Theatre Missile Defence and South Asia: A Volatile Mix

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Introduction

The missile competition in South Asia is on the verge of a new and dangerous phase that threatens to disrupt the delicate strategic balance of the subcontinent. India and Pakistan already have stockpiles of ballistic missiles, along with the associated launchers and trained personnel necessary to deploy them at short notice. Now reports have emerged that India plans to acquire a theatre missile defence (TMD) system, based on Russian, Israeli, and indigenous technology and equipment. Pakistani defence officials have acknowledged that Pakistan would find such a development threatening and could respond by increasing the country's nuclear and missile capabilities.

A similar situation had arisen in 1996 during negotiations between the Greek-Cypriot government and Russia on the purchase of an advanced air defence system with an anti-tactical ballistic missile (ATBM) capability. This had triggered a harsh reaction by Turkey, including threats of military strikes, and resulted in a significant increase in regional tension. The Cyprus crisis was temporarily defused in January 1997 when, after signing the contract with Russia for the missiles, the Greek-Cypriot government agreed that no equipment would be transferred for at least 16 months.

The introduction of an ostensibly defensive ATBM capability into South Asia by India has the potential to cause a crisis of a far greater proportion: one that could derail America's present non-proliferation policy in the region and spark off a full-fledged nuclear and missile arms race.

This essay will examine India's pursuit of an anti-missile capability, the impact of such an acquisition on the fragile security balance in South Asia,

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Pakistan's possible responses, and measures the United States might undertake to prevent this outcome.

India's Quest for Missile Defence

India's recent interest in missile defences appears to be driven primarily by Pakistan's acquisition of M-11 ballistic missiles from China in the early 1990s. Samir Sen, a former director of India's Defence Research and Development Organisation (DRDO) believes that the value of an Indian TMD system will effectively neutralise Pakistan's missile capabilities. Although some of China's missiles have the range to reach targets in India, China's capability to threaten India is diminishing as it moves to retire the DF-3 missile and cancel the follow-on DF-25 programme. India has apparently been pursuing two methods to obtain an anti-missile capability: creating an indigenous system and buying the capability off the shelf. Beginning in early 1994, the DRDO began developing the Indian-designed Akash (Space) system—a low-to-medium altitude surface-to-air missile (SAM)—to enable it to engage ballistic missiles. The Akash anti-aircraft unit with its Rajendra phased array radar was expected to enter service in 1997. The Rajendra radar can reportedly track up to 64 targets at a range of 50 km. The stated goal of the eventual upgrade project is to be able to intercept missiles with ranges up to 2,000 km.

Given the difficulties the United States experienced in developing the theatre high altitude area defence (THAAD), which is supposed to be able to engage missiles with ranges up to 3,500 km, this goal is perhaps unrealistic. But the move could also be motivated by India's desire to develop a defence against the 1,800 km-range DF-21s thought to be deployed in southwestern China.

India has also shown interest in Israeli technology applicable to missile defence, particularly the Arrow ATBM and Phalcon air-borne early warning (AEW) aircraft. Former head of the US Central Intelligence Agency (CIA) James Woolsey has stated: "Israel probably hopes to export the Arrow system or its associated technologies." India is also developing an AEW platform equipped with phased array radar technology, similar to that used by the Phalcon, to cue its ATBM system. Due to America's significant technical and financial involvement in the Arrow programme, however, its approval would be necessary for any legal export of that system. But there are apparently no similar restrictions on the Phalcon.

While it is highly unlikely that the United States would permit Israel to export the Arrow to India, given long-standing US concerns about India's missile programme and its desire to prevent a missile race in South Asia, recent Press

reports indicate that India may be trying to acquire Arrow technology from Israel covertly. In 1993, the US General Accounting Office (GAO) criticised the American government agencies for not properly safeguarding technology and equipment transferred to Israel as part of the Arrow programme, raising the spectre of unauthorised transfers. A year earlier, Israel had been accused of providing sensitive Patriot ATBM technology to China without authorisation. Although the State Department cleared Israel of these charges, the Pentagon did not. Then Secretary of Defence Richard Cheney reportedly believed that the Israeli government was responsible for the illicit technology transfer.

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India's other option for obtaining an ATBM is to buy the missiles themselves, rather than trying to acquire the technology to make them. Negotiations between India and Russia have been underway since 1995 on the acquisition of an advanced air defence system with ATBM capability, either the S-300PMU-1 or the S-300V. The Almaz design bureau's S-300PMU-1 is a highly mobile SAM system that has been upgraded to give it an intercept capability against tactical ballistic missiles with ranges of over 300 km. The Antey bureau's S-300V was the world's first operational, dedicated ATBM system. The S-300V actually comprised two different missiles, the dedicated anti-missile 9M82 (NATO code name: SA-12b Giant), and the dual-role 9M83 (NATO code name: SA-12a Gladiator). The entire system, which is also mobile, can intercept ballistic missiles with ranges of up to 1,000 km. The S-300V has reportedly shot down over 60 tactical ballistic missiles with ranges of up to 600 km during tests and has demonstrated a single-shot kill probability of 40 to 70 per cent. An Indian delegation, led by the minister of defence, reportedly observed the testing of the S-300V system in August 1995 at Russia's Kapustin Yar firing range. In addition, Russia displayed the S-300PMU-1 at India's second international military equipment exhibition in March 1996. At the end of 1996, Oleg Sidorenko, deputy director general of Rosvoroozhenie, Russia's arms export agency, stated: "Negotiations are more than half way through and we expect to sell the systems to India very soon."

India would have no trouble integrating the Russian systems, since its entire air defence system is based on Soviet weapons and technology. Obtaining a reliable supply of spare parts for Russian supplied equipment has been a problem, but measures have been proposed to address this issue.

Table 1: India's Options for Anti-Tactical Ballistic Missiles

Name	ATBM Velocity (km/Sec)	Target Velocity (km/sec)	Target Range (km)	Engagement Range (km)
Akash	5+	4.3	2,000	27 (vs Aircraft)
S-300P	2	1.3	170	25
S-300PMU-1	2+	2.8	800	40
SA-12A	1.7	2.3(approx)	600	25
SA-12B	2.4	3	1,000	40
Arrow	?	3	1,000	100

One possible solution is the formation of joint ventures between Indian and Russian firms, which would also facilitate future technology transfer. The most immediate obstacle to India's acquisition of either S-300 system appears to be financial. Estimates of the costs of the systems vary from $1 billion for six systems and production rights ($160 million a piece) to $230 million for three to four sets (about $55 to 75 million a piece). India's defence budget does not have much room for such big-ticket purchases. However, with the current difficulties being experienced by Russia's defence industry, unorthodox financing arrangements could probably be worked out to facilitate arms deals. For example, China paid for 80 per cent of its Su-27 deal with Russia with barter, and Malaysia paid 25 per cent of the cost of its MiG-29s with palm oil.

Strategic Implications of an Indian TMD System

India's acquisition of a sophisticated air defence system with anti-missile capabilities could erode Pakistan's confidence in both of its main nuclear delivery systems, the M-11 ballistic missile and US-supplied F-16 aircraft, to such a degree that it would no longer believe its nuclear capability provided a credible deterrent against India. Currently, the Indian and Pakistani nuclear deterrents are understood to include non-deployed, nuclear capable missiles, a number of unassembled nuclear weapons, and a capability to build additional nuclear weapons quickly. The leaders of India and Pakistan probably assume that the other side has the capability to deliver a nuclear strike against their country, although both countries have chosen to keep this capability "in the basement." Thus, India and Pakistan seem to have established a fragile, but workable, form of mutual "non-weaponised" deterrence.

However, India's acquisition of an ATBM could destabilise this nuclear balance by depriving Pakistan of an assured strike capability. Pakistani leaders may fear that during a crisis, they would be vulnerable to a disarming first strike by India, which

would then rely on its missile defences to intercept any Pakistani missiles not destroyed on the ground. This concern could drive Pakistan to adopt a "use it or lose it" strategy, calling for the early use of its nuclear forces in the event of a conflict in order to penetrate India's defences. Islamabad may also worry that India's defensive systems would be able to neutralise a nuclear strike by Pakistan, thus, allowing India to engage in a conventional war without fear of nuclear retaliation from Pakistan. Given the large imbalance of conventional forces between India and Pakistan, the outcome of such a conflict is not really in doubt. As one Pakistani analyst has noted, "A shield would allow [India] to wield its sword more menacingly."

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In the past,Pakistan has reacted quite sharply to perceived threats from India. In 1990, during the last major crisis between the two countries, Pakistan reportedly armed its F-16s with nuclear bombs. There are six Indian cities with populations greater than 500,000 within the range of Pakistan's M-11s, but only five would be suitable targets for Pakistani missiles (one in Kashmir would presumably be ruled out because its population is mostly Muslim). Pakistan's ability to saturate India's missile defences cannot be quantified at this time because it is dependent on the number of launchers it has acquired from China as well as on its own capacity to coordinate multiple, simultaneous launches under combat conditions from dispersed sites. The S-300PMU-1 and S-300V batteries are each able to engage up to six targets at once with two missiles a piece. By using different missiles to provide upper and lower tier protection, an S-300V battery can also conduct multiple engagements against incoming missiles.

Instead of buying the required number of systems to protect all of its major cities from the largest possible Pakistani salvo, India apparently plans on complementing the S-300s purchased directly from Russia with models produced under licence, plus its indigenous Akash system. The high mobility of the S-300 systems would also permit India to economise by buying fewer than required and then moving them around to prevent Pakistan from knowing which sites are undefended. In addition, India could use unmanned aerial vehicles, either indigenous ones or those purchased from Israel, to monitor Pakistan's missile force and shift its defences accordingly.

Possible Pakistani Response

How might Pakistan respond to this new challenge? Pakistan's options would be either to match India's defences with similar systems or to build up its offensive forces to overwhelm India's defences. Pakistan's short-term prospects for either building or buying a similar defensive system are slim. Despite reports to the contrary, Pakistan's ability to produce its own TMD system is extremely limited. To date, Pakistan has only succeeded in producing short-range, man-portable SAMs based on Chinese designs. Pakistan's prospects for buying a missile defence capability in the near-term are poor because the United States and Russia, the only two countries which currently deploy ATBM systems, are either unwilling or unable to supply Pakistan with such a capability. The United States is currently barred from supplying Pakistan with any military equipment due to the Pressler Amendment, and Russia's close relations with India make major arms sales to Pakistan unlikely. Pakistan's long-term prospects of acquiring a missile defence system are better since China, which has a history of supplying Pakistan with missile technology, is believed to be working on its own ATBM capability.

One missile analyst has noted that, with assistance from China, countries like Pakistan might acquire missiles or the technologies to develop their own ATBM systems in the next five to ten years. Unable to match India's defensive systems, Pakistan's initial response would probably be to increase the number of nuclear weapons and delivery systems available at short notice in order to restore its deterrent. This view was confirmed by a knowledgeable Pakistani defence official. The options that Pakistan has in the nuclear sphere are outlined below, followed by activities that Pakistan could undertake to enhance its delivery capability.

Nuclear Options

In 1991, in a major concession to Washington that ranks as the United States' most important non-proliferation achievement in South Asia, Pakistan agreed to halt the production of weapons-grade uranium and nuclear weapons components. Pakistan is believed to possess enough weapons-grade uranium for about 15 to 25 nuclear bombs, with only a handful of complete, but unassembled, weapons in its inventory. In order to fully equip the 36 M-11 missiles that Pakistan is believed to possess, it would have to increase its stockpile of weapons-grade uranium by about 50 to 100 per cent. Pakistan is believed to have continued to produce low enriched uranium (LEU) after 1991. Nuclear experts estimate that it would take Pakistan about a year to enrich this LEU to weapons grade, yielding about 20 bombs worth of material

or enough to equip each of its M-11s with a nuclear warhead.

If Pakistan's leaders were especially fearful of India's potential to engage in a surprise attack under the cover of a TMD system, they might order the complete assembly of nuclear weapons to reduce Pakistan's reaction time to an Indian attack. As part of a longer term nuclear build-up, Pakistan could begin operation of its 40 to 50 megawatt plutonium production reactor at Khushab that has been completed, but not yet loaded with fuel. Since less plutonium than uranium is needed for nuclear weapons, plutonium is better-suited for compact missile warheads. China is believed to have been providing assistance to the Khushab reactor as well as an adjoining, unidentified nuclear facility and a plutonium separation plant at Chashma. Once Pakistan begins operating the reactor, approximately 10 to 14 kg of plutonium could be produced each year, enough for two to three bombs. Pakistan is believed to have a small-scale reprocessing capability, but it is not known to be operational.

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Table 2: Pakistani and Chinese Ballistic Missiles

Name	Range (km)	Reentry Velocity (km/sec)	Payload (kg)
M-11	280	1.5	800
Hatf-II	300	1.5	500
Hatf-III	600	2.5	500
DF-3A	2,800	5.3	2,150
DF-21	1,800	4.2	600

In a worst-case scenario, Islamabad may feel compelled to conduct a nuclear test to validate its design for a missile warhead. Pakistan has never conducted a nuclear test, but its weapons are believed to be based on a Chinese design using weapons-grade uranium that China tested in the 1960s as a missile warhead. According to a 1996 US National Intelligence Estimate (NIE), the intelligence community believes "it is probable" that Pakistan has developed a warhead for the M -11. If Pakistan starts the Khushab plutonium production reactor and develops a plutonium-based warhead design, its need to conduct a test would increase, since the Chinese design is believed instead to use weapons-grade uranium.

Missile Options

India's acquisition of a sophisticated air defence system with anti-missile capabilities, such as the S-300PMU-1 or S-300V, will further reduce Pakistan's ability to deliver a nuclear weapon by aircraft and, for the first time, threaten Pakistan's ability to strike targets with missiles. Pakistan's air force is currently outnumbered and outgunned by India. In addition, India has begun an air force and air defence modernisation programme that includes the purchase and licensed production of Russian-made Su-30MKI fighter-bombers and the Tunguska low-altitude air defence system. At the same time, Pakistan is barred from obtaining any additional advanced fighters from the United States due to the embargo. Moreover, its planned acquisition of French Mirage 2000 fighters has been held up by financial and political problems. Even the head of Pakistan's air force has admitted, "We are now losing the qualitative edge." According to the Pentagon, Pakistan's missile programmes "are driven by a desire to augment limited offensive air capabilities against India (which holds a nearly 3:1 advantage in combat aircraft) and to field a more effective delivery system." Therefore, without a credible aerial delivery capability, Pakistan will have to rely mainly on ballistic missiles to overwhelm India's defences. According to the 1996 NIE, Pakistan's M-11s could be operational within 48 hours. Although this is a fairly short interval of time, Pakistan's leaders may feel compelled during a crisis to disperse the stored missiles or deploy them in the field in order to reduce their vulnerability to a first strike. This move would enhance the survivability of its current missile arsenal, but would not improve Pakistan's ability to penetrate India's missile defences. For that objective, Pakistan would have to acquire additional missiles to saturate India's defences. China is unlikely to provide these missiles since it agreed in October 1994 to halt the sale of ballistic missiles inherently capable of carrying a 500-kg payload to a distance of at least 300 km, a ban which China agreed prohibited further exports of the M-l1. However, China has apparently not interpreted this pledge as barring the transfer of missile components or production technology. Since late 1995, Pakistan, with Chinese assistance, has been constructing an M-11 missile factory outside of Rawalpindi. The 1996 NIE estimated that the factory will become operational in one or two years, about the time that India plans on deploying a missile defence system.

Consequences of Possible Pakistani Response

By undertaking any of the actions described above, Pakistan runs the risk of seriously damaging its relationship with the United States. In 1996, President Clinton signed into law the Brown Amendment, which allows the United States

to transfer to Pakistan the military equipment it had paid for before the 1990 cut-off, except for the 28 F-16s. According to the State Department, "Our ability to move ahead with partial implementation of the Brown Amendment is based on a continuation of Pakistan's current voluntary restraint in its nuclear and missile activities." Pakistan's more drastic options such as conducting a nuclear test or deploying its missile force, which would be harder to hide from US intelligence, would also result in harsher penalties. Deployment of the M-11s or construction of additional ones would likely trigger US missile proliferation sanctions on both Pakistan and China. The 1994 Nuclear Proliferation Prevention Act requires the United States to cut off all military and economic assistance, deny certain export licences, and oppose domestic and international bank loans to any non-nuclear weapon state that conducts a nuclear test. Therefore, Pakistan's leaders would have to weigh carefully the possible costs of the responses described above against the benefits for Pakistan's security and deterrent capability.

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If Pakistan were to take any of these actions—enriching uranium to weapons-grade, increasing its nuclear weapons stockpile, conducting a nuclear test, commissioning the Khushab reactor, deploying the M-11, or building additional missiles—it is likely that India would reciprocate in a similar manner, if only for domestic political reasons. India is already on the verge of deploying the Prithvi, and the Agni still enjoys considerable support in India (although its development was recently put on hold). Once India and Pakistan have embarked on an overt nuclear and missile arms race, it could be difficult to slow down or stop. An example of the potential for this type of spiralling escalation was demonstrated in early 1996. After reports emerged about India's nuclear test preparations in December 1995, John Deutch, then head of the Central Intelligenc Agency (CIA), stated: "We are concerned India is considering the possibility of a nuclear test. We have judged that if India should test, Pakistan would follow." Shortly after Deutch's statement, Pakistan's efforts to ready its own test site became public, and Foreign Minister Assef Ahmad Ali boasted: "If

India wants to prove its manhood by conducting a nuclear test, then we have the capability to prove our manhood."

ATBM Systems and Non-Proliferation Agreement

The United States has reportedly expressed its concerns to Russia about the sale of missile defence systems to India. However, the United States will find it difficult to block the sale for several reasons. First, Russia is eager to sell the S-300 system, which it has been marketing for many years. China, the United Arab Emirates, South Korea, Singapore, Egypt, and Iran have all expressed their interest in these systems, and Russia would not want to jeopardise future sales by bowing to US pressure to halt a sale to India. Second, India is a key market in its drive to boost arms exports, and Russia cannot risk alienating New Delhi. In 1994, India signed a six-year military cooperation agreement with Russia, which signalled the political importance attached by both countries to establishing closer defence ties.

There are two non-proliferation agreements that deal with missile transfers, the Missile Technology Control Regime (MTCR) and the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies. The Wassenaar Arrangement, the successor regime to the Cold War-era COCOM, was agreed to by 33 countries, including Russia, on July 12, 1996. Although this agreement regulates guided missiles with ranges greater than 25 km, it excludes SAMs. The MTCR, which Russia is a member of, does not distinguish between offensive and defensive missiles, but its members have agreed to a "strong presumption to deny" the export of Category I missiles which are inherently capable of carrying a 500 kg payload to at least 300 km. According to State Department officials, even the most capable Russian ATBM missile, the 9M82 (SA-12b Giant), does not appear to exceed the MTCR threshold. However, if Russia allows India to produce the S-300V under licence, this would raise the issue of whether the solid rocket engines could be used in a ballistic missile restricted by the regime. This concern is well-founded since India has already proved its ability to adapt the liquid-fuel rocket engines of the SA-2 SAM for use in its 150 to 250 km-range Prithvi missile. Under MTCR rules, the export of production technology that could be used in Category I missiles is prohibited.

Conclusion

South Asia could see the emergence of two hostile countries armed with nuclear-tipped missiles deployed on hair-trigger alert. Given Russia's strong incentives for selling the S-300 system to India and the lack of any kind of international arrangement to prevent such transfers, the United States will need to initiate a

multi-pronged strategy to prevent, or at least significantly delay, the introduction of these missile defences into South Asia. The most severe near term threat is Russia's sale of advanced missile defence systems to India. For the reasons noted above, it will probably be difficult for the United States to persuade Russia to halt such a sale. As a sweetener, the United States could offer to drop its objections to Russia's sale of its S-300V to the United Arab Emirates and South Korea on the condition that the systems be used only in an ATBM mode. This compromise would allow these two US allies, which face immediate missile threats, to field defensive systems years before the United States' dedicated ATBM, the AC-3, would be ready for export. In addition, by limiting the S-300V to operating only in a missile defence role, the oft-cited problem of friendly fire could be resolved. As a complement to this initiative, and to keep Russia from feeling that it was being singled out unfairly, the United States should try to reach an understanding with the other potential ATBM suppliers such as Israel, China, and the Europeans to keep these systems and the associated technologies out of South Asia. However, it may only be possible to secure a postponement of the sale, similar to the case of Cyprus. If so, the United States should use the extra time to engage in diplomacy that could reduce regional tension and obviate India's perceived need for the weapons. One possible goal would be to secure an agreement by Pakistan and India to a non-deployment policy for both ballistic missiles and missile defences. This measure would be a simple, yet symbolic, step that could be taken in the wake of their May 1997 bilateral peace talks as a confidence-building measure and as a demonstration of improved relations between the two countries.

The United States should follow up such a proposal with renewed pressure on China to halt the transfer of missile production technology to Pakistan. India and Pakistan seem to practice a unique form of deterrence, relying on non-deployed nuclear weapons and ballistic missiles. However, the stability of this mutually deterrent relationship could be threatened by the unilateral introduction of missile defences, just as such systems threatened to destabilise superpower relations during the 1980s and still antagonise US-Russian relations today. The primary goal of the United States should always be to prevent the spread of nuclear weapons and ballistic missiles, but, in instances where that policy fails, such as South Asia, the United States must prevent the introduction of missile defences into the region. Once that line has been crossed, the ability of the international community to achieve significant reductions in the nuclear or missile arsenals of the opposing sides will be severely constrained.

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