

# Pakistan's Battlefield Nuclear Policy

Jaganath Sankaran

## A Risky Solution to an Exaggerated Threat

In April 2011, Pakistan announced the latest addition to its expanding nuclear arsenal: a short-range tactical ballistic missile, the Nasr, reportedly designed to deliver low-yield battlefield nuclear weapons.<sup>1</sup> Since then, prominent purveyors of Pakistani nuclear doctrine—including Maleeha Lodhi, Adil Sultan, Zahir Kazmi, and Lt. Gen. Khalid Kidwai—have, in essence, viewed Nasr as a counter to India's Cold Start war doctrine.<sup>2</sup> Proponents of Nasr imagine the weapon being used against invading Indian armored units inside Pakistani territory. After the latest flight test of the Nasr in February 2013, Pakistan declared it ready for use, though it has not yet been added to the military's inventory.<sup>3</sup>

The Cold Start doctrine emerged out of the experience of the Indian army during Operation Parakram. The operation followed the attack on the Indian Parliament on December 13, 2001, by five individuals associated with two terrorist groups: Lashkar-e-Taiba and Jaish-e-Mohammed. The five terrorists, armed with rifles, grenades, and explosives, killed nine people before being shot dead by security forces in the Parliament building. The Indian govern-

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The author is extremely grateful to Rajesh Basrur, Stephen Cohen, Toby Dalton, Steve Fetter, Nancy Gallagher, Gaurav Kampani, Gary Samore, and John Steinbruner for their thoughtful comments and suggestions on earlier drafts of this article. He is also thankful to the anonymous reviewers for their suggestions.

1. See Pakistani Inter-Services Public Relations, "Press Release No. PR94/2011-ISPR" (Rawalpindi: Pakistani Inter-Services Public Relations, April 19, 2011), [http://www.ispr.gov.pk/front/main.asp?o=t-press\\_release&id=1721](http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1721). Since then, the Nasr has been tested three times.
2. For details, see *ibid.*; Maleeha Lodhi, "Pakistan's Nuclear Compulsions," *News* (Pakistan), November 6, 2012, <http://www.thenews.com.pk/Todays-News-9-141314-Pakistan%E2%80%99s-nuclear-compulsions>; Adil Sultan, "Pakistan's Emerging Nuclear Posture: Impact of Drivers and Technology on Nuclear Doctrine," *Strategic Studies*, Vols. 31–32 (Winter 2011/Spring 2012), pp. 147–167; and Zahir Kazmi, "Nothing Tactical about Nuclear Weapons," *Express Tribune*, May 17, 2014, <http://tribune.com.pk/story/709277/nothing-tactical-about-nuclear-weapons/>.
3. Sikander Shaheen, "Pakistan Successfully Test Fires Hatf-IX Missile," *Nation* (Pakistan), February 12, 2013, <http://www.nation.com.pk/national/12-Feb-2013/pakistan-successfully-test-fires-hatf-ix-missile>.

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*International Security*, Vol. 39, No. 3 (Winter 2014/15), pp. 118–151, doi:10.1162/ISEC\_a\_00191  
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ment accused Pakistan's Inter-Services Intelligence directorate of being involved in harboring those behind the attack and demanded that Pakistan take immediate action against them. Pakistan denied any involvement. India subsequently ordered its entire army to the international border on December 15, 2001, in what became known as Operation Parakram. Although the Indian political leadership seems not to have had a particular war plan in mind, the leadership of the army appears to have believed that war was the ultimate aim. In the view of India's army and sections of its strategic community, the operation did not lead to war for two reasons: (1) the political leadership lost its nerve during the approximately three weeks the army needed to deploy its three strike corps—the Mathura-based 1 Corps, the Ambala-based 2 Corps, and the Bhopal-based 21 Corps—to the international border; and (2) during this period, Pakistan's army was able to countermobilize on the border.<sup>4</sup>

In response, senior Indian army officials began debate at an army commanders' conference, held in April 2004, on what would eventually become known as the Cold Start doctrine. There seems to be no evidence, however, of the unveiling of an actual doctrine at the time.<sup>5</sup> All publicly available details regarding Cold Start are drawn from the assumptions of analysts on what the doctrine might recommend. Such assumptions postulate that the doctrine entails the reorganization of India's offensive corps stationed in the middle of the country into smaller armored strike "integrated battle groups" (IBGs) stationed closer to the international border and capable of launching an offensive operation within three to four days. These IBGs could make "shallow territorial gains" and "pursue narrow enough aims to deny Islamabad a justification to escalate the clash to the nuclear level." The seized terrain then "could be used in postconflict negotiations to extract concessions from Islamabad."<sup>6</sup>

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4. Praveen Swami, "Gen. Padmanabhan Mulls Over Lessons of Operation Parakram," *Hindu*, February 6, 2004, <http://www.thehindu.com/2004/02/06/stories/2004020604461200.htm>; "Mobilization Strategy of Troops Changed after Operation Parakram," *Indian Express*, December 6, 2011, <http://archive.indianexpress.com/news/mobilisation-strategy-of-troops-changed-after-operation-parakram/884589/>; and Subhash Kapila, "India's New 'Cold Start' War Doctrine Strategically Reviewed, No. 991" (New Delhi: South Asia Analysis Group, May 4, 2004), <http://www.southasiaanalysis.org/paper991>.

5. The Indian army doctrine document released in October 2004 following the army commanders' conference makes no mention of the Cold Start doctrine. See Headquarters Army Training Command, *Indian Army Doctrine* (Shimla, India: Headquarters Army Training Command, October 2004), [ids.nic.in/Indian%20Army%20Doctrine/indianarmydoctrine\\_1.doc](http://ids.nic.in/Indian%20Army%20Doctrine/indianarmydoctrine_1.doc).

6. Walter C. Ladwig, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security*, Vol. 32, No. 3 (Winter 2007/08), pp. 164–165. To understand the elements of

To date, there is no document officially promulgating the Cold Start doctrine. Additionally, some in the Indian government and the military deny that Cold Start is a sanctioned doctrine. The Indian army has made no apparent major changes in either its structure or its posture. It has not reoriented or modernized its forces in a fashion consistent with the purported goals of the doctrine. Rather, it retains its three strike corps in their original configuration, which could make Cold Start-style rapid military operations infeasible. Moreover, India's war-fighting inventory, including main battle tanks, armored personnel carriers, and armored infantry fighting vehicles, has remained unchanged, thereby presumably limiting India's potential for a Cold Start-style operation.

Nevertheless, if Pakistani decisionmakers believe that Cold Start could be implemented in the future, given the comparatively fast pace of modernization of the Indian army, is the deployment of battlefield nuclear weapons a viable option? The use of even one low-yield battlefield nuclear weapon along the heavily populated India-Pakistan international border region could cause thousands, if not tens of thousands, of civilian deaths. In addition, India has stated categorically that it would consider any use of nuclear weapons against its forces as a strategic attack requiring massive retaliation. Although this may or may not be mere posturing, in a number of nuclear exchange scenarios, the use of a tactical nuclear weapon could lead quickly to full-scale nuclear war.

If Cold Start is not as great a threat as Pakistan believes and the dangers of battlefield nuclear weapons are much larger than realized, then it is in Pakistan's interest not to deploy them. Instead, India and Pakistan could negotiate confidence-building measures (CBMs) to demonstrate India's resolve to respect the territorial integrity of Pakistan. For India to consider such measures, however, Pakistan would need to make sincere efforts to curtail terrorism originating from its territory.

This article is organized in six sections. The first section details Pakistani motivations for pursuing the development of Nasr. The second section de-

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Cold Start, see also Shashank Joshi, "India's Military Instrument: A Doctrine Stillborn," *Journal of Strategic Studies*, Vol. 36, No. 4 (August 2013), pp. 512-540; Gurmeet Kanwal, "Military Dimensions of the 2002 India-Pakistan Standoff: Planning and Preparations for Land Operations," in Zachary S. Davis, ed., *The India-Pakistan Military Standoff: Crisis and Escalation Control in South Asia* (New York: Palgrave Macmillan, 2011), pp. 85-86; David Smith, "The 2001-2002 Standoff: A Real-Time View from Islamabad," in Davis, *The India-Pakistan Military Standoff*, p. 207; Firdaus Ahmed, "The Calculus of 'Cold Start,'" *India Together*, January 17, 2004, <http://www.indiatogether.org/2004/may/fah-coldstart.htm>; and "India As a Great Power: Know Your Own Strength," *Economist*, March 30, 2013, <http://www.economist.com/news/briefing/21574458-india-poised-become-one-four-largest-military-powers-world-end>.

scribes the experience of Operation Parakram and how it led some within India's army and strategic community to postulate the Cold Start doctrine. The third section discusses the lack of evidence on the sanctioning and implementation of the doctrine. It also details how Pakistan's active military deployment and defense patterns would stop India from successfully executing a Cold Start-style operation. The fourth section presents a detailed analysis of the number of casualties that could be expected from the use of battlefield nuclear weapons under several scenarios. The subsequent section illustrates the challenges of escalation control. The sixth section concludes with a discussion of confidence-building measures that could help to dissuade Pakistan from deploying Nasr while providing it with some assurance against a possible future Cold Start-style attack.

### *Why Nasr?*

Pakistan's development of the Nasr battlefield nuclear missile is a direct response to the presumed existence of an Indian Cold Start war doctrine. The doctrine, which emerged in 2004, suggests rapid but limited retaliatory incursions into Pakistan to seize and hold shallow slices of territory in response to a terrorist event in India involving Pakistanis.<sup>7</sup> The underlying assumption of the doctrine is that Pakistan would not use nuclear weapons in response to

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7. Even before contemplating the Cold Start doctrine, numerous senior Indian political and army leaders had discussed the idea of waging a limited conventional conflict in a nuclearized strategic environment. In 2000, for example, Defense Minister George Fernandes, drawing from India's experience in the Kargil War, stated, "There was a perception in Pakistan that the nuclear status had ensured it that a covert war would continue and aggression across the Line of Control would be carried out and India would be deterred by the nuclear factor." He concluded, however, "The issue is not that war has been made obsolete by nuclear weapons, and that covert war by proxy is the only option, but that conventional war remained feasible, but with definite limitations if escalation across the nuclear threshold is to be avoided. . . . We need to ensure that a conventional war, if imposed upon us in the future, is kept below the nuclear threshold. This will require a close examination of our doctrine, defense strategy and force structure." See "Fernandes Does Not Rule Out Conventional War with Pak.," *Hindu*, January 6, 2000, <http://www.hindu.com/2000/01/06/stories/0106000b.htm>. For similar suggestions, see V.P. Malik, *Fighting Limited Wars: A Major Challenge for the Military* (New Delhi: Center for Land Warfare Studies, March 7, 2010), <http://www.claws.in/Fighting-limited-wars-A-major-challenge-for-the-military-Gen-VP-Malik.html>; "Army Will Be Prepared to Tackle Nuclear Threat," *Hindustan Times*, September 29, 2000; Vijay Mohan, "Big Increases in Infantry Firepower: General Vij," *Tribune (India)*, March 1, 2004, <http://www.tribuneindia.com/2004/20040302/main3.htm>; "Limited War under Nuclear Overhang Possible," *Zee News (India)*, November 24, 2009, [http://zeenews.india.com/news/nation/limited-war-under-nuclear-overhang-possible\\_581525.html](http://zeenews.india.com/news/nation/limited-war-under-nuclear-overhang-possible_581525.html); and Deepak Kapoor, "Limited Wars in the Indian Context," *India Strategic*, February 2012, [http://www.indiastrategic.in/topstories1368\\_limited\\_wars\\_in\\_the.htm](http://www.indiastrategic.in/topstories1368_limited_wars_in_the.htm).

a limited Indian incursion into Pakistan, opting instead for a conventional conflict.

Pakistan's political and military leaders consider the Cold Start doctrine an operationally viable component of Indian policy—and thus a major threat. Pakistan's former chief of Army Staff, Gen. Ashfaq Parvez Kayani, for example, stated: "Proponents [in India] of conventional application of military forces, in a nuclear overhang, are chartering an adventurous and dangerous path, the consequences of which could be both unintended and uncontrollable."<sup>8</sup> Pakistani leaders argue that the Indian military will eventually possess the wherewithal to execute Cold Start-style operations. They also maintain that Pakistan's current nuclear arsenal would not deter India from launching such operations, arguing that the deterrent value of this arsenal operates only at the strategic level, leaving a gap at the tactical level that gives India the freedom to successfully engage in limited Cold Start-style military operations without fear of nuclear escalation.<sup>9</sup> The Nasr missile, they claim, is Pakistan's answer to Cold Start, because it "is designed to make an Indian decision to initiate conventional operations—even on a limited scale—difficult, complicated, and dangerous." In other words, it creates "a credible linkage between conventional war and nuclear escalation."<sup>10</sup>

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8. "Tough Kayani Warning to Proponents of 'Adventurism,'" Dawn.com, January 2, 2010, <http://www.dawn.com/news/847867/tough-kayani-warning-to-proponents-of-adventurism>. Similarly, Pakistan's Joint Chiefs of Staff chairman, Gen. Tariq Majid, addressing the 2010 graduating class at the National Defense University in Islamabad, argued that Pakistan should "be mindful of the blatant pursuit of military preponderance in [its] neighborhood. . . . [A]doption of dangerous cold start doctrine . . . especially after very exceptional civil nuclear deal and notions of two front war are all destabilizing trends, carrying implications for Pakistan's security." See Pakistan Inter-Services Public Relations, "Press Release, No. PR235/2010-ISPR" (Rawalpindi: Inter-Services Public Relations, June 17, 2010), [https://www.ispr.gov.pk/front/main.asp?o=t-press\\_release&id=1333](https://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1333). The National Command Authority of Pakistan, a joint civilian-military decisionmaking group, similarly "took serious note of recent Indian statements about its capability to conduct conventional military strikes under a nuclear umbrella," suggesting that "[s]uch irresponsible statements reflected a hegemonic mind-set oblivious to dangerous implications of adventurism in a nuclearized context." For details, see Pakistani Inter-Services Public Relations, "Press Release—16th NCA Meeting, No. PR11/2010-ISPR" (Rawalpindi: Pakistani Inter-Services Public Relations, January 13, 2010), [http://www.ispr.gov.pk/front/main.asp?o=t-press\\_release&date=2010/1/13](http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2010/1/13); and Irfan Ghauri, "Indian Arms Buildup Could Jeopardise Regional Balance: NCA," *Daily Times* (Pakistan), January 14, 2010, <http://archives.dailytimes.com.pk/main/14-Jan-2010/indian-arms-buildup-could-jeopardise-regional-balance-nca>.

9. Pakistanis suggest that Pakistan's military situation is similar to NATO's position against the Warsaw Pact forces during the Cold War. For a more detailed account, see Jaganath Sankaran, "Pakistan's Battlefield Nuclear Weapons and the Limits of the NATO Analogy," *International Relations and Security Network*, August 15, 2014, <http://www.isn.ethz.ch/Digital-Library/Articles/Detail/?id=182664>.

10. Unnamed Pakistani presenter at the September 2011 U.S.-Pakistan Strategic Dialogue

In a press release announcing the first successful test of the Nasr missile in 2011,<sup>11</sup> the Pakistani Inter-Services Public Relations office quoted Lieutenant General Kidwai, the now retired director general of the Pakistani Strategic Plans Division (SPD), claiming that the Nasr weapon system filled a perceived nuclear gap at the tactical level and consolidated Pakistan's deterrence at all levels of the threat spectrum.<sup>12</sup> Kidwai is believed to have mentioned later that the intent of Nasr is to "pour cold water on Cold Start."<sup>13</sup> Other senior Pakistani leaders have made similar arguments. The distinguished Pakistani diplomat Maleeha Lodhi has written that the thinking of India's strategic community about how to neutralize the strategic balance and engage in limited conventional war with Pakistan below the nuclear threshold led to Pakistan's development of Nasr. She argues that Nasr's purpose is to plug the tactical gaps evident to Indian planners and achieve "Full Spectrum deterrence."<sup>14</sup> Similarly, Adil Sultan, former SPD director for Arms Control and

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(Track II), quoted in Feroz H. Khan and Nick M. Masellis, *US-Pakistan Strategic Partnership: A Track II Dialogue*, Project on Advanced Systems and Concepts for Countering WMD Report Number 2012 002 (Monterey, Calif.: Center on Contemporary Conflict, U.S. Naval Postgraduate School, January 2012), p. 26.

11. The Nasr is advertised as a mobile, highly accurate weapon designed for nimble "shoot-and-scoot" warfare, with a range of 60 kilometers and the ability to carry nuclear warheads. See Pakistani Inter-Services Public Relations, "Press Release No. PR94/2011-ISPR." According to another source, the "system is probably a four-tube adaptation of a Chinese-design multiple rocket launcher (MRL), possibly the A-100 type, on an eight-wheeler truck, capable of carrying four, ready-to-fire 20-foot ballistic missiles of about 300 mm (11.8 inch) diameter." For details, see Rodney W. Jones, "Pakistan's Answer to Cold Start?" *Friday Times* (Pakistan), May 13–19, 2011, <http://www.thefridaytimes.com/13052011/page7.shtml>. Although Pakistan has declared that the Nasr missile has been tested successfully, it is not clear whether Pakistan has developed a warhead small enough to fit onto the missile. Indian researchers argue that, though it is possible to fit a nuclear device onto the Nasr, Pakistan cannot have confidence in the weapon without extensive testing of the warhead. See Rajaram Nagappa, Arun Vishwanathan, and Aditi Malhotra, *HATF-IX/NASR—Pakistan's Tactical Nuclear Weapon: Implications for Indo-Pak Deterrence* (Bangalore, India: International Strategic and Security Studies Programme, National Institute of Advanced Studies, July 31, 2013), [http://isssp.in/wp-content/uploads/2013/07/R17-2013\\_NASR\\_Final.pdf](http://isssp.in/wp-content/uploads/2013/07/R17-2013_NASR_Final.pdf).

12. Peter Crail, "Pakistan Tests Short-Range Missile," *Arms Control Today*, May 2011, [https://www.armscontrol.org/act/2011\\_05/NewsBrief4](https://www.armscontrol.org/act/2011_05/NewsBrief4); and Pakistani Inter-Services Public Relations, "Press Release, No PR94/2011-ISPR" (Rawalpindi: Pakistani Inter-Services Public Relations, April 19, 2011), [http://www.ispr.gov.pk/front/main.asp?o=t-press\\_release&id=1721](http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1721). Levels of the threat spectrum can be presumed to mean the three levels of war as defined by the U.S. Army: (1) strategic level, (2) operational level, and (3) tactical level. For details, see Headquarters Department of the Army, FM 100-5 Operations (Washington, D.C.: Headquarters Department of the Army, June 1993), pp. 1–3, [http://www.fs.fed.us/fire/doctrine/genesis\\_and\\_evolution/source\\_materials/FM-100-5\\_operations.pdf](http://www.fs.fed.us/fire/doctrine/genesis_and_evolution/source_materials/FM-100-5_operations.pdf).

13. David O. Smith, *The US Experience with Tactical Nuclear Weapons: Lessons for South Asia* (Washington, D.C.: Henry L. Stimson Center, March 4, 2013), p. 32, [http://www.stimson.org/images/uploads/research-pdfs/David\\_Smith\\_Tactical\\_Nuclear\\_Weapons.pdf](http://www.stimson.org/images/uploads/research-pdfs/David_Smith_Tactical_Nuclear_Weapons.pdf).

14. Lodhi, "Pakistan's Nuclear Compulsions."

Disarmament Affairs (ACDA) suggests that “these perceived gaps at the operational and tactical level . . . needed to be plugged—to deny India the space to launch limited military operations in the form of CSD [Cold Start doctrine]. NASR provides Pakistan’s National Command Authority (NCA) additional options during the times of crisis, other than retaliating with full force.”<sup>15</sup> Zahir Kazmi, a senior deputy director of ACDA at SPD, asserts: “Indian strategies of Cold Start—fighting under Pakistani nuclear threshold—and massive retaliation strain deterrence stability. . . . Islamabad has developed short-range missiles like Hatf-IX (Nasr) for delivering low-yield warheads against advancing forces seeking limited war.”<sup>16</sup>

### *Operation Parakram: The Trigger to the Cold Start Doctrine*

As stated earlier, India’s Cold Start doctrine was born out of the experiences of the Indian army during Operation Parakram, following the attack on the Indian Parliament. The five terrorists, who allegedly had links to two Pakistani jihadi terrorist organizations—Lashkar-e-Taiba and Jaish-e-Mohammad—stormed the Parliament, which was in session at the time. As Steve Coll recounts, the men were armed with three pistols, four automatic assault rifles, spare ammunition, a grenade launcher, fifteen grenades, several homemade bombs, and a large ammonium nitrate bomb. An Indian trial court judge overseeing the prosecution of individuals linked to the attack later suggested that “had the attack succeeded the entire building with all inside would have perished.”<sup>17</sup>

Indian Prime Minister Atal Bihari Vajpayee called the assault the “most dangerous” challenge so far to India’s national security and declared that “[t]he punishment will be as big as the crime.”<sup>18</sup> The prime minister told the three service chiefs to prepare for war with Pakistan.<sup>19</sup> On December 15, 2001, the army began moving its three major offensive strike corps toward the international border. The mobilization was completed on January 3, 2002.<sup>20</sup> Indian

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15. Sultan, “Pakistan’s Emerging Nuclear Posture,” p. 159.

16. Kazmi, “Nothing Tactical about Nuclear Weapons.”

17. Steve Coll, “The Stand-Off: How Jihadi Groups Helped Provoke the Twenty-first Century’s First Nuclear Crisis,” *New Yorker*, February 13, 2006, [http://www.newyorker.com/archive/2006/02/13/060213fa\\_fact\\_coll](http://www.newyorker.com/archive/2006/02/13/060213fa_fact_coll).

18. “Punishment Will Be As Big As Crime: PM,” *Times of India*, December 18, 2001, <http://www.freerepublic.com/focus/f-news/592727/posts>.

19. “Govt. Blames LeT for Parliament Attack, Asks Pak to Restrain Terrorist Outfits,” *Rediff.com*, December 14, 2001, <http://www.rediff.com/news/2001/dec/14par12.htm>.

20. Kanwal, “Military Dimensions of the 2002 India-Pakistan Standoff.”

troops remained at the border ready for engagement until October 2002. At no time, however, did the Indian political leadership instruct the army to cross into Pakistan, nor was it allowed to initiate military action against Pakistan when, on May 14, 2002, three men in Indian army uniforms disembarked from a public bus at an Indian army garrison at Kaluchuk (approximately 13 meters from city of Jammu) and shot dead twenty-two family members (women and children) of Indian soldiers. Apparently, a deeply distressed Army chief, Gen. S. Padmanabhan, tried unsuccessfully to press Prime Minister Vajpayee and his security cabinet for permission to launch retaliatory attacks against Pakistani military targets.<sup>21</sup>

Across the three military services, the decision of India's political leadership to mobilize and deploy the armed forces, yet not authorize them to engage in war, was seen as highly inefficient,<sup>22</sup> wasteful,<sup>23</sup> and lacking in resolve. The

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21. Coll, "The Stand-Off."

22. From the beginning of Operation Parakram, senior commanders had vigorously criticized the lack of a mandate. Adm. Sushil Kumar, navy chief and chairman of the Chiefs of Staff Committee during Operation Parakram, recounts that at the end of the Cabinet Committee on Security meeting late on the day of the Parliament attack, Prime Minister Vajpayee turned toward him and said, "Aap khush nahi lag rahen hain, Admiral sahib (you don't seem to be happy)." The admiral apparently replied, "I beg your pardon, sir, can you give us what is your political aim, we need to derive a military aim from it?" See "Op Parakram Most Punishing Mistake: Ex-Navy Chief," *Indian Express*, November 5, 2011, <http://indianexpress.com/article/news-archive/web/op-parakram-most-punishing-mistake-exnavy-chief/>. According to another report, Kumar asked: "What the rules of engagement were, what if a naval flotilla were to encounter a Pakistani naval ship?" According to the admiral, the prime minister replied, "[M]obilize for the present, rest will follow." See "Operation Parakram after Parliament Attack Lacked Clear Objectives: Ex-Navy Chief Sushil Kumar," *Times of India*, November 6, 2011, <http://timesofindia.indiatimes.com/india/Operation-Parakram-after-Parliament-attack-lacked-clear-objectives-Ex-Navy-chief-Sushil-Kumar/articleshow/10625959.cms>. Such restricted mandates, though disadvantageous, are not new for the army. In fact, during the 1999 Kargil War the army was given a very specific mandate on how it was to conduct the war against Pakistani forces in the Kargil Heights: do not cross the international border. The Indian army executed the war within that mandate. Gen. V.P. Malik, the chief of army staff during the Kargil conflict, claimed in an interview that the prime minister and the cabinet made clear that the Line of Control should not be crossed. General Malik also said that if the army had felt the need to cross the Line of Control, it would have asked the cabinet for clearance: "[O]ur military aim has to be drawn out of the political aim given to us. The political aim was very clear: get that area vacated. We were asked not to violate the Line of Control. The military functioned within those parameters." See V.P. Malik, interviewed by Chindu Sreedharan and Josy Joseph, "Crossing the LoC Would Have Had Other Implications," *Rediff.com*, July 26, 2001, <http://www.rediff.com/news/2001/jul/26inter.htm>. Given that the Indian army accepted a restricted political mandate during the Kargil War, it is not clear why it could not accept one during Operation Parakram.

23. Former Chief of Naval Staff (ret'd.) Adm. Vishnu Bhagwat, for example, has stated, "You seriously degrade your operational reserves of combat hours. What happens if you have a repeat requirement in three months? You have to place orders, receive it. You open yourself to new strategic vulnerabilities. You get squeezed in the process." See V. Sudarshan, "Mirage 2001-02," *Outlook (India)*, November 04, 2002, <http://www.outlookindia.com/article.aspx?217748>. For other similar criticism, see "Premature Pullback vs. Army Fatigue," *Times of India*, October 29, 2002.

consensus within the Indian army and within certain circles of India's strategic community after the operation was that the political leadership had lost its nerve during the approximately three-week period the Indian army took to deploy to the international border. In contrast, it seems that the Indian political leadership hoped to resolve the crisis diplomatically.<sup>24</sup> Former Indian External Affairs Minister Jaswant Singh has written that India's main aim in mobilizing the army was "(1) to defeat cross-border infiltration/terrorism without conflict; (2) to contain the national mood 'to teach Paki a lesson'; and (3) in the event of war, to destroy and degrade Pakistan's war-fighting capabilities."<sup>25</sup> Singh writes that one of the biggest challenges for the civilian leadership during Operation Parakram was to restrain the three service chiefs, claiming that they were so eager "to have a crack" at Pakistan that he had to personally convince them to recognize restraint as an asset.<sup>26</sup> Other evidence also reveals the political leadership's desire to quietly exercise diplomacy to control the crisis without letting it spiral into war. In 2006 Ambassador C.V. Ranganathan, India's National Security Advisory Board (NSAB) chairman, was quoted as saying: "[T]he consensus of the NSAB was that while it is good to show the alert of the army and the rest of it, there should be nothing provocative done by India since it was quite clear that international opinion was in favor of India."<sup>27</sup>

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24. Even after the second terrorist attack on May 14, 2002, at the Indian army garrison at Kaluchak, the Indian leadership—in spite of its public rhetoric—apparently hoped to find a diplomatic solution to the crisis. Pakistani President Musharraf made a speech on May 27, 2002, saying that Pakistan would not allow itself to be used as a staging area for insurgents who wanted to drive India out of the disputed Kashmir region. For details on the speech, see Sharon LaFraniere and Rajiv Chandrasekaran, "Musharraf Pledges to Rein in Militants; New Vow on Kashmir Fails to Sway India," *Washington Post*, May 28, 2002. Thinking back to the speech years later, Brajesh Mishra, national security adviser to the Indian prime minister during the crisis, stated, "[Musharraf's speech] stopped us from going across the border. We were reluctant to go to war. But we were willing to do it if we were forced to—any opportunity available to us to postpone the action, that was utilized by us. . . . The idea was to—if possible—stop short of a war." See Alex Stolar, "To the Brink: Indian Decision-Making and the 2001–2002 Standoff" (Washington, D.C.: Henry L. Stimson Center, February 1, 2008), p. 21, <http://www.stimson.org/books-reports/to-the-brink-indian-decision-making-and-the-2001-2002-standoff/>.

25. Jaswant Singh, *A Call to Honor: In Service of Emergent India* (New Delhi: Rup and Company, 2006), pp. 268–269.

26. *Ibid.*; and "Restraining Service Chiefs during Op Parakram Biggest Challenge," *Indian Express*, October 25, 2013, <http://indianexpress.com/article/news-archive/web/restraining-service-chiefs-during-op-parakram-biggest-challenge/>.

27. Stolar, "To the Brink," p. 13. Additional evidence of the desire of the Indian political leadership to resolve the crisis diplomatically can be found in "Deployment Completed, Says Delhi," *Dawn.com*, January 2, 2002, <http://www.dawn.com/news/13215/deployment-completed-says-delhi>; C. Raja Mohan, "Road Map for De-escalation?" *Hindu*, January 6, 2002, <http://www.hindu.com/2002/01/07/stories/2002010701020100.htm>; and Anwar Iqbal, "India, Pakistan Flirting with

Despite these overt attempts at a diplomatic resolution, the Indian army leadership seems to have expected a war,<sup>28</sup> apparently in the belief that it could deliver tangible military gains. As mentioned earlier, elements within the Indian army and the strategic community continue to believe that Operation Parakram did not lead to full-scale war because in the three weeks required to mobilize the army (1) the political leadership lost its nerve; and (2) the Pakistani army was able to countermobilize on the border.<sup>29</sup>

### *Casting Doubt on the Origin and Viability of Cold Start*

India's government and its military have sought to deny that Cold Start is accepted doctrine.<sup>30</sup> Timothy Roemer, U.S. ambassador to India from 2009 to 2011, noted in a leaked assessment that "several very high level GOI [Government of India] officials [including former Indian National Security Adviser M.K. Narayanan] have firmly stated, when asked directly about their support for Cold Start, that they have never endorsed, supported or advocated for this doctrine."<sup>31</sup> Officials in Barack Obama's administration also apparently raised the issue of Cold Start during a November 2009 visit by Indian Prime Minister Manmohan Singh to Washington. U.S. officials expressed concerns about Pakistan redirecting its troops from Afghanistan to its border with India.

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Peace," UPI, January 6, 2002, [http://www.upi.com/Business\\_News/Security-Industry/2002/01/06/India-Pakistan-flirting-with-peace/UPI-42591010379580/](http://www.upi.com/Business_News/Security-Industry/2002/01/06/India-Pakistan-flirting-with-peace/UPI-42591010379580/).

28. Swami, "Gen. Padmanabhan Mulls Over Lessons of Operation Parakram"; and Stolar, "To the Brink," p. 16.

29. When India initiated Operation Parakram, Pakistan's "[t]wo strategic reserve corps, the 11th in NWFP [North-West Frontier Province] and the 12th in Balochistan, were fully engaged along the Afghan border. . . . Both would have to withdraw from forward positions along the Afghan border and move to railheads near Peshawar and Quetta before they could even begin to move east." Yet by January 12, the entire Pakistan army (10th, 11th, and 12th Corps) had fully occupied its wartime positions along the border. See Smith, "The 2001–2002 Standoff," p. 195. Pakistani military leaders, it seems, "were very satisfied that their ground forces were able to reach their designated strike positions more quickly than their [Indian] opposite numbers, thus eliminating the element of surprise and nullifying any advantage that India might have by striking across the border first." See Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries beyond War* (Carlisle, Pa.: Strategic Studies Institute, 2008), pp. 129–166, at p. 132.

30. One exception is a statement by Indian army Chief Gen. Deepak Kapoor. During an army war exercise, he is believed to have remarked, "A major leap in our approach to conduct of operations . . . has been the successful firming-up of the cold start strategy." For details, see Rajat Pandit, "Army Reworks War Doctrine for Pakistan, China," *Times of India*, December 30, 2009, <http://timesofindia.indiatimes.com/india/Army-reworks-war-doctrine-for-Pakistan-China/articleshow/5392683.cms>.

31. "Cold Start—A Mixture of Myth and Reality," [http://www.wikileaks.org/plusd/cables/10NEWDELHI295\\_a.html](http://www.wikileaks.org/plusd/cables/10NEWDELHI295_a.html).

Indian officials reportedly told U.S. officials that “the strategy [Cold Start] was not a government or military policy, and that India had no plans to attack Pakistan.”<sup>32</sup> Defense Secretary Pradeep Kumar later said, “We don’t know what Cold Start is. Our Prime Minister has said that Pakistan has nothing to fear. Pakistan can move its troops from the eastern border.”<sup>33</sup> Similarly, Indian Army Chief Gen. V.K. Singh stated in 2010: “There is nothing called ‘Cold Start.’ As part of our overall strategy we have a number of contingencies and options, depending on what the aggressor does. In the recent years, we have been improving our systems with respect to mobilization, but our basic military posture is defensive.” He went on to say, “I think that ‘Cold Start’ is just a term bandied about by think tanks and media. It is neither a doctrine nor a military term in our glossary.”<sup>34</sup>

Are Indian political leaders being duplicitous in denying the existence of the Cold Start war doctrine? How is the chief of the Indian army able to repudiate the existence of a doctrine supposedly created within his own organization? To answer these questions, it is necessary to examine the doctrine’s origin. As mentioned, talk of the Cold Start doctrine began following an army commanders’ conference held in April 2004, when Indian newspapers and other publications started announcing the creation of a new war doctrine. One publication noted that, although the “full details of the doctrine would naturally remain classified” an official spokesperson had mentioned “the concept of integrated ‘battle groups’ being employed in place of existing ‘strike’ formations.”<sup>35</sup> The only contemporaneous mention of “cold start” appeared in a newspaper article in which a “source” stated: “The idea is that the international community should not get the opportunity to intervene. Hence, the need for swift action from a ‘cold start’ instead of slow mobilization.”<sup>36</sup>

One of two prime sources to which all writings on the Cold Start doctrine

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32. Lydia Polgreen and Mark Landler, “Obama Is Not Likely to Push India Hard on Pakistan,” *New York Times*, November 5, 2010, [http://www.nytimes.com/2010/11/06/world/asia/06india.html?\\_r=0](http://www.nytimes.com/2010/11/06/world/asia/06india.html?_r=0).

33. *Ibid.*

34. Manu Pubby, “No ‘Cold Start’ Doctrine, India Tells US,” *Indian Express*, September 9, 2010, <http://archive.indianexpress.com/news/no-cold-start-doctrine-india-tells-us/679273/>.

35. P.J.S. Sandhu, “Taking the Easier Way Out,” *Indian Express*, July 1, 2004, <http://archive.indianexpress.com/oldStory/50053/>. See also Firdaus Ahmed, “‘No’ to ‘Cold Start,’” A No. 1485 (New Delhi: Institute for Peace and Conflict Studies, September 1, 2004), <http://www.ipcs.org/article/india/no-to-cold-start-1485.html>; “Cold Start’ to New War Doctrine,” *Times of India*, April 14, 2004, <http://timesofindia.indiatimes.com/india/Cold-Start-to-new-war-doctrine/articleshow/616847.cms>; and Kapila, “India’s New ‘Cold Start’ War Doctrine Strategically Reviewed.”

36. “Cold Start’ to New War Doctrine.”

point is an op-ed by Firdaus Ahmed. Writing in May 2004, and without citing any evidence, Ahmed refers to preliminary and informal discussions on the doctrine taking place within the ministry of defense. In the piece, Ahmed notes two important elements of the doctrine: (1) smaller integrated battle groups would be able to quickly commence offensive military operations; and (2) these groups "would be able to undercut Pakistan's yet unstated nuclear doctrine of first use by striking at shallow objectives [inside Pakistan] that do not necessarily compel Pakistan to cross its nuclear threshold."<sup>37</sup> The other prime source is an article by Subhash Kapila, which suggests that in the absence of more details, the doctrine's important "strategic conceptual underpinnings" are (1) "India's three strike corps may be reconstituted and reinforced to provide offensive elements for the eight or so 'battle groups' to launch multiple strikes into Pakistan"; and (2) "strike corps elements will have to be moved well forward from existing garrisons."<sup>38</sup> In both cases, Ahmed and Kapila appear to be making assumptions about what they believe are the elements of an as-yet-undeclared doctrine, rather than providing any facts.

More important, the unclassified Indian army doctrine released in October 2004, after the army commanders' conference, makes no mention of a Cold Start doctrine. In addition, there is no clear evidence that the Indian army has reoriented and modernized its forces in a fashion consistent with the goals of the doctrine. All three strike corps are still stationed deep inside India, not near the border with Pakistan. And as Christopher Clary points out, the army appears not to have built new railheads and cantonments, which would be needed to deploy troops closer to the border.<sup>39</sup> Other changes that would indicate a reorientation of the army also have not occurred. The number of main battle tanks, for example, increased only slightly from an estimated 3,898 in 2003 to approximately 4,000 tanks in 2014. In 2003 the army had 317 armored personnel carriers. In 2014 the number rose to approximately 336. The number of armored infantry fighting vehicles was estimated at 1,600 in 2003 and 1,445

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37. Ahmed, "The Calculus of 'Cold Start.'" It should be noted, however, that Ahmed is very critical of the idea. Speaking on the utility of the Cold Start doctrine, he writes, "The danger is that in doing so it [the Cold Start doctrine] is attempting to bring war back as an option into political calculus. If it takes as little as a bunch of fanatics with automatic weapons to spark off a subcontinental crisis with nuclear overtones, then to make war, howsoever restrained, appear as a viable option to address similar crisis in the future is itself a danger." Ahmed also points out that there was no indication that the Cold Start doctrine had support from the Indian air force or navy.

38. Kapila, "India's New 'Cold Start' War Doctrine Strategically Reviewed."

39. Christopher Clary, "Deterrence Stability and the Conventional Balance of Forces in South Asia," in Michael Krepon and Julia Thompson, eds., *Deterrence Stability and Escalation Control in South Asia* (Washington, D.C.: Henry L. Stimson Center, 2013), p. 151.

in 2014.<sup>40</sup> Although the size of a military's inventory does not always reflect its intent, the launch of a Cold Start-style campaign would presumably necessitate an increase in India's military inventory.

Some Pakistanis have claimed that six Indian war exercises—Divya Astra in 2004, Vajra Shakti in 2005, Sang-i-Shakti in 2006, Ashwamedh in 2007, Hind Sakthi in 2009, and Vijaya Bhava in 2011—were designed as trial runs for Cold Start-style operations.<sup>41</sup> There is, however, little public information on what occurred during these exercises and the extent to which they can be seen as a proxy for India's capability on the battlefield. In 2005 a senior retired Pakistani general summed up the real-world operational challenges for implementing Cold Start: "What can a few forward deployed battalions do?" he asked rhetorically.<sup>42</sup>

Even before Cold Start, Pakistan had explicitly designed its defense posture to prevent Indian forces from entering Pakistan, given the location near the border with India of important Pakistani cities and military garrisons. For example, Lahore and Sialkot, the two major battlegrounds of the 1965 India-Pakistan War, are very close to the international border. Lahore is just 25 kilometers away, and Sialkot only 15 kilometers away. In 1965, Indian forces had great difficulty crossing even these distances. In the southern desert region, a major military garrison, Fort Abbas, is located only 20 kilometers from the international border; another garrison, Rahim Yar Khan, is only 45 kilometers away. Indian forces would thus confront huge obstacles in trying to move deeper into Pakistan. And even if they could, doing so would probably not make sense because the forces' flanks would be exposed to counterattacks.

Pakistan employs a significant portion of its military forces in "holding corps," which are designed to slow down Indian advances at the international border. "[T]he entire combat component of the holding or pivot corps is deployed to man static defenses in a thin line all along the front." Each holding corps is designed to absorb and delay an enemy offensive until "massive redeployment takes place to first contain and then eliminate the ingress made

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40. All data were obtained from the *Military Balance* databases published by the International Institute for Strategic Studies. See also Simran R. Maker, "Cold Start, Cold Progress" (Washington D.C.: Henry L. Stimson Center, August 26, 2010), <http://www.stimson.org/spotlight/cold-start-cold-progress/>.

41. Muhammad Azam Khan, "India's Cold Start Is Too Hot," *Proceedings* (U.S. Naval Institute), March 2011, p. 297, <http://www.usni.org/magazines/proceedings/2011-03/indias-cold-start-too-hot>; and "Indian Army Holds Military Exercise 'Vijaya Bhava' along Pakistan Border," *Terminal X*, April 22, 2011, <http://www.terminalx.org/2011/04/indian-army-holds-military-exercise.html>.

42. Smith, "The 2001–2002 Standoff," p. 209.

by the enemy."<sup>43</sup> Four of Pakistan's nine army corps are forward deployed along the international border to serve as holding corps. The 4 Corps, forward deployed at Lahore, is tasked with defending the Punjab Province. The 30 Corps, in Gujranwala, is responsible for defending the regions north of Lahore. The 31 Corps, deployed at Bahawalpur, is tasked with defense of southern Pakistan. The mandate of the 5 Corps is to defend the southern Sindh Province.<sup>44</sup>

In addition, Pakistan has a forward line of heavily defended irrigation canals along the international border and a minefield, with a width of 1,000 to 2,000 meters, along the side facing India. In some areas along the canals, additional minefields have apparently been laid on the Pakistani side. The outposts on the border facing India are reinforced with small surveillance teams "carrying automatic weapons and anti-tank rocket launchers." The teams, which are housed in concrete bunkers intended to be "impervious to direct hits by medium/heavy artillery shells," are meant to both slow an Indian advance and give ample warning to Pakistani military divisions located behind the canal defenses. The irrigation canals are made of hardened concrete and cannot be outflanked, because they extend along a continuous stretch in one form or other for more than "2,000 kilometers—from Chammb in J & K [Jammu and Kashmir] to the middle of Rajasthan."<sup>45</sup> For example, the Lahore region—a major battleground in the 1965 war—is protected by the Ichogil canal, which runs 105 kilometers north to south, parallel to the India-Pakistan border. On the direct axis of approach from India into Lahore, an invading Indian armored division would reach the Ichogil canal within approximately 7.5 kilometers from the border. The canal is 140 feet wide and 15 feet deep near major bridges leading to Lahore and serves as a tank trap.<sup>46</sup> Similarly, the Marala-Ravi Link canal runs north of Lahore and provides a strong defensive shield against any sudden India invasion.<sup>47</sup> These defensive water canals would likely force an invading Indian army to expend resources to secure the heavily

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43. Gurmeet Kanwal, *Indian Army: Vision 2020* (New Delhi: HarperCollins, 2008), pp. 67–68.

44. "Command and Structure: Pakistan Army Corps" (Gainesville, Fla.: Pakdef Military Consortium, n.d.), <http://pakdef.org/commandstructure/>.

45. V.K. Sood and Pravin Sawhney, *Operation Parakram: The War Unfinished* (New Delhi: Sage, 2003), pp. 150–151.

46. Russell Brines, *The Indo-Pakistani Conflict* (London: Pall Mall, 1968), p. 328; D.R. Mankekar, *Twenty-two Fateful Days: Pakistan Cut to Size* (Bombay: P.C. Manaktala and Sons, 1966), p. 103; and R.D. Pradhan, *1965 War, the Inside Story: Defence Minister Y.B. Chavan's Diary of India-Pakistan War* (New Delhi: Atlantic, 2007), p. 33.

47. Pradhan, *1965 War, the Inside Story*, p. 33; and Brian Cloughley, *A History of the Pakistan Army: Wars and Insurrections* (New York: Oxford University Press, 1999), pp. 84–85.

defended Pakistani home bank—a herculean task. Rohit Vats points out that the Indian army would have to begin by “creating and then securing a bridge-head.” As Vats notes, “[This] is never an easy task against an entrenched enemy,” given the potential for “counter-attacks from the enemy reserves in the areas.” “Any direct assault would require substantial manpower and engineering effort from India’s strike formations” and would likely be bloody and lengthy.<sup>48</sup> It would also be easily noticed, giving the Pakistani commander in charge time to launch a counteroffensive. Additionally, Vats notes that “all major Pakistani road and rail networks run west of these canals, thus affording them protection from early interdiction by Indian forces.”<sup>49</sup>

The southern desert region of Pakistan contains smaller water bodies similar to the defensive canal systems in the northern Punjab region that could potentially slow down an Indian invasion. There are also “nodal point defenses in deserts where a chain of water and communication centers are held in strength with concrete bunkers and pill boxes and linked with a defensive minefield.”<sup>50</sup> These water defenses help to ensure that the enemy could not gain freedom of access in the southern desert region. The major military garrison city of Bahawalpur, for example, is protected by such a water body. Fort Abbas, an important junction en route to Bahawalpur, would likely need to be captured first by Indian forces. The fort is protected, however, by the Hakra Left Distributary, which would present an important tactical barrier to invading Indian forces. Vats suggests that “a straight Indian advance toward Fort Abbas could be halted by flooding the area between Indian border and Hakra Left Distributary and by manning the defenses on [the] western bank of this canal.”<sup>51</sup> Furthermore, the distributary bifurcates into smaller channels, known as “flood minors,” that could also be used to flood the area. Other canals between Fort Abbas and Bahawalpur serve as additional barriers.

Another possible target of an Indian invasion in the southern desert region of Pakistan is the city of Rahim Yar Khan. The major north-south link—National Highway 5—connects the port city of Karachi with important cities such as Lahore and Rawalpindi and runs less than 10 kilometers west of Rahim Yar Khan. Some analysts in both India and Pakistan claim that los-

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48. Rohit Vats, “Pakistan-Defense Canals in South Punjab and Sindh-I (Sulemanki-Fort Abbas),” *Perspective* blog, August 15, 2012, <http://vatsrohit.blogspot.com/2012/08/pakistan-defensive-canals-in-south.html>. See also Sood and Sawhney, *Operation Parakram*, pp. 150–151.

49. Vats, “Pakistan-Defense Canals in South Punjab and Sindh-I (Sulemanki-Fort Abbas).”

50. Sood and Sawhney, *Operation Parakram*, pp. 150–151.

51. Vats, “Pakistan-Defense Canals in South Punjab and Sindh-I (Sulemanki-Fort Abbas).”

ing Rahim Yar Khan and consequently National Highway 5 would mean splitting Pakistan in two. Highway 55 was built to avoid such a possibility, however. Highway 55 runs further west of the Indus River and lies deep within Pakistan, giving it depth and protection from an Indian advance into Rahim Yar Khan. In the event of an Indian interdiction of National Highway 5, Highway 55 would “serve as the backup and ensure that the north-south link is not severed.”<sup>52</sup> Although capturing Rahim Yar Khan and National Highway 5 could affect the flow of trade in Pakistan, the Pakistani military would likely still be able to use Highway 55 to move troops.

Reaching Rahim Yar Khan, however, would be a more difficult Indian objective. The Abbassia canal, fed from the Punjnad barrage on the Chenab River, offers protection to the city. The main canal and its major and minor channels (with widths ranging from 20 to 30 meters) lie between the Indian border and Rahim Yar Khan. These channels have the potential to force Indian columns to advance along a narrow and predictable axis, thereby allowing Pakistani forces to fight behind prepared defenses with a relatively smaller number of troops than would be required in an open, wide-area engagement. In addition, the desert region near Rahim Yar Khan has a number of evaporation ponds that could be breached by Pakistani forces during an Indian incursion.<sup>53</sup> The remaining sandy area would then become unsuitable for the large-scale movement of tracked and wheeled vehicles.<sup>54</sup> Another potential target for Indian forces is the city of Sukkur. The Sukkur barrage on the Indus River, however, would act as a major barrier to an invading force. Proponents of the Cold Start doctrine have offered no suggestions as to how the Indian army would overcome such barriers and manage to rapidly gain access into Pakistan.

### *Victory with Ruin: The Dilemma of Battlefield Nuclear Weapons*

The use of battlefield nuclear weapons in the heavily populated India-Pakistan international border area would likely cause civilian deaths in the thousands or even tens of thousands. In deciding to launch a Nasr missile, Pakistan

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52. Rohit Vats, “Pakistan: Defense Canals in South Punjab and Sind-II (Rahim Yar Khan),” *Perspective* blog, August 28, 2012, <http://vatsrohit.blogspot.com/2012/08/canal-based-defenses-in-south-punjab-ii.html>.

53. For a description of what constitutes an evaporation pond, see Vats, “Pakistan.” Vats suggests that evaporation ponds were built in the Pakistani desert region as part of the Salinity Control and Reclamation Project to develop a drainage system that redirects water away from agricultural fields as well as from subsurface levels into these ponds, where it then evaporates.

54. *Ibid.*

would need to answer two questions. First, would it stop that advance of an invading Indian army unit inside Pakistani territory? Second, could it accomplish this goal while minimizing the number of Pakistani civilian casualties? The best source to estimate the required optimal yield for a battlefield nuclear weapon such as the Nasr is the U.S. Department of the Army and the Navy Staff Officers' *Field Manual on Nuclear Weapons Employment Effects*.<sup>55</sup> The manual contains the most detailed, publicly accessible data on the yield and corresponding effects produced from a nuclear weapon. For the purpose of standardizing the discussion here, use of a battlefield nuclear weapon would have to meet two different criteria: (1) rendering ineffective 50 percent of troops in a well-protected invading armored unit of the Indian army up to a distance of 1 kilometer from the point of explosion;<sup>56</sup> and (2) rendering ineffective 50 percent of troops in a well-protected invading armored unit of the Indian army up to a distance of 250 meters from the point of explosion.

To achieve the first objective with 90 percent assurance, a weapon with an approximate minimum yield of 30 kilotons detonated in low air-burst conditions would be needed (see figure 1).<sup>57</sup> To achieve the second objective, a weapon with an approximate yield of 5 kilotons detonated in low air-burst conditions would be required.

#### A HYPOTHETICAL INDIA-PAKISTAN MILITARY ENGAGEMENT

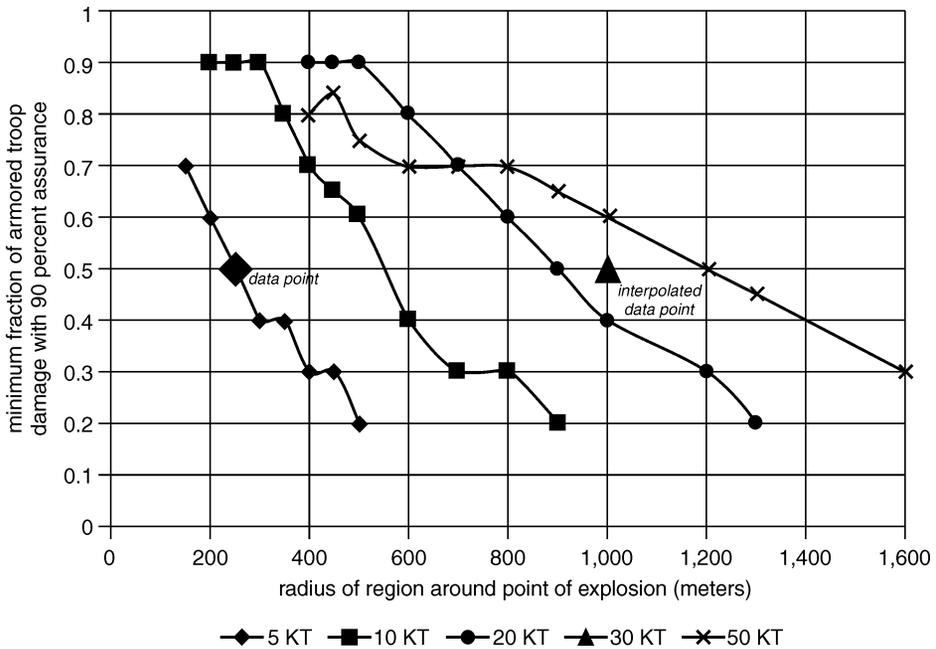
Where would the Nasr likely be employed? The answer depends on the operational context of an Indo-Pakistani war. A major military engagement could

55. U.S. Department of the Army and the Navy, *Staff Officers' Field Manual: Nuclear Weapons Employment Effects Data* (Washington, D.C.: U.S. Department of the Army and the Navy, 1968).

56. The Indian army has been training to protect itself and operate in a nuclearized environment. War game Poorna Vijay, conducted in 2001, for example, assumed "that India had been hit with a surprise nuclear attack; and must then recover and launch a nuclear counter-strike." See "Exercise Poorna Vijay," tripod.com, n.d., <http://iaf00.tripod.com/poorna.html>; and Harinder Baweja, "Readying for Nukes: For the First Time after India Became a Nuclear Power, Army Stages a Nuclear War Game," *India Today*, May 28, 2001, <http://indiatoday.intoday.in/story/for-the-first-time-after-india-became-a-nuclear-power-army-stages-a-nuclear-war-game/1/233562.html>. Other major Indian military exercises—Shiv Shakti (1998), Vijay Chakra (2000), and Aswamedh (2007)—have also "tested dispersal of formations to minimize impact of nuclear weapons, decontamination procedures, and logistics for formations advancing in contaminated areas." See Y.I. Patel, "Dig Vijay to Divya Astra: A Paradigm Shift in the Indian Army's Doctrine," BharatRakshak.com, n.d., <http://www.bharat-rakshak.com/LAND-FORCES/History/Millennium/324-A-Paradigm-Shift.html>; and Rajat Pandit, "Army's Wargames to Test Reflexes against Nuke, Bio Attacks," *Times of India*, April 6, 2007.

57. A low air burst provides two advantages. First, it maximizes the distance to which the blast pressure wave effects are felt for a given yield. Second, it significantly minimizes, if not eliminates, radioactive fallout. This is not to suggest there is no immediate radiation created by a nuclear weapon air burst. Unlike a surface blast, however, an air burst does not throw particles up into the air, which are then irradiated and fall slowly back to the ground, causing radiation fallout.

Figure 1. Armored and Artillery Personnel Casualties Following the Explosion of a Low Air-Burst Battlefield Nuclear Weapon of Various Yields



SOURCE: Department of the Army and the Navy, *Staff Officers' Field Manual on Nuclear Weapons Employment Effects Data* (Washington, D.C.: U.S. Department of the Army and the Navy, 1968). The figure was created using a data table from the field manual.

NOTES: The x-axis denotes the distance from the ground directly below the location of the explosion of the nuclear weapon up to the farthest point where its effects are still felt. The y-axis denotes the proportion of armored troops that could be damaged beyond reconstitution. For example, a value of 0.5 on the y-axis indicates that 50 percent of the armored troops could be destroyed with 90 percent assurance. All casualties data indicated in the graph are immediate after an explosion. The number of casualties may increase depending on the subsequent medical response and evacuation efforts.

occur in various theaters, with multiple axes of approach in each theater. Each axis might have a unique trigger point—a location at which Pakistan might be forced to consider employment of a battlefield nuclear device. Presumably, successful penetration of a trigger point by Indian troops could enable them to threaten major cities and therefore present a huge challenge to the defending Pakistani army.

To provide a rough idea of the theaters, axes, and trigger points in a possible Indo-Pakistani military conflict, I use the 1965 war as a baseline. Although the war occurred fifty years ago, the following factors are likely still valid: (1) the

issue of Kashmir was then, and could still be, the source of conflict; (2) initial Pakistani military action might occur in the Kashmir region; (3) the Indian army could choose to attack major Pakistani population and military centers such as Lahore and Sialkot, which would divert Pakistan's army away from Kashmir and therefore ease Pakistani military pressure on Indian forces in Kashmir; and (4) the early defenses that existed on the Pakistani side during the 1965 war are apparently still in place, though with more modern weaponry; breaching them in a war would probably trigger the use of battlefield nuclear weapons.

The main force-on-force engagements of the 1965 war began when the Indian army launched a major armored attack toward Lahore. A second Indian offensive began the next day against Sialkot.<sup>58</sup> India's attempt to fight a war in the flat plains of Punjab was motivated by a need to relieve the pressure mounting on its forces in Kashmir. Earlier, Pakistan had infiltrated troops into Kashmir and was threatening to cut off Indian forces in the Akhnur sector of Kashmir. To prevent the loss of Kashmir, India decided to launch an all-out war. The diversionary tactic worked. Brines points out that "Pakistan withdrew the bulk of her armored strength from the Akhnur sector to meet the new challenge. As a result, the threat to Kashmir quickly subsided, and it became a secondary theater for the remainder of the conflict."<sup>59</sup>

The Indian attack on Lahore in the 1965 war was launched simultaneously along three axes (see the first map in figure 2).<sup>60</sup> The first axis of approach originated in Amritsar in India and proceeded along the Grand Trunk Road to the heart of Lahore. The second axis stretched along the road leading to Lahore via Burki. The third ran toward Kasur. India chose these three roads because the bridges crossing the Ichogil along these routes are the only ones with sufficient load-carrying capacity for armored vehicles moving into Pakistan. The Lahore region is highly cultivated and densely populated, making alternative invasion routes difficult and wide-area maneuver into Pakistan impossible. The bridges spanning the Ichogil canal still exist, and an Indian invasion force seeking to make rapid progress toward Lahore would likely have to use the main roads mentioned above, with the bridges as the axes of approach.

In the 1965 war, the Pakistani army stopped Indian forces heading to Lahore on or near different bridges along the Ichogil canal barrier. Along the first axis, a unit from the Indian Jat Regiment—3 Jat—had managed to cross the Ichogil

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58. Cloughley, *A History of the Pakistan Army*, pp. 82–84.

59. Brines, *The Indo-Pakistani Conflict*, p. 327.

60. Cloughley, *A History of the Pakistan Army*, p. 83.

Figure 2. Possible Major Theaters and Axes of Military Engagement in an India-Pakistan War

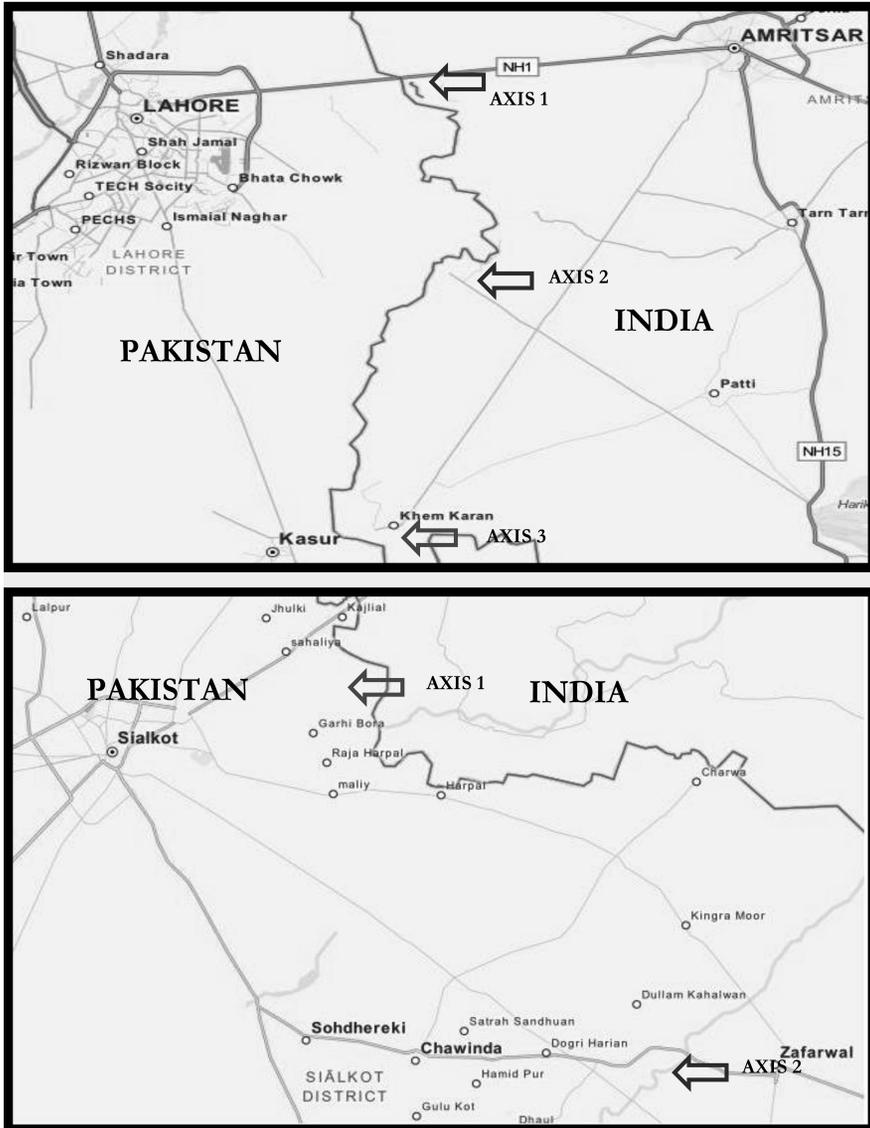


Image Credit: ©OpenStreetMap contributors.

NOTES: In the 1965 India-Pakistan War, Lahore and Sialkot were the major theaters of military engagement. The first figure shows the three major axes of approach in the Lahore theater during the 1965 war. The second shows the two major axes in the Sialkot theater during the 1965 war.

canal bridge and capture the town of Batapur, but it was unable to obtain backup from its divisional command. To keep Indian forces on the east bank of the canal bridge, Pakistan launched a strong counteroffensive with air support, forcing the Indian regiment to withdraw. Pakistan's army then blew up the bridge.<sup>61</sup> For the rest of the war, Indian forces on this axis were stuck on the eastern bank of the canal. Along the second axis, the Indians were able to capture the village of Burki on the eastern bank of the canal.<sup>62</sup> Pakistan's earlier decision to blow up the canal bridge, however, further stalled movement of the Indian troops. Finally, the Indian forces were pushed back along the third axis even before they could reach the Ichogil canal barrier near Kasur. In each case, if Indian forces had managed to secure the bridges over the canal, they would have been able to pose a threat to Lahore or, at the least, cause Pakistani forces to lose the high ground along the west bank of the Ichogil canal.<sup>63</sup> Therefore, in a hypothetical future war in the Lahore theater, breaching the bridges along the Ichogil canal on each of the three axes of approach could be a potential trigger event for Pakistan's use of battlefield nuclear weapons.

India launched its second offensive in the 1965 war against the military garrison city of Sialkot.<sup>64</sup> Unlike Lahore, Sialkot did not have the protection afforded by a canal. Similar to Lahore, however, the region around Sialkot is highly cultivated and densely populated, making a wide-area armored attack impossible. India launched its assault on Sialkot along two axes: (1) one division marching southwest along the Jammu-Sialkot road into the Zafarwal-Bhagowal area; and (2) one infantry and one armored division marching into Pakistan further south, from the Jammu area toward Phillora and Chawinda (see of the second map in figure 2).<sup>65</sup>

The Chawinda-Phillora region saw some of most intense tank-to-tank armored battles since World War II, involving the Indian 1st Armored Division and elements of Pakistan's newly formed 6th Armored Division.<sup>66</sup> On the night of September 10, 1965, for example, India and Pakistan engaged in a hard-fought battle involving hundreds of tanks. Both sides suffered heavy casualties. Pakistan supposedly lost more than fifty tanks on that day alone. R.D. Pradhan writes, "India's armored regiments had succeeded in isolat-

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61. Desmond E. Hayne, *The Battle of Dograi and Batapore* (New Delhi: Natraj, 2006); Farooq Bajwa, *From Kutch to Tashkent: The Indo-Pakistan War of 1965* (London: Hurst, 2013), p. 171; and Cloughley, *A History of the Pakistan Army*, pp. 86–87.

62. Brines, *The Indo-Pakistani Conflict*, p. 336; and Mankekar, *Twenty-two Fateful Days*, p. 105.

63. Pradhan, *1965 War, the Inside Story*, p. 33.

64. Bajwa, *From Kutch to Tashkent*, p. 163.

65. Cloughley, *A History of the Pakistan Army*, pp. 84, 115.

66. Brines, *The Indo-Pakistani Conflict*, p. 343; and Mankekar, *Twenty-two Fateful Days*, p. 123.

ing enemy [Pakistani] armor in Phillora, threatening it with destruction." Pakistani forces "vacate[d] Phillora and remained on the defensive" until they were later able to recapture it.<sup>67</sup> Although a future India-Pakistan battle in Sialkot would likely not unfold in the same manner, the theater and the axis might well be similar. Therefore, in a hypothetical future India-Pakistan war, Indian armored forces nearing Phillora, Chawinda, or the Zafarwal-Bhagowal area could be a possible trigger for the use of battlefield nuclear weapons by Pakistan.

Some Pakistanis believe that the southern desert region of Pakistan could also be a major battle theater in a future war. This argument has some merit. During the 1965 war, the Indian army opened a third front on the southern "Rajasthan-Sind border. The Indian column entered Sind at Barmer and occupied Gadra town," approximately 9.5 kilometers from the border.<sup>68</sup> The Indians explained this action as a diversionary thrust to keep Pakistani forces in the city of Karachi pinned down. Brig. Saeed Ismat of the Pakistani army has argued, however, that "if an Indian military invasion came through the Rajistan desert directed towards the GT [Grand Trunk] road near Rahimyarkhan. . . . In matter of days, India could cut off our north-south communication, divide and dislocate our military forces and divide the country in two. . . . This action by itself can cause strategic division and isolation of our forces, leading to ultimate defeat and [the] breakup of a nation."<sup>69</sup>

Some Indian researchers have agreed that there is a possibility that India might attack in the south of Pakistan rather than in the Punjab heartland. Lt. Gen. V.K. Sood and Pravin Sawhney claim that, sometime during the first three months of Operation Parakram, the Indian army had all three of its strike corps poised in the desert region. Once the order for military action was given, they posit that "instead of seeking multiple thrusts in PoK (Pakistan-occupied Kashmir), the army could cross the border boldly into the Thar desert."<sup>70</sup> Such action, however, would be problematic. Pakistan's concept of conventional op-

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67. Pradhan, *1965 War, the Inside Story*, p. 51.

68. Mankekar, *Twenty-two Fateful Days*, p. 127; and Pradhan, *1965 War, the Inside Story*, p. 52. There is another explanation, however, for India's action in the desert region. As Russell Brines writes, "[A] local Indian politician visited the headquarters of the Indian commander on the edge of the desert and demanded to know what he was doing in the war. 'Well,' the commander replied, 'I sent some patrols out this morning.' The politician thereupon announced to waiting newspapermen that a massive new offensive had begun, and New Delhi had to support the story." See Brines, *The Indo-Pakistani Conflict*, p. 335.

69. Saeed Ismat, "Strategy for Total Defence: A Conceptual Nuclear Doctrine," *Pakistan Defence Journal*, March 2000, <http://www.defencejournal.com/2000/mar/doctrine.htm>.

70. Sood and Sawhney, *Operation Parakram*, p. 81. In contrast to Sood and Sawhney's assertion, Raj Chengappa and Shishir Gupta claim that the Indian military goal was a "salami slice offensive"

erations, irrespective of where the Indian strike corps attacked, seems to be based on the idea that Pakistan's two offensive strike corps would advance east in the Indian Punjab region to threaten Delhi.<sup>71</sup> Deploying all of India's strike corps in the southern desert region would leave Delhi exposed. For the purpose of completeness, however, the next section includes an examination of the effects of using a battlefield nuclear weapon in the southern desert region of Pakistan in the cities of Rahim Yar Khan and Sukkur.<sup>72</sup>

#### POTENTIAL COLLATERAL CIVILIAN CASUALTIES FROM USING NASR

How many civilian casualties are likely to result from the employment of a nominal 30-kiloton or a 5-kiloton battlefield nuclear weapon in the Lahore, Sialkot, Rahim Yar Khan, or Sukkur theaters? To answer this question, I used NUKEMAP, an online JavaScript application designed to estimate the effects of the detonation of a nuclear weapon.<sup>73</sup> In making casualty calculations, NUKEMAP combines a fine-grained population database, the LandScan

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that would "rapidly capture small swathes of territory in PoK [Pakistan-occupied Kashmir] and hold them as a bargaining chip while signaling clearly that India didn't want the war to escalate to other areas." For details, see Chengappa and Gupta, "In Striking Distance. Vajpayee Sounds War Cry, India Prepares for Limited Military Offensive against Pakistan," *India Today*, June 3, 2002, <http://indiatoday.intoday.in/story/vajpayee-sounds-war-cry-india-prepares-for-limited-military-offensive-against-pakistan/1/221339.html>.

71. During the staging of the Lahore offensive in the 1965 war, "Indian officials said one of its chief purposes was to prevent an anticipated Pakistani attack across the same [Punjab] border into India." For details, see Brines, *The Indo-Pakistani Conflict*, p. 328.

72. W.P.S. Sidhu says that during the November 1986 exercise Brasstacks, "the size and location of the forces participating in the exercise in Rajasthan would have made it possible to cut Pakistan in half had they raced across Sindh to reach the Sukkur barrage." See Waheguru Pal Singh Sidhu, "India's Nuclear Use Doctrine," in Peter R. Lavoy, Scott D. Sagan, and James J. Wirtz, eds., *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons* (Ithaca, N.Y.: Cornell University Press, 2000), p. 135. For this reason, Sukkur is considered a potential battle theater.

73. All civilian fatalities and injuries were calculated using Alex Wellerstein's NUKEMAP application, <http://nuclearsecrecy.com/nukemap/>. Responsibility for generating and interpreting the data, however, lies with the author. Other scholars have performed similar casualty calculations using different methods in the context of a strategic nuclear weapons exchange scenario in South Asia. See, for example, S. Rashid Naim, "Aadhi Raat Ke Baad 'After Midnight,'" Program in Arms Control, Disarmament, and International Security Occasional Paper (Urbana-Champaign: Department of Political Science, University of Illinois at Urbana-Champaign, June 1998); Robert T. Batchler, "The Consequences of an Indo-Pakistani Nuclear War," *International Studies Review*, Vol. 6, No. 2 (June 2004), pp. 135-162; M.V. Ramana, "Bombing Bombay? Effects of Nuclear Weapons and a Case Study of a Hypothetical Explosion" (Cambridge, Mass.: International Physicians for the Prevention of Nuclear War, 1999); and Natural Resources Defense Council, "The Consequences of Nuclear Conflict between India and Pakistan" (Washington, D.C.: National Resources Defense Council, 2002), <http://www.nrdc.org/nuclear/southasia.asp>.

Global Population 2011, with open-source data on the physical effects of the overpressure, heat, and radiation emerging from a nuclear bomb explosion.

According to calculations made with NUKEMAP, the use of one 30-kiloton battlefield nuclear weapon against Indian armored troops on the east bank of the Ichogil canal along the first axis (i.e., Grand Trunk Road) in the Lahore theater could result in approximately 50,000 deaths and an equal number of critical injuries (see scenario 1 in table 1). As the Indian armored forces move forward on the Ichogil canal bridge and closer to Lahore, the number of casualties could increase significantly. For example, a 30-kiloton explosion exploded over the city of Lahore might produce approximately 300,000 deaths and 766,000 injuries (see scenario 2 in table 1). The number of deaths and injuries following the use of a similar weapon between the east bank of the Ichogil canal and the city of Lahore would be somewhere between those listed in scenarios 1 and 2 in table 1. As for the second axis of approach in the Lahore theater near the village of Burki, which lies on the east bank of the Ichogil canal, the likely numbers would be 9,000 dead and 15,000 injured (see scenario 4 in table 1). Along the third axis in the Lahore theater, for an explosion on the east bank of the Ichogil canal, the estimate would be 20,000 deaths and 115,000 injuries (see scenario 6 in table 1). As the Indian armored forces move forward and crossed the bridge over the Ichogil canal toward Kasur, the number of civilian casualties would increase significantly (see scenario 7 in table 1). These estimates are significant—even for the most hard-line Pakistani leader willing to put part of his own country's population at risk to prevent India from gaining any military advantage in a conflict. It is also conceivable that Indian decisionmakers would assume that Pakistan would be unwilling to bear such high civilian casualties.

The use of a 5-kiloton battlefield nuclear weapon does not change the estimates of civilian casualties very much. For example, along the first axis in the Lahore theater, a 5-kiloton weapon exploded near the east bank of the Ichogil canal would cause approximately 30,000 deaths. As the Indian armored forces move forward on the Ichogil canal bridge and closer to Lahore, the number of casualties would increase significantly. For example, if the same weapon were detonated over the city of Lahore the number of dead could reach 122,000. Similarly, along the third axis in the Lahore theater, the number of casualties remains significant (see table 1). Along the second axis, however, the number of Pakistani civilian deaths decreases from approximately 9,000 to 3,800, which is still a nontrivial figure. If Indian troops were spread over greater distances than assumed here, which is more likely in an actual conflict, then more than

Table 1. Fatalities and Injuries from the Employment of a 30-Kiloton/5-Kiloton Battlefield Nuclear Weapon inside Pakistan in Various Possible Theaters in an India-Pakistan Military Engagement

Scenario	Major Indian Axis of Advance	Region Battlefield Nuclear Weapon Use Occurs	Battlefield Nuclear Weapon Yield (kilotons)	Number of Fatalities	Number of Injuries	Approximate Distance from Indian Border (kilometers)
Offensive on Lahore						
Axis 1						
1	Axis 1	Outskirts of Lahore near Ichogil canal	30 5	49,590 30,870	32,900 20,050	7.3
2	Axis 1	City of Lahore	30 5	303,660 122,060	766,220 235,980	25
3	Axis 1— immediate use	Axis 1 (Grand Trunk Road) near Indian border	30 5	10,800 4,140	18,620 6,480	
Axis 2						
4	Axis 2	Outskirts of Barki near Ichogil canal	30 5	9,260 3,800	16,010 5,620	10.8
5	Axis 2— immediate use	Axis 2 near Indian border (midway between the border and Hudiara canal)	30 5	9,350 3,660	12,710 5,960	
Axis 3						
6	Axis 3	Outskirts of Kasur near Ichogil canal	30 5	19,540 7,020	115,440 14,720	1.4
7	Axis 3	City of Kasur	30 5	255,050 87,130	131,050 145,660	6.2
Offensive on Sialkot						
Axis 1						
8	Axis 1	Outskirts of Sialkot (Zafarwal-Bhagowal area)	30 5	8,670 4,650	29,840 7,620	8
9	Axis 1	City of Sialkot	30 5	200,190 75,320	311,780 154,990	16
10	Axis 1— immediate use	Axis 1 near Indian border	30 5	11,730 3,660	27,840 8,210	
Axis 2						
11	Axis 2	Chawinda	30 5	40,850 28,740	21,700 12,010	23.1
12	Axis 2	Multiple explosions: Chawinda and Phillora	30 5	54,630 45,720	58,610 31,070	

Table 1. (continued)

Scenario	Major Indian Axis of Advance	Region Battlefield Nuclear Weapon Use Occurs	Battlefield Nuclear Weapon Yield (kilotons)	Number of Fatalities	Number of Injuries	Approximate Distance from Indian Border (kilometers)
Offensive on Rahim Yar Khan						
13	Axis 1	Outskirts of Rahim Yar Khan (Rahim Yar Khan Road—Canal Road intersection)	30 5	41,610 14,370	114,710 29,080	45
14	Axis 1	City of Rahim Yar Khan	30 5	146,040 59,130	169,340 94,970	50
15	Wide approach—immediate use	Desert area near Indian border	30 5	50 0	190 0	
Offensive on Sukkur						
16	Axis 1	Outskirts of Sukkur near Sukkur barrage bridge	30 5	26,450 4,110	169,060 53,800	90.5
17	Axis 1	City of Sukkur	30 5	219,970 84,420	178,880 143,120	95
18	Wide approach—immediate use	Desert area near Indian border	30 5	52 10	140 90	

NOTE: The 30-kiloton weapon is optimized to explode at an altitude of 0.56 kilometers in order to maximize the distance to which the 20 psi (pounds per square inch) overpressure blast wave is effective. The 5-kiloton weapon is optimized to explode at an altitude of 0.31 kilometers in order to maximize the distance to which the 20 psi overpressure blast wave is effective. In a low-altitude nuclear explosion, the deaths and injuries are caused by multiple effects: (1) a fireball, (2) an air blast wave of 20 psi, (3) a radiation ring, and (4) a thermal radiation region causing third-degree burns.

one battlefield nuclear device would be required, thereby increasing the number of Pakistani casualties.

The use of battlefield nuclear weapons in the Sialkot theater would also produce large numbers of civilian casualties. On the first axis of approach along the Jammu road leading to Sialkot, the explosion of a 30-kiloton battlefield nuclear weapon on the outskirts of Sialkot, in the vicinity of Zafarwal-Bhagowal, could cause approximately 8,600 deaths and 30,000 injuries (see scenario 8 in table 1). The use of such a weapon within the limits of Sialkot would

vastly increase the number of casualties, to approximately 200,000 dead and 312,000 injured (see scenario 9 in table 1). Along the second axis of approach in the Sialkot theater, a similar explosion near Phillora or Chawinda—both major armored battle grounds in the 1965 war—would result in the deaths of tens of thousands of Pakistani citizens (see scenario 11 and 12 in table 1). The number of casualties does not decrease significantly when a 5-kiloton weapon is used. In most scenarios, the number of casualties would be in the tens of thousands (see scenarios 9, 11, and 12 in table 1). One exception is when a 5-kiloton weapon is exploded on the outskirts of Sialkot over Zafarwal. The result would be 4,650 deaths compared with 8,600 deaths produced by a 30-kiloton weapon (see scenario 8 in table 1). To most observers, killing 4,650 Pakistani civilians to destroy approximately thirteen Indian armored tanks in a battle with potentially hundreds of tanks would seem reckless.<sup>74</sup>

In the southern desert region of Pakistan, the number of civilian casualties could be comparable to those in Lahore or Sialkot. Outside the Canal Road at Rahim Yar Khan, for example, the detonation of a 30-kiloton battlefield nuclear weapon would cause approximately 42,000 deaths and 115,000 injuries (see scenario 13 in table 1). A detonation closer to the city could produce approximately 146,000 deaths and 170,000 injuries (see scenario 14 in table 1). An explosion outside the city limits of Sukkur near the barrage bridge could result in approximately 26,000 deaths; and one closer to the city 220,000 deaths (see scenarios 16 and 17 in table 1). The casualty figures remain in the tens of thousands even when a 5-kiloton weapon is used (see scenarios 13, 14, and 17 in table 1).

To avoid large numbers of casualties, Pakistan might consider employing battlefield nuclear weapons immediately after Indian troops have crossed the international border. The early use of battlefield nuclear weapons might have

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74. A.H. Nayyar and Zia Mian point out that an armored formation could use tanks spaced 50 meters apart in a row, with the rows set 250 meters apart. See Nayyar and Mian, "The Limited Military Utility of Pakistan's Battlefield Nuclear Weapons in Response to Large Scale Indian Conventional Attack," Pakistan Security Research Unit Brief No. 61 (Bradford, U.K.: Department of Peace Studies, University of Bradford, November 11, 2010), p. 6. Assuming these values for tank spacing, a 5-kiloton weapon with a kill radius of 250 meters would, under the best circumstances, destroy thirteen tanks. It would be very difficult for a Pakistani field commander with limited information to decide in any meaningful fashion if it made sense to use one battlefield weapon against thirteen tanks. In all probability, he would have no way to be absolutely sure that all conventional options had been exhausted and that he was using the nuclear weapon only as a last resort. Neither could he be sure that his decision to use a battlefield nuclear weapon—and therefore cause the deaths of approximately 4,650 Pakistani civilians—would change the outcome of the battle.

value in the southern desert region, where their detonation would occur over areas that do not contain any significant permanent civilian settlements. In the case of Rahim Yar Khan, the result would be approximately 50 deaths (see scenario 15 in table 1); and in Sukkur, the estimate is 52 dead (see scenario 18 in table 1). These numbers are possibly small enough to be politically acceptable.

Early use of a 30-kiloton bomb on the outskirts of the Lahore or Sialkot theaters, however, does not significantly reduce the number of casualties. Only on the first axis of approach in the Lahore theater does early detonation reduce the number see scenario 3 in table 1). On all of the other axes, an early detonation increases their number. For example, detonation of a 30-kiloton battlefield nuclear weapon in the Sialkot theater immediately after Indian troops have crossed the border increases the number of deaths from approximately 9,000 to 12,000 (see scenarios 8 and 10 in table 1). Early use of a 5-kiloton bomb in the Lahore or Sialkot theater, on the other hand, does reduce the number of deaths to approximately 4,000 in each scenario (see scenarios 3, 5, and 10 in table 1). Although comparatively lower, these casualty figures are still high if only thirteen Indian armored tanks are destroyed. One plausible reason to explode a battlefield nuclear weapon at the beginning of an invasion would be to serve as a warning shot to Indian decisionmakers to stop the assault and hasten international intervention. The same purpose could be achieved, however, using Pakistan's current weapons arsenal and firing a missile to explode off the coast of Mumbai, for example. The latter action would send a message without resulting in any Indian or Pakistani casualties.

Although the early use of battlefield nuclear weapons in the southern desert region would offer advantages to Pakistan, it would also entail difficulties, given the absence of natural choke points such as narrow bridges or strategic communication locations. At the initial stages of an incursion, Indian forces could use wide-area maneuvers and disperse quickly to dampen the effects of a nuclear blast. If they did this, the Pakistanis might need to detonate more battlefield nuclear weapons. Also, early use implies that battlefield nuclear weapons would come into play before the Pakistani army had a chance to use conventional military means to stop the invading force. This scenario raises two problems. First, would the Pakistani army, a highly funded organization in a cash-strapped country that prides and presents itself as the defender of the nation, be comfortable relying on nuclear weapons to do its job? Conceivably, the army might prefer to defeat India in a conventional war.<sup>75</sup> Second, and

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75. Michael Krepon also suggests that using Nasr inside Pakistani territory might present “a

more important, Pakistan has argued that its battlefield nuclear weapons are devices of last resort, to be employed only if its conventional forces were unable to stop an Indian assault. In so stating, Pakistan would hope to convince the international community that India was the aggressor. Early employment of battlefield nuclear weapons, however, would undermine this argument.

### *The Complexity of Escalation Control for Pakistan*

Indian decisionmakers have consistently argued that India would respond to Pakistan's battlefield use of a nuclear weapon with massive nuclear retaliation, treating any attack as a case of strategic aggression. For example, Shyam Saran, of India's National Security Advisory Board, has stated: "India will not be the first to use nuclear weapons, but if it is attacked with such weapons, it would engage in nuclear retaliation which will be massive and designed to inflict unacceptable damage on its adversary." Criticizing Pakistan's rationale for developing Nasr, Saran declares: "Pakistani motivation is to dissuade India from contemplating conventional punitive retaliation to subconventional but highly destructive and disruptive cross-border terrorist strikes such as the horrific November 26 attacks on Mumbai. What Pakistan is signaling to India and to the world is that India should not contemplate retaliation even if there is another Mumbai because Pakistan has lowered the threshold of nuclear use to the theatre level. This is nothing short of nuclear blackmail, no different from the irresponsible behavior one witnesses in North Korea." He continues, "The label of a nuclear weapon used for attacking India, strategic or tactical, is irrelevant from the Indian perspective. . . . A limited nuclear war is a contradiction in terms. Any nuclear exchange, once initiated, would swiftly and inexorably escalate to the strategic level. Pakistan would be prudent not to assume otherwise as it sometimes appears to do, most recently by developing and perhaps deploying theatre nuclear weapons."<sup>76</sup> Saran's views are widely per-

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significant psychological hurdle" for Pakistan's military. See Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," in Krepon and Thompson, *Deterrence Stability and Escalation Control in South Asia*, p. 52.

76. Indrani Bagchi, "Strike by Even a Midget Nuke Will Invite Massive Response, India Warns Pak," *Times of India*, April 30, 2013, <http://timesofindia.indiatimes.com/india/Strike-by-even-a-midget-nuke-will-invite-massive-response-India-warns-Pak/articleshow/19793847.cms>; and Shyam Saran, "Is India's Nuclear Deterrent Credible?" address at the India Habitat Centre, New Delhi, April 24, 2013, <http://krepon.armscontrolwonk.com/files/2013/05/Final-Is-Indias-Nuclear-Deterrent-Credible-rev1-2-1-3.pdf>. See also Rajat Pandit, "Response to Strike from Pak Will Be Very Heavy: IAF Chief," *Times of India*, July 26, 2011, [http://articles.timesofindia.indiatimes.com/2011-07-26/india/29815644\\_1\\_iaf-indian-air-force-nuclear-attack](http://articles.timesofindia.indiatimes.com/2011-07-26/india/29815644_1_iaf-indian-air-force-nuclear-attack).

ceived as reflecting India's quasi-official policy in response to Pakistan's development of battlefield nuclear weapons.

India's stance could be more posturing than anything else. A response to battlefield nuclear attacks against Indian army units featuring nuclear counterattacks on Pakistani cities would likely result in countervalue strikes against Indian cities. If India launched a military invasion and Pakistan responded with battlefield nuclear weapons, four outcomes are possible. First, India could decide to withdraw its military forces behind the international border following the detonation of a battlefield nuclear weapon inside Pakistani territory. Although such an outcome might seem to be a resounding defeat for India, it need not be. If India could return to the status quo ante, it would have managed to cause the obliteration of a part of Pakistan, with civilian deaths in the thousands, while losing only a portion of a regiment or brigade.<sup>77</sup> The deaths of thousands (or maybe even tens of thousands) of civilians could be a comparatively higher loss to Pakistan, which India could come to see as fitting punishment for, say, a major terrorist strike.

Second, if India's military or its people were unwilling to pull back after losing a regiment or brigade to nuclear first use, then, as Evan Montgomery and Eric Edelman suggest: "[New Delhi] could order army units to press on with their assault, particularly if those units maintained a reasonable level of effectiveness because Pakistan only used a small number of weapons."<sup>78</sup> Such a strategy would be ill conceived, however, if Pakistan responded with additional nuclear strikes. The result then could be an escalation crisis. How many battlefield nuclear weapons would Pakistan use next if India disregarded its first such detonation? What confidence could Pakistan's leadership have that India would pull back after a second explosion? A cautious (and hawkish) Pakistani decisionmaker could conclude that if the first battlefield nuclear weapon was unsuccessful, the next step would be to use strategic weapons against Indian military garrisons, rather than continue to incur Pakistani civilian casualties with the use of battlefield nuclear weapons. The cautious decisionmaker, however, would then have to account for India's likely retaliation. If Pakistan used only one of its strategic weapons against an Indian military

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77. Henry A. Kissinger illustrated how this logic functioned in the case of the Soviet Union and Germany. For details, see Kissinger, "Limited War: Conventional or Nuclear? A Reappraisal," *Daedalus*, Vol. 89, No. 4 (Fall 1960), p. 808.

78. Evan Braden Montgomery and Eric S. Edelman, "Rethinking Stability in South Asia: India, Pakistan, and the Competition for Escalation Dominance," *Journal of Strategic Studies*, online edition, April 25, 2014, p. 17.

garrison, India might respond with massive retaliation. Realizing this possibility, the Pakistani decisionmaker might have two options: (1) stop further nuclear use and call for negotiations, or (2) engage in the massive use of nuclear weapons to destroy a large part of India's arsenal and its political leadership, thereby destroying India's will to fight.

In a third outcome, India, left with fewer military options following Pakistan's use of additional battlefield nuclear weapons against Indian forces, might decide to rapidly escalate with nuclear weapons. Such a decision would be consistent with India's stated posture of initiating massive retaliation against any nuclear use on its forces.

The fourth outcome would be if India—despite its stated posture—retaliated with a limited nuclear attack against Pakistani military targets. A hawkish Pakistani decisionmaker could then respond by giving the order to launch strategic weapons against major Indian cities.

In sum, although the range of options available while initiating the first limited use of battlefield nuclear weapons against a nuclear opponent might appear wide, once a state has exploded a nuclear weapon, the range begins to shrink. There is no public evidence that Pakistani leaders have considered these possible outcomes, nor have they openly articulated how they would avoid rapid escalation.

### *Conclusion*

Pakistan's presumed reason for developing battlefield nuclear weapons seems not to have materialized. India's Cold Start doctrine, even if it has been officially approved, remains at best an idea. Its political class seems decidedly disinterested, and the military has not made any of the strategic changes needed to execute such a doctrine—for example, dividing its major strike corps into smaller integrated battle groups. Additionally, the Indian army does not appear to have acquired the weapons necessary to move toward a genuine Cold Start-type capability. In a letter that was later leaked to the press, Gen. V.K. Singh, who served as chief of Indian army from March 2010 to May 2012, wrote at length to India's prime minister about his concerns regarding the "alarming" deficit in operational fighting capabilities of the Indian army.<sup>79</sup>

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79. Singh's concerns include a tank fleet "devoid of critical ammunition to defeat enemy tanks"; air defenses that are "97% obsolete"; a dearth of "essential weapons" for elite special forces; and night-fighting and surveillance capabilities with "large-scale voids." See Saikat

Singh argued that with two "inimical neighbors [i.e., China and Pakistan]," such "critical deficiencies" will greatly damage the army's preparedness. Although not everyone in the Indian leadership agrees with all of Singh's assertions, or their implications, they do agree with the larger point concerning the status of the Indian army. In the aftermath of the 2008 Mumbai terrorist attack, for example, senior army commanders, worried about the inadequate and obsolete arsenal at their disposal, apparently advised the political leadership in New Delhi against a war with Pakistan—a far different response from the clamoring for war after the 2001 Parliament attack.<sup>80</sup>

Using Nasr inside Pakistani territory could result in the deaths of tens of thousands of civilians. Alternatively, India and Pakistan could negotiate confidence-building measures to help reduce military tensions while demonstrating India's resolve to respect the territorial integrity of Pakistan.<sup>81</sup> Such measures could include (1) an understanding between Pakistan and India not to deploy long-range artillery close to border areas; (2) an understanding not to deploy infantry forces and armored divisions in areas close to the international border, from where surprise attacks are possible; (3) limited consultations on defense acquisitions of new weapon systems on a case-by-case basis;<sup>82</sup> (4) facilitation of foreign military attachés' ability to observe each country's troop movements when explicitly requested in certain situations;<sup>83</sup> and (5) use

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Datta, "DNA' Exclusive: Gen VK Singh Tells PM Some Hard Truths," *DNA India*, March 28, 2012, <http://www.dnaindia.com/india/report-dna-exclusive-gen-vk-singh-tells-pm-some-hard-truths-1668283>; and "Army Chief's Letter to PM: General VK Singh Exposes Chinks in Armor," *Times of India*, March 29, 2012, <http://timesofindia.indiatimes.com/india/army-chiefs-letter-to-PM-General-V-K-Singh-exposes-chinks-in-armour/articleshow/12447751.cms>.

80. Siddharth Srivastava, "Indian Army 'Backed Out' of Pakistan Attack," *Asia Times*, January 21, 2009, [http://www.atimes.com/atimes/South\\_Asia/KA21Df02.html](http://www.atimes.com/atimes/South_Asia/KA21Df02.html).

81. The two most prominently cited successful examples of such measures are the agreement on prenotification of ballistic missile tests and the agreement to declare and not target nuclear facilities. The value of these measures in preventing future conflicts is a matter of debate. For example, Toby Dalton, deputy director of the Nuclear Policy Program at the Carnegie Endowment for International Peace, points out that incremental and narrowly focused confidence-building measures are not useful for building long-term stability or in leading India and Pakistan toward a peaceful resolution of their disputes. Dalton suggests that these CBMs may at best be useful only to diminish misperceptions. See Dalton, "Beyond Incrementalism: Rethinking Approaches to CBMs and Stability in South Asia," in Krepon and Thompson, *Deterrence Stability and Escalation Control in South Asia*, pp. 187–205.

82. Measures 1–3 are drawn from Maleeha Lodhi, "Dealing with South Asia's Nuclear and Security Issues," *Defence Journal*, n.d., <http://www.defencejournal.com/jan99/nuc-sec-issues.htm>.

83. There is a precedent for such actions. During a crisis in the 1990s, "[w]hile India and Pakistan made precautionary preparations for war, they also took unilateral measures to avoid misperception. . . . Even as troops were being rushed to the border on both sides . . . India and Pakistan took the unusual step of giving U.S. military attachés in Islamabad and New Delhi permission to observe troop deployments." See Sidhu, "India's Nuclear Use Doctrine," p. 138.

of dedicated military operations telephone lines for discussion of matters involving the two states' military capabilities as well as emerging military situations.<sup>84</sup> For India to engage in such measures, Pakistan will need to make genuine efforts to curtail terrorism. In the wake of the 2001 terrorist attack on the Indian Parliament and the 2008 Mumbai attacks, the Indian government faced extremely strong pressure to retaliate.<sup>85</sup> India's display of restraint in these crises probably stemmed in large part from the cautious personal judgment of Prime Ministers Vajpayee and Manmohan Singh. In the wake of the Parliament attack, Prime Minister Vajpayee apparently wanted "to avoid a war whose risks were great and benefits modest."<sup>86</sup> After the Mumbai attack, Prime Minister Singh's decision against military action was guided by a form of cautious realism. According to Steve Coll, Singh calculated that "if India were to launch even selective strikes, it would likely only deepen Pakistan's internal turmoil" and "would also risk escalation that could include nuclear deployments—which may be precisely what the jihadi leaders hoped to provoke."<sup>87</sup>

India, however, might not be able to observe such restraint under all circumstances. If another terrorist attack on the scale of the 2001 Parliament attack were to occur, the Indian leadership might decide that it has no option other than war. In delivering its judgment on an appeal petition filed by a participant in the attack, the Supreme Court of India stated: "The attempted attack on Parliament is an undoubted invasion of the sovereign attribute of the State

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84. According to Chief of Indian Army V.P. Malik, during the Kargil War these lines were extremely useful in facilitating communication between the two sides. General Malik has said that talks occurred on all scheduled days and sometimes more often. These talks, he has said, were one of the reasons why the war was kept limited. For details, see Malik, interviewed by Sreedharan and Joseph, "Crossing the LoC Would Have Had Other Implications"; and V.P. Malik, interviewed by Chindu Sreedharan and Josy Joseph, "Kargil Was a Good Wake-Up Call," Rediff.com, July 28, 2001, <http://www.rediff.com/news/2001/jul/28inter.htm>.

85. Arundhati Ghose, India's former United Nations representative, said in the wake of the Mumbai terrorist attack, "If there is another attack, we should go in and bomb the daylights out of them." Pradeep Kaushiva, a retired vice admiral, similarly stated that every member of the Indian armed services believed "that the country [had] been attacked and someone must pay for it." Bharatiya Janata Party parliamentarian Arun Shourie demanded, "Not an eye for an eye, but for an eye, both eyes." See Ahmad Faruqi, "Beyond Mumbai: Prospects for Indo-Pakistani Relations," *RUSI.org*, January 11, 2009, <https://www.rusi.org/analysis/commentary/ref:C496A403CE6D75/#.Uy2vZqhdUXs>.

86. Michael Krepon, "The Stability-Instability Paradox, Misperception, and Escalation Control in South Asia," in Krepon, Rodney W. Jones, and Zaid Haider, eds., *Escalation Control and the Nuclear Option in South Asia* (Washington, D.C.: Henry L. Stimson Center, 2004), p. 23.

87. Steve Coll, "The Back Channel: India and Pakistan's Secret Kashmir Talks," *New Yorker*, March 2, 2009, <http://www.newyorker.com/magazine/2009/03/02/the-back-channel>. It is quite conceivable that given the recent spate of terrorist attacks within Pakistan, India recognizes that Pakistan is able to exert much less control over jihadi elements in its territory.

including the Government of India." It goes on to say that "the modus operandi adopted by the hard-core 'fidayeens' are all demonstrative of the intention of launching a war against the government of India."<sup>88</sup> Although Pakistan may not be able to constrain all terrorist activities against India, it should take all necessary steps to prevent such activities from being launched inside its territory.

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88. "Full Text: Supreme Court Judgment on Parliament Attack Convict Afzal Guru," IBN Live (India), February 9, 2013, <http://ibnlive.in.com/news/full-text-supreme-court-judgement-on-parliament-attack-convict-afzal-guru/371782-3.html>.