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Nuclear Weapons and Ballistic Missile Proliferation in India and Pakistan: Issues for Congress

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Summary

The Indian and Pakistani nuclear tests of May 1998 ended South Asia's condition of "existential" deterrence. Both countries now have overt nuclear postures, and U.S. concerns in the region have focused on preservation of global nonproliferation regimes and related efforts, prevention of an arms race in South Asia, and movement toward reconciliation between India and Pakistan, especially on their mutual differences over the area of Kashmir.

The "benchmarks" which provide a framework for U.S. policy in this area encompass key aspects of nonproliferation efforts. Progress toward stated goals has been limited. Neither India nor Pakistan is signatory to the Nuclear Non-Proliferation or Comprehensive Test Ban treaties, and there are indications that both are continuing to produce fissile materials and perhaps even deploy nuclear weapons.

The 1999 Kargil conflict had the effect of suspending the so-called Lahore process of reconciliation begun in February of that year. The October 1999 military *coup* in Pakistan and the November 1999 political victory of the Hindu nationalist party in India brought renewed fears of further conflict in the region, but the governments of both countries have thus far maintained fairly moderate external policies.

There remain no confirmed reports of the actual deployment of nuclear weapons by India or Pakistan, but both governments have indicated that their militaries are prepared to make use of such weapons. In August 1999, a quasi-governmental Indian body released a Draft Nuclear Doctrine for India. This document calls for a "minimum credible deterrent" (MCD) based upon a triad of delivery systems and pledges that India will not be the first to use nuclear weapons in a conflict. It has been neither accepted nor rejected by New Delhi. Islamabad has made no comparable public declaration, but it also seeks to maintain an MCD while rejecting a no-first-use pledge.

Some observers consider the current situation of territorial contiguity and weak command and control structures in South Asia to be inherently unstable. Others believe that, in the absence of increased regional tensions, strategic stability will continue to be present. Given China's strategic complacency in relation to India, and Pakistan's largely reactive posture, New Delhi's nuclear deployment decisions are perhaps key to regional stability. At present, strategic, economic, and technological factors indicate that the growth of South Asian nuclear and missile forces likely will continue to be limited in the foreseeable future.

In pursuit of its stated policy goals, the U.S. government may employ four broad approaches to proliferation in South Asia, each with its own potential strengths and weaknesses. These are: *increased pressure* to compel greater cooperation, *continuation* of the approach currently in place, *increased incentives* to encourage greater cooperation, and/or the provision of *technological assistance* to allow for better managed and, therefore, potentially safer nuclear arsenals.

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For questions regarding this report, contact Barbara LePoer, CRS Foreign Affairs, Defense, and Trade Division.

Missile Classifications and Other Acronyms

SRBM	short-range ballistic missile	70-1,000 km	(40-620 mi.)
MRBM	medium-range ballistic missile	1,001-3,000 km	(620-1,860 mi.)
IRBM	intermediate-range ballistic missile	3,001-5,000 km	(1,860-3,100 mi.)
ICBM	inter-continental ballistic missile	5,001+ km	(3,100+ mi.)

CTBT	Comprehensive Nuclear Test Ban Treaty
DND	(Indian) Draft Nuclear Doctrine
FMCT	Fissile Material Cutoff Treaty (negotiations)
MCD	minimum credible deterrent
NMD	national missile defense
NPT	Nuclear Non-Proliferation Treaty
TMD	theater missile defense
WMD	weapons of mass destruction

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Introduction

While many international security analysts focus their attentions on the evolving relationship between the United States and the People's Republic of China (PRC), less frequently addressed are the security orientations of South Asia's nuclear powers. Issues of nuclear proliferation on the Indian subcontinent have major implications for both U.S. and global security. The region is by most accounts the world's most dangerous nuclear flashpoint, and the use or even large-scale deployment of nuclear weapons there would drastically alter global attitudes toward proliferation, and could result in a tragedy of immense proportions.

Ten years after the cold war's end, U.S. relations with India and Pakistan are in a state of flux. As the power of both China and India increases, the strategic orientations of these two vast nations – and the triangular relationship with a nuclear-armed Pakistan – are likewise still being formed. The new configurations that arise will be central to Asian stability or the lack thereof, and the means by which the United States wields its currently preponderant power could strongly influence both the tone and substance of Asia's security dialogue in the new century.

This report reviews recent developments relevant to South Asian nuclear and ballistic missile proliferation, and then summarizes open-source reports on the nuclear capabilities of India and Pakistan. A following section discusses possible deterrence models for South Asia. Finally, four broad avenues for U.S. policy are introduced and briefly evaluated. The United States Government has maintained a policy of nonproliferation in South Asia, a policy which seeks to "cap" or even "roll back" the region's nuclear forces and their delivery systems. Possible policy options for the United States Congress include those which either *increase pressure* in seeking to compel greater cooperation on nonproliferation, *continue* the approach currently in place, *increase incentives* to encourage greater cooperation, and/or provide *technological assistance* to one or both countries with the goal of allowing for better managed and, therefore, safer nuclear arsenals and more stable security dynamics in the region.

Background

U.S. Policy Goals

For the past decade, the United States security focus in South Asia has sought to minimize damage to the nonproliferation regime, prevent escalation of an arms and/or missile race, and promote Indo-Pakistani bilateral dialogue, especially on the sovereignty dispute over Kashmir and adjacent areas. In light of these goals, the Clinton Administration has set forward five key "benchmarks" for India and Pakistan based on the contents of UN Security Council Res. 1172 (June 1998) which condemned the two countries' nuclear tests. These are:

- signing and ratifying the Comprehensive Nuclear Test Ban Treaty (CTBT)[1]
- halting all further production of fissile material and participating in Fissile Material Cutoff Treaty (FMCT) negotiations[2]
- limiting development and deployment of weapons of mass destruction (WMD) delivery vehicles
- implementing strict export controls on sensitive WMD materials and technologies
- establishing bilateral dialogue between India and Pakistan to discuss their mutual differences.

Progress in each of these areas has been limited. Neither India nor Pakistan has signed the CTBT, and both appear to be continuing their production of weapons-grade fissile materials. The status of weaponization and deployment is unclear, but there are indications that this is occurring at a more or less steady pace. A positive area is that of export controls. Fears that these countries, especially Pakistan, might seek to export nuclear materials and/or technologies have proven unfounded thus far.[3] While there has been no repeat of the intense military clashes of summer 1999, tensions in Kashmir remain high, and bilateral dialogue is not occurring.[4]

India and Pakistan have generally had very different priorities in their dealings with the United States: New Delhi tends to seek greater recognition as a major power,

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[1] For a review of the CTBT and its current status, see CRS Issue Brief IB92099, *Nuclear Weapons: Comprehensive Test Ban Treaty*, by Jonathan Medalia.

[2] For an overview of the FMCT, see U.S. Department of State, Bureau of Nonproliferation, "Fact sheet: Fissile Material Cutoff Treaty," June 29, 1999.

[3] U.S. concerns persist, however. For example, a member of Pakistan's Atomic Energy Commission has recently indicated that the country is ready to export "peaceful nucelar capability" to other developing nations ("Official: Pakistan ready to export peaceful nuclear capability," *Khabrain* (Islamabad in Urdu), July 15, 2000 via Foreign Broadcast Information Service (FBIS), July 15, 2000).

[4] Recent developments, including India's release of several jailed Kashmiri separatist leaders, an indigenous Kashmiri call for restored autonomy, and the unilateral ceasefire announced by a key Kashmiri militant group, have raised hopes that bilateral dialogue will be initiated in the near-future. See "Breakthrough in Kashmir?," *Economist*, July 29, 2000.

while Islamabad desires recognition commensurate with that of India.[5] Yet both countries place a high value on friendly relations with Washington, especially in the area of military-to-military contacts.[6] New Delhi has long been a strident critic of U.S. nonproliferation policy, identifying the creation of nuclear "apartheid" in the alleged US/Western disregard for Article VI of the Non-Proliferation Treaty (NPT) calling for "good faith" negotiations aimed at achieving global nuclear disarmament.[7] Islamabad, too, has criticized perceived inconsistencies in U.S. policy, particularly in Washington's relative silence on nuclear weapons proliferation in Israel.[8]

Actions of the 105th and 106th Congresses

After the May 1998 nuclear tests, President Clinton imposed sanctions on both India and Pakistan under Section 102(b) of the Arms Export Control Act (AECA). Given the importance to U.S. wheat growers of agricultural exports to the region and especially to Pakistan, the 105th Congress passed legislation (P.L. 105-194) amending the AECA to allow for the purchase or other provision of food or other agricultural commodities for one year, and (P.L. 105-277) adding one-year waivers on sanctions under the Foreign Assistance Act of 1961 and the Export Import Bank Act of 1945. The 106th Congress granted the President authority, in the national security interest, to extend these waivers for an indefinite period (P.L. 106-79). Thus far, the President has exercised his authority to restore certain key forms of financial support for both India and Pakistan, and there have been congressional efforts to suspend sanctions entirely.

Some Indian entities involved in nuclear or missile-related industries remain under U.S. sanctions, and opposition to international financial institution loans for non-humanitarian assistance projects in India remains a source of friction between Washington and New Delhi. The October 1999 overthrow of Pakistan's democratically elected government triggered additional sanctions on that country under Section 508 of the Foreign Operations Appropriations Act. These include restrictions on foreign military financing and economic assistance. Presently, United States Government assistance to Pakistan is limited mainly to refugee and counter-

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[5] Tariq Rauf, "Learning to live with the bomb in South Asia: Accommodation not confrontation," Center for Nonproliferation Studies Report, Jan. 1999. India's main goals in negotiations with the United States are cited as "recognition of regional and global power status; mitigation of the effects of a Sino-American strategic alliance; lifting of technology sanctions; sharing of information and data on sub-critical tests and simulation for weapon safety and reliability; keeping the Kashmir dispute a bilateral issue between India and Pakistan; and achieving multilateral progress toward global nuclear disarmament." Pakistan's goals are seen as "securing a nonproliferation, economic, and technology sharing package roughly equal to that secured by India; U.S. and/or international intervention in resolving the Kashmir dispute; easing the threat of war in the region; and salvaging its crumbling economy."

[6] See also CRS Issue Briefs IB93097, *India-US Relations*, and IB94041, *Pakistan-US Relations*, by Barbara LePoer.

[7] George Perkovich, "Nuclear proliferation," *Foreign Policy*, Fall 1998.

[8] "A worrying nuclear nexus," *News* (Islamabad), July 16, 2000.

narcotics assistance. Military sales to both countries continue to be banned, though the President has authority to change this.[9]

Actions of the Administration

Administration officials continue to press both India and Pakistan to halt proliferation activities and make progress in each of the benchmark guideline areas. On June 15, 2000, the United States and Pakistan resumed talks on nonproliferation issues after a 16-month hiatus. Deputy Secretary of State Strobe Talbott, in his ninth such meeting with the Pakistani Foreign Secretary in two years, urged Pakistan to sign the CTBT, most immediately as a means of gaining international political and economic support. Since the May 1998 tests, Secretary Talbott has also held regular meetings with India's Minister of External Affairs, and these talks have involved similar prodding on issues of nonproliferation.

President Clinton traveled to the South Asia in March 2000, visiting numerous sites in India over a period of six days, and spending six hours in Pakistan. The trip included an address to the Indian parliament and a nationally televised address to the people of Pakistan. Though economic issues topped the list of priorities, nuclear proliferation and regional stability were also covered, with the President urging both countries to adhere to the nonproliferation benchmarks and exercise mutual restraint. The visit produced a joint statement by President Clinton and Indian Prime Minister Vajpayee reaffirming their commitment to voluntary nuclear testing moratoria, and pledging India's continued work toward stricter export controls and negotiation on the FMCT.[10] Other than this, no concrete progress on the nonproliferation benchmarks was made during the trip.

The President's itinerary did, however, cause many to identify a strategic U.S. shift, with the Indian Ambassador to the United States seeing "a gradual shift towards India which has been unfolding ever since Kargil and even earlier."[11] The Clinton Administration has taken pains to assure Islamabad that improved U.S.-India relations will not come at the expense of U.S.-Pakistan ties, and that "an enhanced relationship with India will serve Pakistan's long-term interests as well."[12] There is as yet no

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[9] U.S. Department of State, *Background Notes*, March 2000. For broader discussion, see CRS Report RL30384, *Economic Sanctions: Legislation in the 106th Congress*, by Dianne Rennack; CRS Report 98-116, *Nuclear, Biological, Chemical, and Missile Proliferation Sanctions: Selected Current Law*, by Dianne Rennack; CRS Report 98-486, *Nuclear Sanctions: Section 102(b) of the Arms Export Control Act and its Application to India and Pakistan*, by Jeanne Grimmett.

[10] Matthew Rice, "Treading lightly in South Asia, Clinton reaffirms non-proliferation goals," *Arms Control Today*, Apr. 2000. See also CRS Report RS20508, *President Clinton's South Asia Trip*, by Barbara LePoer.

[11] Kalyani Shanker, "U.S. tilting towards India: Envoy," *Hindustan Times* (Delhi), Mar. 29, 2000.

[12] Karl Inderfurth, "Transcript: [Assistant Secretary] Inderfurth's remarks on U.S.-India relations July 1," *USIS Washington File*, July 3, 2000.

consensus on whether a U.S. shift toward India is a positive or negative development in terms of regional stability.[13]

Recent Developments in India and Pakistan

Kargil Conflict

In the spring and summer of 1999, a pitched battle between Indian and Pakistani-supported forces lasted nearly three months and caused more than 1,000 deaths in the mountains of Kashmir.[14] In response to the fighting, the House International Relations Committee considered condemning Pakistan for its support of an "armed incursion" across the Line of Control. A meeting of Pakistan's then-Prime Minister Nawaz Sharif and President Clinton produced the so-called Washington Declaration to end hostilities, and within two weeks the two countries' forces had disengaged.[15]

Perhaps the most important effect of the 1999 Kargil conflict was to severely undermine a key assumption of classical deterrence theorists: that nuclear-armed countries do not go to war with one another. President Clinton's senior arms control advisor opined that, "Pakistan concluded, or may have concluded, that its nuclear capacity made it less vulnerable in a conventional context, and therefore enabled conventional conflict" in Kargil.[16] The crisis also suspended the so-called Lahore process of reconciliation between India and Pakistan begun in February 1999 when the Indian Prime Minister traveled by bus across the international border and into Pakistan. Too, there is reason to believe that perceived shortcomings with Indian military hardware at Kargil were behind the large boost in India's defense budget earlier this year.[17] The incident served to bring international attention to the grave dangers posed by Indo-Pakistani conflict, and – by damaging the Pakistani Prime

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[13] "U.S. policy shift breaks balance," *China Daily*, May 2, 2000; Ranjah Gupta, "Clinton's visit to India marks a new relationship," *San Francisco Chronicle*, Apr. 5, 2000; Sukhwinder Malhi, "Pak stands isolated as U.S. tilts toward India," *National Herald* (Panaji), Mar. 30, 2000; Nayan Chanda, "Coming in from the cold," *Far Eastern Economic Review*, Mar. 30, 2000.

[14] The Indian government claimed that the infiltrators were a "mix of Pakistani army regulars and Islamic militants," and the Pakistani army chief admitted that his troops had carried out "aggressive patrolling" across the Line of Control. U.S. officials are reported to have concluded that Pakistani troops "participated" in the incursion. See Surojit Gupta, "India says infiltrators flushed out," Reuters newswire, July 26, 1999, 10:19 AM EDT; Andrew Hill, "Pakistan army chief says troops into India," Reuters newswire, July 19, 1999, 10:57 AM EDT; Pamela Constable, "Kashmir deal wins support," *Washington Post*, July 10, 1999.

[15] See also CRS Report RS20277, *Recent Developments in Kashmir and U.S. Concerns*, by Barbara LePoer.

[16] John Holum, "Transcript: Arms Control Advisor Holum on Non-Proliferation," *USIS Washington File*, Apr. 5, 2000.

[17] Mohammed Ahmedullah, "India's Kashmir offensive may accelerate army modernization plans," *Military Technology* 7, 1999. Vivek Raghuvanshi, "India devotes more resources to counter Pakistan," *Defense News*, Feb. 21, 2000: 38.

Minister's reputation at home – may also have set the stage for a military *coup d'etat* in Islamabad three months later.[18]

October 1999 Pakistani *Coup*

On October 12, 1999, Prime Minister Sharif was replaced by Chief of Army Staff and current Chief Executive Gen. Pervez Musharraf in a bloodless military *coup*. According to Director of Central Intelligence Tenet, the emergence of a Pakistani government led by the man who oversaw the Pakistani Army during the Kargil conflict has "reinforced New Delhi's suspicion about Islamabad's intentions."[19] Concerns about Pakistani relations with terrorist groups also reemerged. The overthrow of a democratically elected government led to widespread international condemnation of Pakistan, as well as its suspension from the British Commonwealth. The Pakistani Supreme Court has ruled that democracy must be restored within three years. Gen. Musharraf has promised to abide by the ruling and has met with leaders of the major political parties, including the Pakistan Muslim League and the Pakistan People's Party, to discuss such an eventuality.[20]

Concerns that the presence of a military government in Islamabad might exacerbate the region's nuclear dynamics have not yet borne out.[21] The *coup* also renewed fears in some quarters that Pakistan might become a "failed state" at some time in the future, and that such a potential breakdown of central control would drastically increase the chances of an accidental or unauthorized nuclear launch. Some U.S. officials see a recipe for disaster if an economically troubled Pakistan were to sell nuclear secrets abroad. Of particular concern is Islamabad's relations with North Korea, a country that could supply Islamabad with missile technology in return for assistance with nuclear weapons development.[22] There are also concerns that if the regime of Gen. Musharraf fails, it might be replaced by a military leadership with hardline Islamic tendencies.[23]

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[18] "This is the punishment for signing the Washington Declaration," *Nawa-i-Waqt* (Rawalpindi in Urdu), July 11, 2000 via Foreign Information Broadcast Service (FBIS), July 11, 2000.

[19] Statement by Director of Central Intelligence George Tenet Before the Senate Foreign Relations Committee on The Worldwide Threat in 2000: Global Realities of Our National Security, Mar. 21, 2000.

[20] Nadeem Syed, "Heading for a safe exit," *Nation* (Islamabad), July 7, 2000 via Foreign Broadcast Information Service (FBIS), July 7, 2000; Amir Zia, "Pakistan ruler discusses democracy," Associated Press, July 3, 2000.

[21] These include fears about loss of civilian control of nuclear forces and the introduction of more hardline policies toward India. For a more detailed account of these concerns, see Gaurav Kampani, "The military coup in Pakistan: Implications for nuclear stability in South Asia," Center for Nonproliferation Studies Report, Oct. 1999.

[22] Kim Sa Nae, "North Korea aid to Pakistan raises nuclear fears," *Los Angeles Times*, Aug. 28, 1999.

[23] N.V. Subramanian, "Will Pakistan's coup repeat?," *Defense News*, Jan. 17, 2000: 21.

Pakistan's post-*coup* record on terrorism has been described as "mixed." Though Islamabad has recently outlined plans to curtail the activities of militants in both Pakistan and neighboring Afghanistan, the Pakistani leadership continues to receive criticism on this issue.[24] The director of the State Department's Office of Counterterrorism offers that, "Despite significant and material cooperation in some areas – particularly arrests and extraditions – Pakistan also has tolerated terrorists living and moving freely within its territory. But the areas of cooperation are real, and we are still in the game to make more progress."[25] Islamabad maintains diplomatic relations with Afghanistan's Taliban regime, and it is believed to support and provide haven for Kashmiri militant groups that engage in terrorism.[26] The Secretary of State in June 2000 rejected a congressionally-appointed commission's recommendation that Pakistan be threatened with sanctions for its alleged failure to cooperate with counterterrorism efforts.[27]

November 1999 Indian Elections

India possesses a viable and healthy democratic system. Fall 1999 elections served to consolidate the position of the Bharatiya Janata Party (BJP) and allowed Prime Minister Vajpayee to organize a working coalition government. The BJP's history and reputation as a Hindu nationalist party has caused concern that Indian foreign policy would become more hardline. Director of Central Intelligence Tenet noted that Pakistanis are "suspicious of India's newly elected coalition government in which Hindu nationalists hold significant sway."[28] While a major boost in defense spending was announced in February 2000, the Vajpayee government's policies have remained fairly moderate, and much attention has been given to moving forward on economic reform and development, particularly in the high-technology sectors.[29]

According to the State Department, there continue to be "significant human rights abuses" in India, caused in large part by "intense social tensions, violent secessionist movements, and the authorities' attempts to repress them, and deficient police methods and training."[30] Sectarian violence has been of special concern of late, with Christians coming under attack and accusing militant Hindu groups for a series

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[24] Judith Miller, "Pakistan outlines plan to curb militant networks," *New York Times*, June 10, 2000.

[25] Statement of Ambassador Michael Sheehan Before the Senate Foreign Relations Committee, June 15, 2000.

[26] U.S. Department of State, *Patterns of Global Terrorism: 1999*, May 2000.

[27] National Commission on Terrorism, *Countering the Changing Threat of International Terrorism*, June 7, 2000. "Proposal of sanctions rejected: Albright says U.S. is 'pressing' Pakistan, Greece on terrorism," *Washington Post*, June 5, 2000.

[28] Statement by Director of Central Intelligence George Tenet Before the Senate Foreign Relations Committee on The Worldwide Threat in 2000: Global Realities of Our National Security, Mar. 21, 2000.

[29] See also CRS Report RS20320, *India's 1999 Parliamentary Elections*, by Barbara LePoer.

[30] U.S. Department of State, Bureau of Democracy, Human Rights, and Labor, *1999 Country Reports on Human Rights Practices*, Feb. 25, 2000.

of church bombings.[31] A recent call from Kashmiri authorities demanding greater autonomy for that state has brought concern that other Indian states might likewise push for greater independence from New Delhi.[32]

December 1999 Indian Airliner Hijacking

Relations between India and Pakistan were further exacerbated by an eight-day hijacking incident last year. On December 24, five armed men took control of an Indian Airlines passenger jet carrying 189 people from Katmandu to New Delhi and demanded the release of some militants involved in the Kashmiri insurgency who were imprisoned in India. After a peaceful end to the drama (one passenger was killed during the stand-off), the Indian government claimed to have "irrefutable evidence" that Pakistani intelligence services were involved in the hijacking and it demanded that Pakistan be labeled a terrorist state. Islamabad denied the charges. The United States has reportedly determined that a terrorist group that has received Pakistani government backing was responsible for the hijacking, but stopped short of blaming Pakistan itself. In the wake of the hijacking and the 1999 Kargil conflict, Indo-Pakistani relations plummeted to their lowest level in recent times.[33]

Debate Over a Regional Nuclear and/or Missile Race

The "unofficial" status of both India and Pakistan as nuclear weapons states – coupled with the countries' animosity – makes discussion of their relative capabilities in this arena an inherently delicate undertaking. The U.S. State Department suggests that speculation on the size and capabilities of South Asian nuclear arsenals can, in itself, be "potentially destabilizing."[34] Other observers argue that a coherent (if approximate) understanding of the status of South Asian nuclear arsenals and of the intentions of their owners is essential for effective United States security planning in the first decade of the new century.

Both Indian and Pakistani government officials express a desire to avoid engaging in a costly and potentially disastrous arms race. Yet Director of Central Intelligence George Tenet has stated that "both India and Pakistan are developing more advanced nuclear weapons and moving towards deployment of significant nuclear arsenals." Similarly, the Assistant Secretary of State for South Asia recently expressed concern that "we are seeing the dawn of a dangerous and expensive arms race" in the region. The leadership of both Pakistan and especially India is reported

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[31] "Christians in India blame Hindu groups for bombings," *New York Times*, June 10, 2000.

[32] Pamela Constable, "A lion's son tries out his roar," *Washington Post*, July 24, 2000.

[33] Pamela Constable, "Hijacking pushes India and Pakistan further apart," *Washington Post*, Jan. 9, 2000; Jonathan Wright, "US has evidence linking hijackers, Pakistan," Reuters newswire, Jan. 25, 2000, 12:54 AM EDT.

[34] Richard Boucher, U.S. Department of State Daily Press Briefing, June 16, 2000.

to be under intense pressure from their respective nuclear establishments to conduct additional nuclear tests.[35]

Apparent tit-for-tat ballistic missile tests in April 1999 have been viewed as evidence that an action-reaction dynamic is at work, and some believe a slow-motion and possibly accelerating arms race is underway.[36] Others, however, think it unlikely that a nuclear arms race will occur in South Asia, especially taking note of Islamabad's repeated statements that Pakistan means only to maintain a deterrent capability and will not seek to match India in missile production.[37] In either case, overt nuclear weaponization by either side – most especially of their short-range ballistic missiles (SRBMs) – could be highly destabilizing, especially if significant nuclear missile forces are deployed in the absence of secure command and control (C2) structures. If these forces are perceived as being vulnerable to attack then one or both sides might adopt a launch-on-warning status.[38]

According to a 1997 Pentagon report, "Pakistani and Indian pursuit of ballistic missiles is largely driven by the perception that these missiles are necessary to counter their rival's capabilities. India's development of [medium-range ballistic missiles (MRBMs)] also is motivated by its desire to be recognized as a great power and strategic competitor with China."[39] One of the more dangerous scenarios is that in which India actively seeks to gain nuclear parity with China by building a larger nuclear arsenal and long-range delivery force. Moreover, some observers suggest that United States deployment of theater missile defense (TMD) systems in Asia – or a national system covering U.S. territory (NMD) – could spur ballistic missile proliferation in South Asia.[40]

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[35] Statement by Director of Central Intelligence George Tenet Before the Senate Foreign Relations Committee on The Worldwide Threat in 2000: Global Realities of Our National Security, Mar. 21, 2000; Karl Inderfurth, "Text: Remarks by State's Inderfurth to the Pakistani American Congress," *USIS Washington File*, June 7, 2000; "Pressure for more weapon tests great in both India, Pakistan," *Nucleonics Week*, June 8, 2000.

[36] Michael Mecham, "India test fires Agni missile; Pakistan responds with Ghauri," *Aviation Week and Space Technology*, Apr. 19, 1999; Rodney Jones, "Pakistan's nuclear posture: Arms race instabilities in South Asia," *Asian Affairs, An American Review*, Summer 1998.

[37] Pravin Sawhney, "How inevitable is an Asian 'missile race'?," *Jane's Intelligence Review*, Jan. 2000.

[38] Neil Joeck, *Maintaining Nuclear Stability in South Asia*, Adelphi Paper 312 (London: 1997).

[39] U.S. Department of Defense, *Proliferation: Threat and Response* (Washington, DC: 1997).

[40] Frank Ching, "Scrap the national missile shield," *Far Eastern Economic Review*, June 8, 2000; Michael Gordon and Steven Lee Myers, "Risk of arms race seen in U.S. design of missile defense," *New York Times*, May 28, 2000; Gaurav Kampani, "How a U.S. national missile defense will affect South Asia," Center for Nonproliferation Studies Report, May 2000; Joseph Cirincione, "The Asian nuclear reaction chain," *Foreign Policy*, Spring 2000; Gary Koblentz, "Viewpoint: Theater missile defense and South Asia: A volatile mix," *Nonproliferation Review* 4, 3, Spring/Summer 1997.

Another potential source of instability is the possibility that, though they may decrease the likelihood of all-out war, the possession of nuclear weapons can actually increase a country's willingness to engage in limited hostilities.[41] Both India and Pakistan have held military exercises which emphasize offensive, tri-service operations, and India's February 2000 "Vijay Chakra" exercises – in simulating a limited, short-duration war – caused concerns in Islamabad.[42] Cross-border artillery and small-arms firing between Indian and Pakistani forces occurs on an almost daily basis along the Line of Control (LOC) in Kashmir. India views warily any Pakistani support for the Kashmiri separatist movement in India's Jammu and Kashmir state, and both sides allege occasional armed incursions across the LOC. As of July, Indian official sources reported nearly 800 insurgency-related deaths in Kashmir in 2000.[43]

Current Weapons and Delivery Capabilities, and Strategic Doctrines

South Asia's condition of "existential deterrence" based on implicit (opaque) nuclear capabilities was transformed by the May 1998 tests.[44] Since that time, security relations between India and Pakistan have to a large degree been based upon the knowledge of actual mutual capabilities. Yet both countries face internal security problems that may in some ways be more threatening to regional stability than are bilateral animosities. Such regional instability could itself increase the chances of nuclear war. Moreover, some analysts assert that an externally-oriented explanation of nuclear weapons proliferation overlooks more fundamental political and nationalist motivators "that make attaining such weapons seem a short cut to great status for otherwise struggling states."[45] As such, arsenal size and doctrinal intent are shaped by internal as well as external considerations.

Both India and Pakistan appear to have made substantial efforts to expand and modernize their armed forces in the two years since assuming overt nuclear postures. Open sources provide only limited information regarding specific developments in the

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[41] See, for example, John Arquella, "Nuclear weapons in South Asia: More may be manageable," *Comparative Strategy* 16, Jan. 1997.

[42] Rahul Bedi, "India, Pakistan adopt offensive training tactics," *Jane's Defence Weekly*, Nov. 11, 1998; "Exercises 'Vijay Chakra' and 'Springex 2000'," Virtual Information Center, U.S. Pacific Command, [http://www.vic-info.org], Mar. 6, 2000.

[43] "663 militants, 132 Indian troops killed in Kashmir this year," Agence France Presse, July 14, 2000, 11:19 PM SGT.

[44] Existential deterrence obtains when the mere existence of nuclear weapons means that any armed conflict might escalate to nuclear war, and that fear of such escalation becomes a factor in political calculations. See Marc Trachtenburg, "The influence of nuclear weapons in the Cuban Missile Crisis," *International Security* 10, 1, Summer 1985.

[45] George Perkovich, "Nuclear proliferation," *Foreign Policy*, Fall 1998.

area of nuclear weapons and their delivery systems. What follows is a brief overview of the two countries' current estimated capabilities and apparent strategic intentions.[46]

India

Nuclear Weapons and Fissile Material. Estimates have India possessing 25-100 nuclear bombs, with the majority of reports placing the number between 60 and 90. The report of a U.S. military-affiliated think-tank claims the arsenal amounts to a "handful,"[47] but this estimate is viewed by most observers as too low.[48]

It remains unclear whether any of these bombs have been deployed. While it was reported that India did deploy five nuclear-tipped missiles during the 1999 Kargil conflict,[49] there is no independent confirmation of this. Some sources speculate that long-term warhead miniaturization projects are probably underway, but that – in the absence of growing tensions with China and/or Pakistan – India's nuclear force will not be strengthened in the short-term, and that India has not made significant movement toward fielding nuclear weapons.[50] Yet a May 2000 report from the Indian Department of Atomic Energy claims that "implementation" of a policy of nuclear deterrence "is being pursued," and the recent split of the Bhabha Atomic Research Center from the Atomic Energy Regulatory Board is seen by some as further indication that nuclear warheads for India's armed forces are currently in production.[51]

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[46] For an overview of events related to the May 1998 nuclear tests, see CRS Report 98-570F, *India-Pakistan Nuclear Tests and U.S. Response*, coordinated by Barbara LePoer. See also CRS Report 97-23F, *India-Pakistan Nuclear and Missile Proliferation*, coordinated by Richard Cronin.

[47] "India's nuclear doctrine," Virtual Information Center, U.S. Pacific Command, [http://www.vic-info.org], May 17, 2000 (prepared Nov 23, 1999).

[48] The great majority of estimates place the number at 25 or more. See, for example, Federation of American Scientists, "Nuclear Forces Guide," [http://www.fas.org/nuke/guide/india/nuke/index.html], May 24, 2000; Gregory Jones, "From testing to deploying nuclear forces: The hard choices facing India and Pakistan," RAND Issue Paper 192, Mar. 2000; Eric Arnett, "Nuclear tests by India and Pakistan," *SIPRI Year Book 1999* (New York: 1999): 373; David Albright, "India and Pakistan's fissile material and nuclear weapons inventory, end of 1998," Institute for Science and International Security, [http://www.isis-online.org], Oct. 27, 1999; "After the tests: India and Pakistan update," *Bulletin of the Atomic Scientists*, Sep./Oct. 1998; Rodney Jones and Mark McDonough, *Tracking Nuclear Proliferation* (Washington: 1998).

[49] Sanjay Badri-Maharaj, "Nuclear India's status: Examination of claims in the NBC report," *Indian Defence Review* 15, 2, Spring 2000: 125.

[50] "India's nuclear doctrine," Virtual Information Center, U.S. Pacific Command, [http://www.vic-info.org], May 17, 2000 (prepared Nov. 23, 1999); "Pakistan, India 'have not moved very far' to field nukes: Cohen," *News* (Islamabad), May 13, 2000.

[51] Department of Atomic Energy, Government of India, *Annual Report 1999-2000*, May 2000, [http://www.dae.gov.in/areport/ar9900.htm]; "Nuclear warhead production maybe [sic] underway in India," *Aviation Week and Space Technology*, Jun 19, 2000: 26.

According to one frequently cited, Washington, DC-based Institute for Science and International Security, India has about 450 kg of separated weapons-grade plutonium, enough fissile material to build up to 90 nuclear weapons. Current production is reportedly about 25 kg per year. Plutonium core weapons are suitable for miniaturization for deployment as missile warheads. India's capacity to produce highly-enriched uranium (HEU) is said to be limited to approximately 10 kg per year, only two-thirds of what is necessary to build a single fission weapon.[52]

Delivery Systems. India's Integrated Guided Missile Development Program (IGMDP) oversees the development of two medium-range and one intermediate-range ballistic missiles, along with short-range ballistic missile (SRBM) programs (see Table 1). A strategic orientation focused on China contributes to the fact that India's missile program concentrates on longer-ranged missiles than that of Pakistan. Yet a fairly extensive fleet of liquid-fueled Prithvi-I SRBMs is often labeled "Pakistan-specific," as the range of these missiles is only 150 km (less than 100 miles). There are no indications that India has armed the Prithvi with nuclear weapons, but one of its designers states that it is able to carry "any kind of warhead," and the May 1998 testing of a sub-kiloton device may suggest interest in the kind of small warhead suitable for this missile. India's ballistic missile efforts have been described as both more advanced and more diversified than Pakistan's.[53]

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[52] David Albright, "India and Pakistan's fissile material and nuclear weapons inventory, end of 1998," Institute for Science and International Security, [http://www.isis-online.org], Oct 27, 1999; Gregory Jones, "From testing to deploying nuclear forces: The hard choices facing India and Pakistan," RAND Issue Paper 192, Mar. 2000, [http://www.rand.org/publications/IP/IP192].

[53] Mohammed Ahmedullah, "Prithvi and beyond," *Military Technology* 4, 1999; Wilfried Herrmann, "Missile proliferation in Asia," *Military Technology* 3, 2000.

Table 1. Indian Ballistic Missiles

TYPE	STATUS	RANGE (km)	PAYLOAD (kg)	DETAILS
Prithvi-I SRBM	in service	150	800-1,000	single stage, liquid fuel, $1m/unit
Prithvi-II SRBM	in production, tested 1/96, in service?	250	500	single stage, liquid fuel
Dhanush SRBM (naval)	in development, tested 6/00	250-350	500	single stage, liquid fuel (solid in operation)
Agni-I MRBM	in development, tested 5/89, displayed 1/99	1,500-2,500	1,000	two stage, solid/liquid fuel
Agni-II MRBM	in development, tested 4/99	2,500-3,000	1,000	two stage, solid fuel $8.5m/unit
Agni-III (Surya) IRBM	in development	3,500-5,000	1,000	??
Sagarika SLBM	in development	300	500	solid fuel
Akash ABM	in development, tested 6/00	25	n/a	solid fuel

Sources: CRS Report RL30427, *Missile Survey: Ballistic and Cruise Missiles of Foreign Countries*, by Robert Shuey; Steven Zaloga, *World Missiles Briefing*, Teal Group Corporation, June 2000; Pravin Sawhney, "How inevitable is an Asian 'missile race'?," *Jane's Intelligence Review*, Jan. 2000; Jane's Information Services, *Jane's Strategic Weapons Systems* (London: 2000); Mohammed Ahmedullah, "Prithvi and beyond," *Military Technology* 4, 1999; Carnegie Endowment for International Peace, "Non-Proliferation fact sheet: South Asian missile race," Apr. 15, 1999; Federation of American Scientists, "Nuclear Forces Guide," [http://www.fas.org/nuke/guide]; Centre for Defence and International Security Studies, "Ballistic Missile Threats," [http://www.cdiss.org/bmthreat.htm]; Andrew Koch and Waheguru Pal Singh Sidhu, "Subcontinental missiles," *Bulletin of the Atomic Scientists*, July/Aug. 1998; U.S. Department of Defense, *Proliferation: Threat and Response, 1997*, [http://www.defenselink.mil/pubs/prolif97]. Reports of range and payload capability can vary and must be considered rough estimates.

India tested the two stage Agni-II medium-range ballistic missile (MRBM) in April 1999 and may currently have "inducted" it into service.[54] This missile can travel up to 3,000 km (more than 1,800 miles) and may have been designed specifically for the targeting of China.[55] The head of India's military R&D and architect of the IGMDP claims that this missile is designed to carry a nuclear warhead if required.[56] A solid-fueled Space Launch Vehicle based on American Scout rocket technology provides the first stage of the Agni and may also provide the basis for development of an Indian intercontinental ballistic missile (ICBM) in the future. The Agni's second stage is reported to be derived from SA-2 technology brought to India from Russia, and France is said to have supplied the liquid propulsion knowhow.[57] India generally claims that its entire missile fleet was developed with indigenous technology.[58]

A partially successful test of a naval version of the Prithvi, dubbed the "Dhanush," took place in April 2000. This test, along with more recent tests of Prithvi-I and Akash anti-ballistic missile (ABM) missiles in June and July of this year, seems to belie a senior Indian observer's claim that "there are no signs that delivery systems are being upgraded."[59] If successfully deployed, the Dhanush would give India the potential ability to launch nuclear-armed missiles from surface ships at sea. India is reportedly developing the Sagarika missile with underwater (tube) launch capabilities and a range of 300 km. This weapon may be deployed on a new Kilo-class missile-capable conventional submarine.[60] India has long sought to develop a nuclear-powered submarine capable of carrying submarine-launched ballistic missiles (SLBMs) and is continuing to work on miniaturizing a nuclear reactor for use at sea. One report indicates that "Russia is helping the Indian [missile] program by providing technology to fire a ballistic missile from underwater as well as giving assistance in building [a nuclear submarine]."[61] Estimates are that India will be unable to deploy a nuclear-powered submarine before 2004 and perhaps even 2010.[62]

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[54] Michael Mecham, "India test fires Agni missile; Pakistan responds with Ghauri," *Aviation Week and Space Technology*, Apr. 19, 1999; Rahul Bedi, "India set to introduce Agni II intermediate range missile," *Jane's Defence Weekly*, Aug. 25, 1999: 15.

[55] Sadanand Dhume, "Show of strength," *Far Eastern Economic Review*, April 22, 1999.

[56] Rahul Bedi, "Agni II IRBM: 'Built to carry nuclear warhead,'" *Jane's Defence Weekly*, Apr. 28, 1999: 7.

[57] Clarence Robinson, Jr., "Psst! Want to buy a missile?," *Signal*, Apr. 1999.

[58] "India's missiles use local technology," *Jane's Missiles and Rockets*, June 2000.

[59] Rahul Bedi, "Missile test is a 'partial success'," *Jane's Defence Weekly*, Apr. 19 2000: 14; "India tests Prithvi short-range missile," Reuters newswire, June 16, 2000, 9:09 AM EDT; "India tests nuclear-capable guided missile," Agence France Presse, July 5, 2000, 9:47 PM SGT; V.R. Raghavan, "Whither nuclear policy?," *Hindu* (Madras), July 1, 2000.

[60] Atul Aneja, "New missile-firing sub being commissioned," *Hindu* (Madras), July 19, 2000.

[61] Andrew Koch, "South Asian rivals keep test score even," *Jane's Intelligence Review*, Aug. 1999.

[62] "Mix and match: India's puzzling approach to naval procurement," *Jane's Intelligence Review*, November 1998: 34; "India's nuclear doctrine," Virtual Information Center, U.S.

(continued...)

The Indian Navy operates an aircraft carrier, though it is currently undergoing a major refitting in dry dock. This ship carries a complement of Sea Harrier attack jets that are not considered to be nuclear-capable. New Delhi is reported to be negotiating with Moscow for the purchase of the cruiser-carrier Admiral Gorshkov and a complement of some 18 MiG-29 aircraft modified for carrier service. The total cost of retrofits and equipment could be nearly $1.3 billion.[63] If deployed, the package could provide India with a future ability to execute nuclear bombing missions using sea-launched aircraft.

Despite a robust missile R&D program, India continues to rely on aircraft as potential nuclear weapon delivery platforms. Reports indicate that the Indian Air Force (IAF) operates eighteen ground attack squadrons totaling between 235 and 295 aircraft that would require only modest modification to deliver nuclear weapons. These include at least 150 MiG-27s and some 100 Jaguars.[64] The Jaguar can carry a 1,000-kg weapon up to 1,400 km,[65] allowing for coverage of most Pakistani (but not PRC) targets. Approximately 150 advanced fighter aircraft might also be modified for such purposes, including 65 MiG-29s, 36 Mirage 2000s, and 16 Su-30s.[66] In addition, the IAF operates six Il-78 tanker aircraft that might enable deep-strike bombing missions, although the plane's ability to penetrate air defenses is limited, at best. The Il-78 may serve as an airborne warning and control system (AWACS) platform. Finally, India is reported to be seeking purchase of four or more Tu-22 long-range bombers and advanced airborne radar systems from Russia.[67] About 75 percent of India's naval and air force hardware is of Soviet/Russian origin.[68]

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[62] (...continued)
Pacific Command, [http://www.vic-info.org], May 17, 2000 (prepared Nov. 23, 1999).

[63] International Institute for Strategic Studies, *The Military Balance, 1999-2000* (London: 1999); Rahul Bedi, "India details plans for air defence ship," *Jane's Defence Weekly*, July 14, 1999:12; Vivek Raghuvanshi, "India raises profile of navy in future plans," *Defense News*, Jan. 24, 2000: 25.

[64] Most air fleet data come from International Institute for Strategic Studies, *The Military Balance, 1999-2000* (London: 1999); see also Bharat Rakshak, "Indian Air Force," [http://www.bharat-rakshak.com/IAF/Info/Fleet.html].

[65] Jane's Information Group, *Jane's All The World's Aircraft 1998-1999* (London: 1998).

[66] Ten Sukoi fighters have recently been delivered as part of a $1.8 billion deal with Russia. New Delhi reportedly plans to field 40 new Su-30s by 2003 and to produce a total of 140 Su-30s under license, as well as to purchase ten additional Mirage 2000s from France ("Russia to deliver 40 fighter jets to India by 2003," Agence France Presse, June 29, 2000, 8:47 PM SGT; Vladmir Radyuhin, "World's best fighter planes for India," *Hindu* (Madras), July 1, 2000; "India negotiating for French jets," *Times of India* (Bombay), July 7, 2000).

[67] Programme for Promoting Nuclear Non-Proliferation, *PPNN Newsbrief* No. 49 (1st Quarter 2000): 15; Simon Saradzhyan, "India seeks long-range bombers, radar from Russia," *Defense News*, Oct. 25, 1999: 12.

[68] Anupam Srivastava, "Indo-Russian military technical cooperation: Implications for Southern Asia," *World Affairs* 161, 4, Spring 1999.

Nuclear Doctrine. Some analysts have argued that the political ascension of the BJP brought a new and more expansive security conception to New Delhi.[69] In August 1999, some 14 months after the Pokhran II nuclear tests and while the BJP was still overseeing a caretaker government,[70] India's quasi-governmental National Security Advisory Board made public a Draft Nuclear Doctrine (DND) for India. The document makes the following points:

- "India shall pursue a doctrine of credible minimum nuclear deterrence."
- "India's nuclear forces . . . will be based on a triad of aircraft, mobile land-based missiles and sea-based assets . . ."
- "India will not be the first to initiate a nuclear strike . . ."
- "While India is committed to maintain the deployment of a deterrent which is both minimum and credible, it will not accept any restraints on building its R&D capability."[71]

The DND has been neither approved nor rejected by the Indian government. The document may be a politically-motivated end in itself; some analysts even view it as a wish list of the more hardline factions of India's political elite.[72] In some ways, the Indian government seems to have "dissociated" itself from the document.[73] Yet its existence as a public declaration has caused much debate, particularly on its no-first-use pledge, the claim that India will build a nuclear triad, and the envisaging of a retaliatory capability of potentially massive proportions. Moreover, the DND has done much to erode hopes that South Asian deterrence might remain in a non-weaponized form.[74]

Political rather than military motivators appear to be central to the Indian decision to test and to continue developing its nuclear program, and power struggles within nuclear scientific organizations are apparent.[75] This may partially explain why

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[69] Neil Joeck, "Nuclear developments in India and Pakistan," *Access Asia Review* 2, 2, July 1999.

[70] In April 1999, the Vajpayee-led BJP government had resigned following the loss of a vote of confidence, but remained as the caretaker government in the run-up to the September 1999 parliamentary elections in which a BJP coalition government was returned to power.

[71] "Draft Report of the National Security Advisory Board on Indian Nuclear Doctrine," Aug. 17, 1999," Indian Embassy, Washington, DC.

[72] K.P. Nayar, "Disarmingly Nonprolific," *Telegraph* (Calcutta), June 28, 2000: 12 via Foreign Broadcast Information Service (FBIS), June 28, 2000; Timothy Hoyt, "Nuclear weapons in the new century," *Bharat Rakshak Monitor* 2, 4 (Bombay), Jan./Feb. 2000.

[73] Pravin Sawhney, "How inevitable is an Asian 'missile race'?," *Jane's Intelligence Review*, Jan. 2000.

[74] William Walker, "The risks of further nuclear testing in South Asia," *Arms Control Today* 29, 6, Sep./Oct. 1999; Timothy Hoyt, "Nuclear weapons in the new century," *Bharat Rakshak Monitor* 2, 4 (Bombay), Jan./Feb. 2000.

[75] Eric Arnett, "Nuclear tests by India and Pakistan," *SIPRI Year Book 1999* (New York: (continued...)

the Indian government has made no overt move to adopt the force structure envisaged in the DND.

The existence of a robust democratic system and a vocal press may present obstacles to India's deployment of a minimum nuclear deterrent such as that envisaged by the DND.[76] Too, the sheer cost of such an effort is dissuasive, and may preclude anything more than the smallest of weaponized nuclear forces. The total costs of India's nuclear deterrent as presented in the DND, however it is defined, are difficult to assess. Even the lowest reasonable estimates generally exceed $15 billion.[77] Polls taken immediately after the May 1998 tests showed that fully 87 percent of the Indian public approved of the action,[78] but enthusiasm has waned in the face of both political and economic realities.

Both before and immediately after India's 1998 tests, senior Indian government officials made direct reference to China as the country's primary strategic adversary, and China likely will continue to be the most important factor in India's nuclear calculations.[79] India's pursuit of naval delivery capabilities, in particular the ability to tube launch nuclear-armed missiles from submarines, suggests plans to deploy a survivable retaliatory force.[80] This pursuit, combined with New Delhi's "blue-water" naval ambitions, indicates that China, rather than Pakistan, may be the central object of concern. India's continued development of missiles with ranges in excess of 2,500 km (about 1,500 miles) – far more than needed to strike any Pakistani targets – can be viewed as an effort to match PRC counter-value capabilities.[81]

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[75] (...continued)
1999); T.S. Gopi Rethinaraj, "India's bomb-test scientists prevail," *Jane's Intelligence Review*, Feb. 1999. See also George Perkovich, *India's Nuclear Bomb* (Berkeley: University of California Press, 1999).

[76] Mario Carranza, "Indo-Pakistani nuclear relations: Can the genie be put back in the bottle?," *International Politics* 36, Dec. 1999.

[77] See, for example, Programme for Promoting Nuclear Non-Proliferation, *PPNN Newsbrief* No. 47 (3rd Quarter 1999): 21 (The article quotes a "senior Indian official"). One observer envisages a minimum deterrent based on 60 nuclear-armed Agnis, with required command and control facilities, costing a mere $800 million (C. Uday Bhaskar, "Nukes: Can we afford them?," *Economic Times* (Delhi), Sep. 13, 1999).

[78] Kalpana Sharma, "The Hindu Bomb," *Bulletin of the Atomic Scientists* 54, 4, July/Aug. 1998.

[79] Mohan Malik, "Nuclear proliferation in Asia: The China factor," *Australian Journal of International Affairs*, 53, 1, Apr. 1999.

[80] Amit Gupta, "Nuclear forces in South Asia: Prospects for arms control," *Security Dialogue* 30, 3, Sep. 1999.

[81] Currently, India does not have the ability to target China's eastern population centers with nuclear weapons. In contrast, China's DF-series missiles can target the entire Indian subcontinent (see CRS Report 97-391F, *China: Ballistic and Cruise Missiles*, by Shirley Kan).

Pakistan

Nuclear Weapons and Fissile Material. Pakistan is widely believed to possess 10-25 nuclear bombs. A June 2000 news report cites unnamed U.S. intelligence sources in suggesting that the Pakistani stockpile might number up to 100 bombs (and thus be larger than India's),[82] but most observers consider it unlikely that the Pakistani program has created such a large arsenal.[83]

As with India, it is not clear whether Pakistan's nuclear weapons are deployed. Many observers view Pakistani moves in this area as minimal and say it is not likely that Pakistan has the ability to fit nuclear warheads on either its short-range M-11 or its medium-range Ghauri missiles.[84] One source predicts that – barring further Indian nuclear tests or growing tensions with New Delhi – Islamabad will not expand its nuclear capability.[85] Others believe it likely that Pakistan already has the capability to mate nuclear warheads with the short-range Hatf-1 missile, and there are reports that Pakistan fitted the Ghauri missile with a nuclear warhead as early as 1998.[86] At least one recent report describes Pakistan's delivery systems more broadly as "fully capable of nuclear exchange."[87] (Some responses to June 2000 claims of Pakistani nuclear and missile superiority have variously suggested they are motivated to promote a U.S.

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[82] Robert Windrem and Tammy Kupperman, "Pakistan nukes outstrip India's, officials say," MSNBC, June 6, 2000.

[83] The great majority of estimates place the number at 25 or less. See, for example, Federation of American Scientists, "Nuclear Forces Guide," [http://www.fas.org/nuke/guide/pakistan/nuke/index.html], May 24, 2000; Gregory Jones, "From testing to deploying nuclear forces: The hard choices facing India and Pakistan," RAND Issue Paper 192, Mar. 2000, [http://www.rand.org/publications/IP/IP192]; Eric Arnett, "Nuclear tests by India and Pakistan," *SIPRI Year Book 1999* (New York: 1999): 373; David Albright, "India and Pakistan's fissile material and nuclear weapons inventory, end of 1998," Institute for Science and International Security, [http://www.isis-online.org], Oct. 27, 1999: "After the tests: India and Pakistan update," *Bulletin of the Atomic Scientists*, Sep./Oct. 1998; Rodney Jones and Mark McDonough, *Tracking Nuclear Proliferation* (Washington: 1998). For a specific refutation of recent claims that Pakistan's nuclear forces are larger than India's, see Sanjay Badri-Maharaj, "Nuclear India's status: Examination of claims in the NBC report," *Indian Defence Review* 15, 2, Spring 2000.

[84] Amit Baruah, "Pak. May have 25 n-weapons," *Hindu* (Madras), June 5, 2000 (The author cites Pakistani and Western scholars); Brian Cloughley, "Transition time in Pakistan's army," *Jane's Intelligence Review*, Apr. 2000: 29. A 1999 National Intelligence Estimate states that Pakistan's M-11s "may have a nuclear role" (National Intelligence Council, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015*, Washington, DC, Sep. 1999).

[85] "Pakistan's nuclear doctrine," Virtual Information Center, U.S. Pacific Command, [http://www.vic-info.org], May 17, 2000 (prepared Nov. 9, 1999).

[86] Brian Cloughley, "Transition time in Pakistan's army," *Jane's Intelligence Review*, April 2000: 29; Programme for Promoting Nuclear Non-Proliferation, *PPNN Newsbrief* No. 42 (Insert) (2nd Quarter 1998): 5.

[87] Robert Windrem and Tammy Kupperman, "Pakistan nukes outstrip India's, officials say," MSNBC, June 6, 2000.

missile defense program, encourage an Indian nuclear arms buildup, or – by focusing on alleged PRC technology transfers to Pakistan – disrupt improving relations between New Delhi and Beijing.[88])

The Institute for Science and International Security estimates that Pakistan's fissile material is sufficient to build roughly 45 nuclear weapons, but other sources claim the number is closer to 15.[89] Islamabad's nuclear weapons program has long relied on stocks of highly-enriched uranium (HEU). The Kahuta enrichment plant is said to produce at least 25 kg of HEU per year, adding to a current stockpile of approximately 300-350 kg.[90] Reports also indicate that a reprocessing facility at Khushab is producing 8-10kg of weapons-grade plutonium per year.[91] A single fission weapon requires some 15 kg of HEU or 5 kg of weapons-grade plutonium.

Delivery Systems. Islamabad oversees an extensive ballistic missile program that includes current development of at least three medium-range platforms and possibly an intermediate-range missile capable of traveling up to 3,500 km (about 2,200 miles) (see Table 2). Currently deployed conventionally-armed, short-range missiles are said to be more advanced than those of India, with the Pakistani missile force being described as both faster and more accurate.[92] Pakistan's SRBM force employs a solid propellant, making it more mobile and more quickly configured for launch than India's liquid-fueled Prithvi force.[93] There are currently no indications that Pakistan is developing SLBM or anti-missile capabilities.

Pakistan recently displayed the Shaheen-II MRBM. This appears to be a two-stage, solid-fueled missile with a claimed range of 2,500 km (1,550 miles).[94] The liquid-fueled Ghauri-II also has a range of 2,000+ km. Both missiles are in developmental stages. If fired from the Indo-Pakistani border, missiles with these capabilities could hit targets anywhere in India. Indian press accounts say Pakistan has formed artillery units to handle the Ghauri-III (which has yet to be tested) and M-

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[88] See, respectively, Tony Karon, "Sometimes it helps to add a 'rogue state,'" CNN.com, June 8, 2000; "N-supremacy debate draws mixed results in U.S.," *Dawn* (Karachi), June 11, 2000 (The author quotes the Pakistani ambassador to the U.S.); M.H. Askari, "Not the nuclear option," *Dawn* (Karachi), June 14, 2000.

[89] Amit Baruah, "Pak. may have 25 n-weapons," *Hindu* (Madras), June 5, 2000 (The author cites Pakistani and Western scholars).

[90] Gregory Jones, "From testing to deploying nuclear forces: The hard choices facing India and Pakistan," RAND Issue Paper 192, Mar. 2000.

[91] "Pakistani separation plant now producing 8-10 kg plutonium/yr," *Nuclear Fuel*, June 12, 2000.

[92] Brian Cloughley, "Transition time in Pakistan's army," *Jane's Intelligence Review*, Apr. 2000; A perceived "missile gap" has brought calls in India for development of an ABM system in that country ("India's missile worries," *Hindustan Times* (Delhi), July 11, 2000).

[93] See sources for Table 1.

[94] "Pakistan unveils Shaheen-II," *Jane's Defence Weekly*, Apr. 4, 2000.

11 missiles.[95] A military affairs analyst reports that Pakistan's missile program has been motivated "by politics and internal rivalry rather than strategic considerations," and is "hastened not solely by external threat but also the competition" between the leadership of the missile programs.[96]

Table 2. Pakistani Ballistic Missiles

TYPE	STATUS	RANGE (km)	PAYLOAD (kg)	DETAILS
Hatf-1 rocket	in service	80-100	500	single stage, solid fuel
Hatf-2 SRBM	in service	300	500	single stage, solid fuel
Hatf-3 SRBM	unknown, tested 1997	800	500	two stage, solid fuel, Chinese M-9?
M-11 SRBM	in storage	300	800	two stage, solid fuel
Ghauri-I MRBM	in development, tested 4/98,	1,300	700-1,200	single stage, liquid fuel, NK Nodong?
Ghauri-II MRBM	in development, tested 4/99	2,000-2,300	1,000	single stage, liquid fuel
Shaheen-I SRBM	in development, tested 4/99	600-750	1,000	single stage, solid fuel, Chinese M-11?
Shaheen-II MRBM	in development, displayed 3/00	2,000-3,000	1,000?	two stage, solid fuel? NK Taepodong?
Abdali MRBM/IRBM	in development	2,500-3,500	??	??

Sources: see Table 1, page 13.

Assistance from foreign countries has played a key role in the ongoing success of Pakistan's missile programs. A September 1999 National Intelligence Estimate publicly confirmed what had long been suspected: that Pakistan is in possession of

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[95] "Pak deploys units to handle N-capable missiles," *Times of India* (Bombay), June 25, 2000.

[96] Ben Sheppard, "South Asia nears nuclear boiling point," *Jane's Intelligence Review*, Apr. 1999.

both PRC-supplied M-11 SRBMs and North Korean-supplied Ghauri MRBMs[97] (the Ghauri is believed to be based on technology used in North Korea's Nodong missile). At least 30 of the short-range M-11s are said to be on hand and ready for service. Another source indicates that virtually all of Pakistan's liquid-fueled missiles have their technological origins in North Korea, and that all solid-fueled missiles can be traced to Chinese technology.[98]

North Korean officials have recently declined to halt missile exports unless the United States pays "about $1 billion" in compensation for lost revenue. The lead State Department negotiator with Pyongyang states that the United States will not compensate North Korea for "agreeing to stop conducting an act which they should not be conducting in the first place."[99] Pyongyang has lately offered to cooperate on missile nonproliferation in return for foreign assistance with its space launch capabilities.[100]

American intelligence officials are reported as concluding that China has continued to aid Pakistan's ballistic missile development programs, including shipping specialty steels, guidance systems, and technical expertise, and helping to build an M-11 plant west of Islamabad.[101] The Pakistani government has denied the latter report as "baseless," but its foreign minister recently admitted that China had supplied "a limited number" of SRBMs, adding that because Pakistan is not a participant in the Missile Technology Control Regime (MTCR), it "doesn't have to answer to anyone."[102] (Nor is India a participant in the MTCR.)

Pakistan, like India, must probably rely on aircraft as potential non-conventional delivery platforms. Reports indicate that the Pakistani Air Force operates seven

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[97] National Intelligence Council, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015*, Washington, DC, Sep. 1999. See also CRS Issue Brief IB92056, *Chinese Proliferation of Weapons of Mass Destruction: Current Policy Issues*, by Shirley Kan.

[98] Pravin Sawhney, "How inevitable is an Asian 'missile race'?," *Jane's Intelligence Review*, Jan. 2000.

[99] Chisa Fujioka, "U.S., North Korea missile talks deadlocked over money," Reuters newswire, July 12, 2000, 5:43 AM EDT.

[100] Michael Gordon, "North Korea open to halting missile program," *New York Times*, July 20, 2000.

[101] David Sanger and Eric Schmitt, "Reports say China is aiding Pakistan on missile project," *New York Times*, July 2, 2000: 1. See also Center for Nonproliferation Studies, "China's missile exports and assistance to Pakistan," July 2000, [http://cns.miis.edu/research/india/china/mpakpos.htm].

[102] "Pakistan rejects reports of Chinese missile plant," *Dawn* (Karachi), June 29, 2000; Ahmed Rashid, "Islamabad cool," *Far Eastern Economic Review*, July 13, 2000. The Chinese government has denied selling missile technology to Pakistan, but Chinese officials reportedly recently linked their proliferation policy to United States missile defense plans, in particular saying that they will continue providing missile technology to Pakistan if the United States provides Taiwan with TMD capabilities (John Pomfret, "China again demands U.S. drop missile defense plan," *Washington Post*, July 12, 2000: A16).

ground attack squadrons and at least 200 military aircraft with the potential to deliver nuclear weapons. These include more than 100 Mirage III/5s, approximately 50 A-5s, and some 32 F-16s (the delivery of 28 other F-16s was canceled after the 1990 imposition of sanctions under the Pressler Amendment).[103] The F-16 can carry a 1,000-kg nuclear payload up to 1,250 km,[104] allowing fairly deep strikes into Indian territory. It has been reported that several A-5s may already be equipped to carry a nuclear payload, and that F-16 pilots may have practiced the "toss-bombing" technique that would be used for such purposes.[105]

Pakistan's ability to deliver non-conventional weapons does not currently extend beyond aircraft and possibly land-based missiles. With French assistance, Pakistan is building Agosta 90B submarines, and a recent report claims that – in response to India's submarine program – a secret Pakistani program is underway to develop a nuclear reactor suitable for this platform.[106] If true, this would indicate that Islamabad may intend to deploy a nuclear-powered and potentially nuclear-armed submarine force at some time in the future.

Nuclear Doctrine. The Pakistani government has produced no document comparable to India's Draft Nuclear Doctrine, and it provides only ambiguous statements regarding its own nuclear weapons policies. Thus far, these have tended to be ad hoc responses to Indian actions.[107] A hint of this reactive position can be found in the words of Chief Executive Gen. Musharraf:

> The rationale behind our nuclear policy is purely security and we only want to retain a *minimum credible deterrence* to deter any aggression against our homeland. Pakistan, unlike India, does not harbor any ambitions for regional or global status. We would not enter into a nuclear arms race with India and would never subject our people to economic deprivation [italics added].[108]

This statement reflects Islamabad's key concern with deterring a full-scale Indian attack or, if this fails, to use nuclear weapons to offset India's conventional force advantage.

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[103] Most air fleet data come from International Institute for Strategic Studies, *The Military Balance, 1999-2000* (London: 1999); see also Pakistan Institute for Air Defence Studies, "PAF Inventory & Order of Battle 2000," [http://www.pakdefencenews.org/piads/invent2000.html].

[104] Jane's Information Group, *Jane's All The World's Aircraft 1998-1999* (London: 1998).

[105] Federation of American Scientists, "Nuclear Forces Guide," [http://www.fas.org/nuke/guide/pakistan/aircraft/index.html], May 29, 1998.

[106] Riaz Ahmed, "Pakistan's defense industry part 3," *Pakistan* (Lahore in Urdu), June 9, 2000: 12 via Foreign Broadcast Information Service (FBIS), June 28, 2000.

[107] Farah Zhara, "Pakistan's road to a minimum nuclear deterrent," *Arms Control Today* 29, 5, July/Aug. 1999.

[108] Faraz Hashmi, "Deterrence main aim of nuclear policy: CE," *Dawn* (Karachi), June 27, 2000.

Pakistani leaders consider their country to face substantial military threats – potentially to its very existence – and planners are not fully confident that, despite Pakistan's impressive forces, a full-scale conventional war could be survived.[109] Thus, whereas India's nuclear program has been driven largely by scientific and political factors, Pakistan's progress has been spurred most centrally by military-security concerns, especially after its conventional capabilities declined in the wake of 1990 U.S. sanctions.[110] (In October 1990, U.S. aid and arms sales to Pakistan were suspended when President Bush could not certify to Congress, as required under Section 620E(e) of the Foreign Assistance Act – the so-called "Pressler amendment" – that Pakistan does not possess a nuclear explosive device.) Pakistan's civilian political leaders have traditionally played only a marginal role in the country's nuclear decision making.[111]

The Pakistani leadership – both civilian and military – has emphatically rejected a no-first-use pledge and suggest that Pakistan would consider using nuclear weapons first if attacked by conventional forces.[112] This is not unexpected from the party seen to be at a numerical disadvantage in conventional forces (U.S./NATO nuclear policy similarly avoids such a pledge). Because Pakistan has fears about losing air superiority quickly in a war, ballistic missiles – potentially nuclear-armed – may have greater appeal in Islamabad than in New Delhi, and so considerable resources have been devoted to the creation of a robust missile force.

Deterrence Models

Debate over the proliferation of nuclear weapons is generally divided into two camps: "optimists" and "pessimists."[113] *Proliferation optimists* operate under the logic of deterrence, wherein the possession of nuclear weapons by both sides of an adversarial interstate relationship can be expected to produce stability. Put simply, mutual deterrence obtains when both sides believe that the costs of aggression or escalation are likely to outweigh the potential benefits of such action. In the Indo-Pakistani case, these analysts identify the stabilizing effects of opaque deterrence in

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[109] Rodney Jones, "Pakistan's nuclear posture: Arms race instabilities in South Asia," *Asian Affairs, An American Review*, Summer 1998.

[110] See also Eric Arnett, "Nuclear tests by India and Pakistan," *SIPRI Year Book 1999* (New York: 1999). There exists some evidence, however, that Pakistan's nuclear tests were spurred by efforts to overcome ethnic and social divisions. See Jared Shirck, "Nuclear identity: Pakistan's domestic challenges," *Harvard International Review*, Spring 1999.

[111] Samina Ahmed, "Pakistan's nuclear weapons program," *International Security* 24, 4, Spring 1999.

[112] Adam Tanner, "Pakistan to consider using nukes if attacked," Reuters newswire, July 20, 2000, 7:19 AM EDT; Eric Arnett, "Nuclear tests by India and Pakistan," *SIPRI Year Book 1999* (New York: 1999).

[113] For excellent overviews of this debate, see Scott Sagan and Kenneth Waltz, *The Spread of Nuclear Weapons: A Debate* (New York: WW Norton & Co., 1995); David Karl, "Proliferation pessimism and emerging nuclear powers," *International Security* 21, 3, Winter 1996/1997.

the 1987 "Brasstacks" and 1990 Kashmir crises, claiming that these disputes would otherwise have escalated into full-scale warfare between the two countries if not for uncertainties regarding nuclear retaliation.[114] Likewise, it is argued that the Kargil crisis stopped short of full-scale war due to the moderating effects of nuclear deterrence.

Proliferation pessimists, however, take the view that the spread of nuclear weapons is inherently destabilizing and dangerous, and that – even if assuming that the US-Soviet experience confirmed the logic of deterrence – nuclear dynamics in the developing world are unlikely to re-create the cold war pattern. Political and technological factors in conflict-prone areas are seen to create conditions where nuclear weapons will not produce stability and the introduction of more nuclear weapons will significantly increase the likelihood that these weapons will be used.[115] As regards South Asia, these analysts point to geographic proximity, Pakistan's lack of strategic depth, short warning times, poor command and control structures, and historic animosity as reasons to vigorously oppose nuclear weapons and missile proliferation.

It appears that India's strategic decision making is a key factor is shaping stability in South Asia. China seems content with its existing deterrent against India, and Pakistan's limited resources would seem to constrain its ability to initiate an Indo-Pakistani arms race.[116] Thus, one of the most important variables in the future evolution of South Asian nuclear proliferation is India's strategic intention in relation to China. India's defeat in a 1962 border war and China's first nuclear test two years later were central motivators for the accelerated development of India's own nuclear capability.[117] Today, the key question is whether India will seek to more closely match PRC capabilities or, short of that, to develop the ability to target nuclear weapons on China's eastern population centers as a way of ensuring that any Chinese conventional incursion would hold the threat of being "painful" for Beijing. The deployment of Agni missiles aimed at China may spur Beijing to re-target its nuclear forces to the south and likewise move Islamabad to seek some form of parity in this arena, thus setting in motion a full-blown arms race on the Asian subcontinent.[118] A strategic rivalry between India and China may well be the primary focus of Asian security analysts in the new century.[119]

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[114] See, for example, Devin Hagerty, *The Consequences of Nuclear Proliferation: Lessons from South Asia* (Cambridge, Mass.: MIT Press, 1998).

[115] See, for instance, Scott Sagan, "More will be worse," in Scott Sagan and Kenneth Waltz, *The Spread of Nuclear Weapons: A Debate* (New York: WW Norton & Co., 1995).

[116] Ben Sheppard, "South Asia nears nuclear boiling point," *Jane's Intelligence Review*, Apr. 1999.

[117] George Perkovich, *India's Nuclear Bomb* (Berkeley: University of California Press, 1999).

[118] Joseph Cirincione, "The Asian nuclear reaction chain," *Foreign Policy*, Spring 2000; Ben Sheppard, "South Asia nears nuclear boiling point," *Jane's Intelligence Review*, Apr. 1999.

[119] J. Mohan Malik, "India goes nuclear," *Contemporary Southeast Asia* 20, 2, Aug. 1998.

(continued...)

Many analysts believe that effective nuclear deterrence – or "crisis stability" – requires the existence of a credible retaliatory capability, the ability to withstand a full-scale conventional or nuclear attack and respond with massive force.[120] The most dangerous situation is that in which one side believes it can attack and destroy the other's nuclear forces. Thus, so long as India and Pakistan appear to be engaged in counter-value rather than counter-force targeting, nuclear dynamics may remain relatively stable. If either side fears that its nuclear forces could be lost in a preemptive attack, crisis instability may increase drastically.

"Strategic stability" – a condition in which day-to-day expectations of war are low – cannot be said to exist between India and Pakistan, although it does between India and China. Some analysts doubt that the Indo-Pakistani relationship will attain crisis stability in the near-term.[121] Other observers claim that a limited form of deterrence – such as that currently practiced by China – can be effective even without a completely reliable and prompt retaliatory capability.[122] This view rests on the assumption that "bolt from the blue" counter-force strikes are extremely unlikely, and that even limited nuclear forces can create sufficient uncertainty to deter a would-be aggressor.[123]

Most Indian planners have conceived of *minimum credible deterrence* (MCD) as a significantly scaled-down form of the massive urban/industrial retaliation envisaged under the U.S. nuclear doctrine of the 1950s, based on the ability to launch a retaliatory strike that would inflict "unacceptable damage" upon an adversary.[124]

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[119] (...continued)
See also U.S. Department of Defense, *Asia 2025*, 1999 Summer Study Final Report, Aug. 4, 1999.

[120] One military affairs analyst presents eight requirements for effective deterrence: 1) first strike survivability; 2) ability to penetrate defenses and reach targets; 3) low risk of physical accidents; 4) safe against theft and/or unauthorized use; 5) safe against accidental use; 6) C2 survivability; 7) varied response options; and 8) procurement and deployment at a reasonable cost (Gregory Jones, "From testing to deploying nuclear forces: The hard choices facing India and Pakistan," RAND Issue Paper 192, Mar. 2000).

[121] Gregory Jones, "From testing to deploying nuclear forces: The hard choices facing India and Pakistan," RAND Issue Paper 192, Mar. 2000; Sumit Ganguly, "India's pathway to Pokhran II: Prospects and sources of New Delhi's nuclear weapons program," *International Security* 23, Spring 1999.

[122] Ehsan Ahrari, "South Asia faces the future with a clean strategic slate," *Jane's Intelligence Review*, Dec. 1998.

[123] In a situation of mutual nuclear capability, the stationing and operational features of ballistic missiles can be considered highly destabilizing, but preparing to fire a Prithvi missile reportedly takes about two full hours from the transmittal of orders to actual launch, thus allowing for a potential "cool down" period (Rodney Jones, "Pakistan's nuclear posture: Arms race instabilities in South Asia," *Asian Affairs, An American Review*, Summer 1998; Pravin Sawhney, "How inevitable is an Asian 'missile race'?," *Jane's Intelligence Review*, Jan. 2000).

[124] Gregory Giles and James Doyle, "Indian and Pakistani views on nuclear deterrence," (continued...)

Some independent military analysts believe India can accomplish MCD with 30-50 warheads and without arming Prithvi SRBMs. A senior Indian analyst offers that an effective nuclear triad could be constructed with only a "modest" arsenal of 150 weapons. A high-end estimate claims that, even in a "low risk" situation such as currently exists, an Indian deterrent will require 400-500 warheads.[125]

At the time of Pakistan's nuclear tests, that country's leading scientists were reported to believe that a credible nuclear deterrent capability against India could be achieved with 60-70 warheads. Others claim that a viable Pakistani nuclear posture could employ as few as 20 warheads.[126] Pakistan's military leaders are likely aware that the country lacks the economic and technological resources required for full-scale nuclear weaponization and deployment, especially if in direct competition with India.[127] Given that Pakistani nuclear strategy is made solely in relation to India, continued reliance on aircraft as delivery systems can serve the purpose of deterrence. While all of Pakistan's major cities are within range of Indian short-range missiles, the Pakistani SRBM force cannot target most of India's population centers.[128] However, one Pakistani military analyst asserts that, because nuclear weapons are "absolute" weapons, Pakistan need not match India bomb for bomb and missile for missile, but rather can take a posture based on the assumption of a "one-rung"escalation ladder.[129] Pakistan's perceived conventional disadvantage causes its strategists to both reject a no-first-use pledge and to consider the use of tactical nuclear weapons to repulse a hypothetical Indian armored thrust, perhaps even by detonating such weapons over Pakistani territory.[130]

Some analysts believe it unlikely that India and Pakistan will settle for postures of minimum deterrence as currently conceived.[131] If the two countries do choose to deploy more sophisticated forms of deterrence than they currently possess, they will have to consider maintaining high-alert status for their nuclear forces and developing more powerful, mobile launchers or hardened silos for their land-based missiles, and

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[124] (...continued)
Comparative Strategy 15, 1996.

[125] Eric Arnett, "Nuclear tests by India and Pakistan," *SIPRI Year Book 1999* (New York: 1999); K. Subrahmanyam, "A credible deterrent," *Times of India* (Bombay), Oct. 4, 1999; D. Ramana, "What next? Way to a credible deterrent," *Rakshak Monitor* 2, 3 (Bombay), Nov./Dec. 1999.

[126] Umer Farooq, "Pakistan needs up to 70 nuclear warheads," *Jane's Defence Weekly*, June 10, 1998; Amit Gupta, "After the bomb: U.S. policy toward a nuclear South Asia," *Mediterranean Quarterly* 10, 2, Spring 1999.

[127] Samina Ahmed, "Pakistan's nuclear weapons program," *International Security* 24, 4, Spring 1999.

[128] "Pakistan's nuclear doctrine," Virtual Information Center, U.S. Pacific Command, [http://www.vic-info.org], May 17, 2000 (prepared Nov. 9, 1999); Ehsan Ahrari, "South Asia faces the future with a clean strategic slate," *Jane's Intelligence Review*, Dec. 1998.

[129] Shireen Mazari, "The case of South Asia," *Defence Journal* (Karachi), Mar. 2000.

[130] Saeed Ismat, "A conceptual nuclear doctrine," *Defence Journal* (Karachi), Mar. 2000.

[131] Kotera Bhimaya, "Nuclear deterrence in South Asia," *Asian Survey* 34, July 1994.

more reliable and technologically advanced command and control structures.[132] Reproducing US-Soviet nuclear relations would almost certainly require that India and Pakistan both develop a nuclear triad, but such forces are quite expensive to deploy and neither country is likely to have the resources to do so for the foreseeable future. Moreover, advanced Western nuclear doctrines based on warfighting or mutually assured destruction are widely discredited in South Asia and especially in India.[133] Thus, many analysts believe in the near- and middle-term, both countries are likely to settle for minimum credible deterrent nuclear forces.

Despite India's numerical advantage of two- or three-to-one in conventional land, air, and sea forces, Pakistan's operational strengths may provide sufficient advantages to produce near-parity in conventional forces overall.[134] In this context, recent Indian military procurement, including in-flight refueling and advanced fighter aircraft, may be viewed in Islamabad as attempts by New Delhi to gain a qualitative, as well as quantitative, edge in conventional capabilities.[135] Moreover, the Indian government aspires to regional, if not global, major power status, with the National Security Advisor to India's Prime Minister claiming that India must "ensure stability" in a region extending from Saudi Arabia to the Philippines.[136] Increased muscle-flexing on the part of New Delhi might combine with a perceived erosion of Pakistan's conventional deterrent to encourage both Beijing and Islamabad to enlarge their nuclear arsenals.

India is currently in pursuit of "eye in the sky" intelligence that could allow New Delhi to keep closer tabs on Pakistan's nuclear facilities and even the movement of its strategic forces.[137] Such capabilities, if unmatched by Pakistan, could engender a "use it or lose it" mentality in Islamabad during a crisis. Perhaps even more destabilizing are India's ongoing efforts to deploy a working ABM system. A deal to purchase Russia's S-300 surface-to-air missile system (touted as similar to the U.S. Patriot system) may be settled in time for the Russian President's scheduled visit to New Delhi in October 2000, and Israel is reportedly close to providing a sophisticated

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[132] Gregory Jones, "From testing to deploying nuclear forces: The hard choices facing India and Pakistan," RAND Issue Paper 192, Mar. 2000.

[133] Gregory Giles and James Doyle, "Indian and Pakistani views on nuclear deterrence," *Comparative Strategy* 15, 1996.

[134] Brian Cloughley, "Transition time in Pakistan's army," *Jane's Intelligence Review*, Apr. 2000.

[135] Anupam Srivastava, "Indo-Russian military technical cooperation: Implications for Southern Asia," *World Affairs* 161, 4, Spring 1999.

[136] Brajesh Mishra, "Global security: An Indian perspective," Presentation at the National Defence Institute, Lisbon, Portugal, Apr. 13, 2000.

[137] K.S. Jayaraman, "India, U.S. firm agree to sale of one-meter imagery," *Defense News*, July 24, 2000; Rahul Datta, "India developing own military satellite to watch Line of Control," *Pioneer* (New Delhi), July 17, 2000 via Foreign Broadcast Information Service (FBIS), July 17, 2000.

radar that might complement an Indian ABM system.[138] A viable Indian theater missile defense would almost certainly cause the Pakistanis to doubt the credibility of its nuclear deterrent and perhaps respond with a major effort to bolster its missile forces.

While it is commonly assumed that the nuclear doctrines of the United States, Soviet Union, and other nuclear weapons states were conceived in advance of procurement decisions, this was not always the case. More often, doctrine derived from rather than determined capabilities, and it is claimed that, "Although both [India and Pakistan] seek to give a different impression, they still give the appearance of countries stumbling into futures that they do not know and may be unable to control."[139] This view suggests that the future evolution of nuclear forces and doctrines in South Asia will continue to be driven in large part by political concerns rather than by military-security assessments of need. When economic and technological constraints are factored in, it is unlikely that South Asian nuclear forces will grow at anything more than a limited pace in the foreseeable future. Thus, despite apparent efforts to develop nuclear weapons, both countries seem to be seeking only moderate nuclear forces.

Policy Options

As noted above, U.S. security interests in South Asia focus on preserving the nuclear nonproliferation regime, maintaining regional stability, and improving relations between India and Pakistan. As indications of possible nuclear deployments arise, hopes that South Asian proliferation might be "capped" or even "rolled back" correspondingly fade. Each of the key international nonproliferation regimes and efforts – the NPT, CTBT, MTCR, and a possible FMCT – is endangered by increased nuclearization in South Asia.[140] India and Pakistan are not signatories to the NPT, and under that treaty's stipulations cannot be recognized as official nuclear weapons states. Neither country has signed the CTBT, and it is possible that one or both will conduct further nuclear tests. Their missile programs violate the intent of the MTCR, which is to halt the proliferation of WMD-capable delivery vehicles. Finally, the ongoing production of weapons-grade fissile material in both India and Pakistan is contrary to the purposes of the FMCT negotiations.

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[138] Oleg Odnokolenko, "All the best to India," *Segodnya* (Moscow in Russian), June 30, 2000 via Foreign Broadcast Information Service (FBIS), June 30, 2000; Pranay Sharma, "India, Israel finalizing radar deal despite U.S. opposition," *Telegraph* (Calcutta), July 3, 2000 via Foreign Broadcast Information Service (FBIS), July 3, 2000.

[139] William Walker, "The risks of further nuclear testing in South Asia," *Arms Control Today* 29, 6, Sep./Oct. 1999.

[140] For a concise review of U.S. nonproliferation policy, see CRS Issue Brief IB98039, *Nuclear Nonproliferation Policy*, by Zachary Davis; CRS Report 97-343F, *Proliferation Control Regimes: Background and Status*, by Robert Shuey, Steven Bowman, and Zachary Davis.

In pursuit of it goals, U.S. government policy toward the region can move along four broadly conceived avenues: 1) *increased pressure* on the Indian and Pakistani governments, mainly in the form of economic sanctions; 2) a *continuation* of the current approach based on the five benchmarks; 3) *increased incentives* for India and Pakistan; or 4) the provision of various forms of *technological assistance* in the area of nuclear safety and/or strategy in exchange for increased stability and perhaps greater cooperation in nonproliferation efforts. U.S. policy also could combine the aspects of two or more of these approaches.

Increased Pressure

A senior State Department official stated in June 2000 that there has been little progress on nonproliferation since the May 1998 tests, noting that current efforts to have Pakistan sign the CTBT are stalled, and that movement on other benchmark issues has been "limited." This seems to bear out predictions that the post-Kargil political and security environment would preclude the establishment of any sort of strategic restraint regime for South Asia.[141]

Given this lack of progress toward stated U.S. goals, there are those who recommend restoring or even strengthening economic sanctions aimed at India and Pakistan in an effort to compel the cooperation of their governments.[142] India's self-sufficient economy is less vulnerable to economic sanctions than that of Pakistan, but the Indian economy was measurably and adversely affected by U.S. sanctions in the wake of the 1998 tests. More significant were the effects on Pakistan, where the economy is heavily dependent on the International Monetary Fund and other international financial institutions. The effectiveness or ineffectiveness of U.S. economic sanctions is closely related to the expectation that they will be enforced. In this respect, reimposition and strict enforcement of some or all of those sanctions applied in 1998 would raise the cost to India and Pakistan of further proliferation activities. Some believe a targeted sanctions policy could be especially effective.[143]

Weighing against such a course are U.S. national economic interests (especially in agricultural exports), considerations about "freeing the hand" of the President in negotiations with India and Pakistan, and the conclusion among some that multilateral

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[141] Karl Inderfurth, "Text: Remarks by State's Inderfurth to the Pakistani American Congress," *USIS Washington File*, June 7, 2000; Farah Zhara, "Pakistan's road to a minimum nuclear deterrent," *Arms Control Today* 29, 5, July/Aug. 1999.

[142] For a detailed review of sanctions applied in the wake of Indian and Pakistani nuclear tests, see CRS Report 98-486, *Nuclear Sanctions: Section 102(b) of the Arms Export Control Act and its Application to India and Pakistan*, by Jeanne Grimmett.; CRS Report RL30384, *Economic Sanctions: Legislation in the 106th Congress*, by Dianne Rennack; CRS Report 98-116, *Nuclear, Biological, Chemical, and Missile Proliferation Sanctions: Selected Current Law*, by Dianne Rennack.

[143] Daniel Morrow and Michael Carriere, "The economic impacts of the 1998 sanctions on India and Pakistan," *Nonproliferation Review* 6, 4, Fall 1999; David Cortright and Samina Ahmed, "Sanctions: Modify 'em," *Bulletin of the Atomic Scientists*, 55, 4, Sep./Oct. 1998; Thomas Graham, Jr., "Sanctions: Hang tough," *Bulletin of the Atomic Scientists*, 55, 4, Sep./Oct. 1998.

sanctions in general rarely produce the desired results (and may even be counterproductive). The Congress has been hesitant to maintain sanctions as means of either punishing or coercing India and Pakistan, or even as a way to send a more general message about proliferation. There are also fears that a punitive approach toward Pakistan may push that country toward Islamic radicalism, a development which could have "calamitous" consequences. During the period that sanctions were in place, there was little evidence that they altered the proliferation behavior of either country, and few analysts make the claim that Washington's nuclear-related sanctions have worked.[144] One opinion offers that no amount of U.S. pressure is likely to alter the Pakistani government's present course.[145] Moreover, and in India especially, U.S. efforts perceived as punishment of India and Pakistan and seeking to discourage the establishment of South Asian nuclear deterrence forces are often attributed to racism.[146] Regardless, under current U.S. law any further nuclear tests by either India or Pakistan will require that the President impose new sanctions unless Congress passes a joint resolution allowing him to selectively withdraw from such action.

Continuity

The United States remains categorically opposed to nuclear status for India or Pakistan and will allow no provisions in the NPT for new nuclear weapons states. On a recent trip to South Asia, a senior U.S. diplomat stated that the commitments of both India and Pakistan to refrain from testing should remain in place, and he encouraged both countries to sign the CTBT.[147] Many analysts believe that continuation of current U.S. policy based on steady diplomatic pressure for adherence to the five benchmarks is the most pragmatic means of forwarding U.S. interests, and that India and Pakistan will respond incrementally over time.[148] While U.S. policy may not have prevented the introduction of nuclear weapons on the subcontinent, it is seen by some to have significantly slowed the pace of Indian and Pakistani nuclear programs.[149]

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[144] Robert Hathaway, "Confrontation and retreat: The U.S. Congress and the South Asian nuclear tests," *Arms Control Today*, Jan./Feb. 2000: Pervez Hoodbhoy and Zia Mian, "Sanctions: Lift 'em," *Bulletin of the Atomic Scientists*, 55, 4, Sep./Oct. 1998.

[145] M.B. Naqvi, "Non-proliferation pressures are still there," *Defence Journal* (Karachi), May 2000.

[146] Gregory Giles and James Doyle, "Indian and Pakistani views on nuclear deterrence," *Comparative Strategy* 15, 1996.

[147] "US rules out nuclear status for Pakistan, India," *News* (Islamabad), Apr. 26, 2000; Thomas Pickering, "Transcript: Pickering Press Conference in New Delhi on S. Asia Visit," *USIS Washington File*, May 26, 2000.

[148] Amit Gupta, "After the bomb: U.S. policy toward a nuclear South Asia," *Mediterranean Quarterly* 10, 2, Spring 1999; Pravin Sawhney, "How inevitable is an Asian 'missile race'?," *Jane's Intelligence Review*, Jan. 2000.

[149] Robert Hathaway, "Confrontation and retreat: The U.S. Congress and the South Asian nuclear tests," *Arms Control Today*, Jan./Feb. 2000.

Most reports indicate that both India and Pakistan have, in the main, upheld their respective commitments to control the export of WMD technologies. Further, there are indications that one or both may accede to the CTBT in the near future, with the Indian Prime Minister predicting national consensus by the end of the year and the Pakistani Foreign Minister pledging that Pakistan will not test in the absence of further Indian action.[150] Such accession, especially by both South Asian parties, would be widely regarded as a validation of current U.S. policy. By the same token, a resumption of testing, and/or continued fissile material production or missile proliferation would erode confidence in the present U.S. course.

Others see reason to be pessimistic regarding Indian and Pakistani accession to the CTBT any time soon. A Pentagon official predicts that both India and Pakistan are likely to conduct one more round of nuclear tests each before signing the treaty. The Senate's 1999 rejection of the CTBT has led many in New Delhi to label it a dead issue, and India's opposition Congress Party may withhold support for that country's accession. In Islamabad, government officials indicate that Pakistan will not sign the CTBT unilaterally, and that the treaty is "not an urgent issue."[151]

With regard to nonproliferation in its broader conception, many Western and South Asian analysts identify inconsistencies in U.S. policy – including maintenance of a large nuclear arsenal and development of NMD – as key obstacles to progress in this realm. In the words of a former Indian Foreign Secretary, "It is impossible to prevent proliferation in any discriminatory way, without eliminating the weapons of all nuclear powers."[152] So long as the United States is perceived as relying on nuclear weapons for its own security, encouraging India and Pakistan to forsake their own nuclear capabilities may continue to engender limited progress. U.S. demands on nonproliferation are also criticized for failing to address the legitimate security needs of both countries.[153]

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[150] "Signing of CTBT not linked to curbs: Jaswant," *Hindustan Times* (Delhi), July 5, 2000; "India test ban consensus expected," Associated Press, June 30, 2000, 6:48 AM EDT; Alok Mukherjee, "India committed to signing CTBT after consensus: PM," *Hindu* (Madras), June 29, 2000; P.S. Suryanarayana, "Pak. Will not be the first to resume n-tests: Sattar," *Hindu* (Madras), June 29, 2000.

[151] Thomas Ricks, "Taking the Air Force to the next level," *Washington Post*, June 27, 2000; "Congress to say no to signing of CTBT," *Economic Times* (Delhi), July 11, 2000; "Musharraf: Pakistan not to sign CTBT 'unilaterally,'" *Radio Pakistan* (Islamabad), July 2, 2000 via Foreign Broadcast Information service (FBIS), July 2, 2000; Hasan Akhtar, "No consensus on CTBT yet, says Sattar," *Dawn* (Karachi), July 4, 2000.

[152] Muchkund Dubey, "Congress and Indian's n-policy-II, *Hindu* (Madras), June 20, 2000. See also Todd Sechser, "The grand nuclear bargain," Carnegie Endowment for International Peace Proliferation Brief, May 11, 2000; "Nuclear fix," *Times of India* (Bombay), May 24, 2000; Jaswant Singh, "Against nuclear apartheid," *Foreign Affairs*, Sep./Oct. 1998.

[153] Andreas Katsouris and Daniel Goure, "Strategic crossroads in South Asia," *Comparative Strategy* 18, Apr. 1999.

Increased Incentives

Deputy Secretary of State Strobe Talbott has remarked that, "A durable peace [in South Asia] will require the emergence of inclusive regional mechanisms to promote economic integration and political reconciliation and, conversely, the emergence of such mechanisms will require more willingness by the parties to engage constructively than exists today." U.S. Ambassador to India Richard Celeste told reporters that the United States will do everything it can "to encourage Pakistan to help create an environment in which dialogue could take place" with India, and a joint statement of leaders at a July 2000 G-8 summit urged renewed dialogue in the spirit of the Lahore Declaration. Many analysts see the concept of deterrence itself as including a combination of reassurance and accommodation, and so should perhaps not focus exclusively on nuclear capabilities.[154]

These ideas suggest that a U.S. focus on encouraging improvements in South Asian political and economic conditions could indirectly, but substantially, serve the goals of nonproliferation. First among these might be efforts to ameliorate the territorial dispute in Kashmir, either by gaining Indian acquiescence for direct U.S. diplomatic intervention, or by supporting Track Two (less formal, non-governmental) efforts at reconciliation.[155] Deals involving economic benefits might also be considered, such as pledges of economic aid to both India and Pakistan in return for those two countries reviving the Lahore reconciliation process and making concrete progress on nonproliferation.

Formal incentives to India and Pakistan may encourage those countries to increase their commitment to nuclear arms control regimes and norms. In this vein, there have variously been calls for the United States to lift all remaining sanctions against India and Pakistan except those relating to the transfer of WMD and ballistic missiles, rebuild political and military ties with both countries, and take action to strengthen democracy in the region.[156] Efforts to encourage bilateral dialogue may help build confidence in New Delhi and Islamabad. Developments might include mutual inspections of nuclear facilities and other forms of technical cooperation, and the creation of a joint Indian-Pakistani committee to discuss nuclear issues.[157] Because India's nuclear strategy can be seen as pivotal to the region's strategic

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[154] Strobe Talbott, "The Architecture of Peace in Africa and the World," Address at Witwatersrand University, Johannesburg, South Africa, May 9, 2000; "U.S. to help Pakistan, India hold talks," *Dawn* (Karachi), July 8, 2000; "India, Pak. Urged to talk," *Hindu* (Madras), July 23, 2000; Michael Howard, "Deterrence and reassurance," *Foreign Affairs* 61, Winter 1982/1983.

[155] Pervez Hoodbhoy and Zia Mian, "Sanctions: Lift 'em," *Bulletin of the Atomic Scientists*, 55, 4, Sep./Oct. 1998.

[156] Tariq Rauf, "Learning to live with the bomb in South Asia: Accommodation not confrontation," Center for Nonproliferation Studies Report, Jan. 1999; Todd Sechser, "Nuclear stalemate in South Asia," *Boston Globe*, Mar. 23, 2000; Mario Carranza, "Indo-Pakistani nuclear relations: Can the genie be put back in the bottle?," *International Politics* 36, Dec. 1999.

[157] Toby Dalton, "Toward nuclear rollback in South Asia," *Current History* 97, Dec. 1998.

evolution, efforts to reassure India in relation to China might ease New Delhi's security concerns. One possible step that has been suggested for the United States would be to support creation of a permanent seat for India on the UN Security Council, although some analysts maintain that such a move would almost certainly require a corresponding gesture toward Pakistan.[158]

As with previously discussed options, there are doubts that Indian and Pakistani proliferation behavior is substantively affected by external considerations other than those deriving from their bilateral relations. The two countries have proven resistant to the desires of outsiders when it comes to issues of national security. Moreover, so long as the United States and other nuclear weapons states deploy large nuclear arsenals of their own, India and Pakistan are likely to discount calls to curtail their own efforts in this regard. There have been calls for concrete movement toward global nuclear disarmament, with many believing that the nuclear weapons states must halt modernization programs and reduce their arsenals as a means of demonstrating sincerity on nonproliferation.[159] Recently, 18 senior retired U.S. military officers, including a former CIA director and the commander of Operation Desert Storm's air operations, gathered to call for worldwide nuclear disarmament, and the most recent NPT conference ended with a pledge by the nuclear weapons states to follow this course.[160] Yet such a development is considered highly unlikely to occur in the present international environment, and so any U.S. policy based on incentives may continue to be perceived as hypocritical in New Delhi and Islamabad.

Technological Assistance

There have been recommendations that the United States might increase nuclear stability in South Asia by recognizing India and Pakistan as legitimate nuclear states and providing them with technical means for management of their arsenals. This is seen as especially important for Pakistan, where civilian control of the military is weak or nonexistent.[161] Such efforts could include the provision of command and control expertise, Permissive Action Link (PAL) technology, early-warning assistance or systems, and perhaps even theater missile defense capabilities. Proponents of such policies also claim that U.S. influence in the region would be enhanced by these actions. It has been reported that Pakistan has already asked for U.S. assistance in creating a limited command, control, communications, computers, information, and intelligence (C4I2) system and has no objections if the US does the same for India.[162]

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[158] Mohammed Ayoob, "Nuclear India and Indian-American relations," *Orbis* 43, Winter 1999.

[159] Sharif Shuja, "Nuclear proliferation in South Asia," *Contemporary Review*, June 1999.

[160] "Military figures to call for disarmament," *Washington Post*, June 21, 2000.

[161] Jon Rosenwasser, "Calming South Asia's nuclear threat," *Defense News*, May 15, 2000: 15-16; Todd Sechser, "Pakistan coup underscores nuclear dimension," *Defense News*, Nov. 11, 1999: 37.

[162] Ahmed Rashid, "Islamabad cool," *Far Eastern Economic Review*, July 13, 2000.

As noted above, secure retaliatory capabilities are viewed as an essential aspect of any credible nuclear deterrent. The provision of command and control expertise to both India and Pakistan could enhance the credibility of each sides' deterrent. Likewise, if the United States were to share early-warning data with both India and Pakistan, this might also serve to reassure the two countries in times of crisis. Too, the United States has had legitimate concerns about the possibility of an accidental or unauthorized nuclear launch in South Asia. If employed by the region's armed forces, some analysts say PAL technology could go far in reducing the likelihood of such an occurrence.

Furthermore, because crisis instability is exacerbated if one side believes it can launch a successful first strike against the other's nuclear forces, there are those who have suggested that the United States deploy or share TMD systems in the region if and when these become technologically feasible. With India reportedly pursuing such capabilities on its own, this might entail that the United States provide Pakistan in particular with such technology. Some believe it would be sufficient for the United States to deploy rather than provide such capabilities, with a former Assistant Secretary of State suggesting that U.S. naval boost-phase TMD capabilities, if deployed in the Arabian Sea, could be a highly stabilizing factor in any future South Asian crisis.[163]

Criticism of this tack falls into three general categories. The first, made in response to any provision of nuclear-related expertise to India and Pakistan, is that a signal of acceptance of South Asia's nuclear status – implicit or otherwise – would be seen to undercut three decades of U.S. nonproliferation policy and so do irreparable damage to those international regimes designed to halt proliferation. With this view, the potential benefits of providing India and Pakistan with technical assistance would not outweigh the probable costs of such damage. The second criticism contends that such policy would only serve to strengthen Indian and Pakistani nuclear capabilities, and perhaps even encourage these countries to deploy larger nuclear forces. Finally, some analysts respond more specifically to the idea of deploying missile defenses in the region, viewing such a step as likely to spark an Asian ballistic missile race as countries seek to ensure the viability of their nuclear deterrents.[164]

It may be possible to combine aspects of two or more of these general approaches. For instance, a "carrots and sticks" policy might include promises of future aid and/or technical assistance along with the imposition of new sanctions in the absence of cooperation on nonproliferation issues. An important decision facing United States policy makers at this time would seem to be whether to maintain the more or less strict nonproliferation policies now in place or, alternatively, to either

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[163] Richard Perle, "A better way to build a missile defense," *New York Times*, July 13, 2000. See also Andreas Katsouris and Daniel Goure, "Strategic crossroads in South Asia," *Comparative Strategy* 18, Apr. 1999; John Mearscheimer, "India needs the bomb," *New York Times*, Mar. 24, 2000.

[164] Joseph Cirincione, "The Asian nuclear reaction chain," *Foreign Policy*, Spring 2000; Gary Koblentz, "Viewpoint: Theater missile defense and South Asia: A volatile mix," *Nonproliferation Review* 4, 3, Spring/Summer 1997.

implicitly or explicitly accept the nuclear status of India and Pakistan and so shape a policy that seeks to manage rather than to counter proliferation in South Asia.

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