Security*, Report 45, presented to the Stimson/CAN NMD-China Project.

[12] Dhanda, Suresh (2009). Nuclear Deterrence in South Asia: An Assessment of Second-Strike Capability. *World Affairs*. 13, 4, 108.
[13] Quinlan, Michael *South Asia Nuclear Briefs*: available at http://www.iiss.org/newsite/showpage.php?
[14] Both India and Pakistan declared unilateral nuclear test moratoria in the aftermath of the May 1998 nuclear tests. This was formally recognized in the February 1999 Lahore declaration, and both parties agreed to continue the moratorium.

Table 1: Estimated Time Duration of Some Possible Missile Flights in South Asia

Launch Point	**Target**	**Distance (km)**	**Estimated Total Flight times (minutes)**
Airbase Near Karachi	Thiruvanatpuram	2000	13
Sargodha Airbase	Mumbai	1470	11
Agra Airbase	Karachi	1128	10
Agra Airbase	Lahore	608	8
Sargodha Airbase	New Delhi	581	8
Depressed Trajectory Flight		600	5

Source: Zia Mian, R Rajaraman and M V Ramana, "Early Warning in South Asia : Constraints and Implications," **Science and Global Security**, Vol. 11, 2003, pp.109-150