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Tackling Nuclear Terrorism in South Asia

BY FEROS HASSAN KHAN AND EMILY BURKE

Since India and Pakistan conducted their nuclear tests in 1998, every danger associated with nuclear weapons – proliferation, instability, and terrorism – has been linked to the region. And despite nuclear deterrence and the modernization of nuclear forces, South Asia is a far cry from achieving stability. Indeed, the security situation in South Asia has deteriorated and violent extremism has surged to unprecedentedly high levels. In the past decades, both states have operationalized their nuclear deterrent forces, increased production of fissile material and nuclear delivery means, and developed plans to field a nuclear capable triad. Concurrently, both countries are expanding civilian nuclear facilities in their quests for a cleaner source of energy to combat current and future energy shortages. As tensions and violence in the region have increased, both states blame the other's policy choices for the scourge of terrorism that has seized the region. New leadership in India, Pakistan, and Afghanistan however, creates an opening to tackle the immediate scourge of violent extremist organizations and unresolved historic conflicts. Ironically the traditional stabilizing force in the region – the United States – is drawing down in Afghanistan and shifting its focus to the Asia-Pacific region and to Russia where new tensions have erupted. Within this security context, India and Pakistan will be left on their own to devise mechanisms to mitigate and eliminate the regional risk of terrorism.

As the South Asian threat matrix becomes more complex and with concomitant progress in the nuclear field, these developments provide the basis for the spectacular terror attacks in New Delhi, Mumbai, Karachi, and Islamabad-Rawalpindi. As states possessing nuclear weapons, both India and Pakistan must find a common objective and mechanisms to deal with the metastasizing menace of terrorism. It is imperative that both states acquire the highest standard of nuclear security best practices and learn to live as peaceful nuclear neighbors. Individually, as well as collaboratively, India and Pakistan should direct their efforts to creating a cooperative relationship in the region and developing a nuclear security regime that encapsulates the nuclear security visions set by the three global nuclear security summits.¹

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In order to analyze the dangers of nuclear terrorism, this article will examine four variables: threat, probability, consequence, and risk. The threat of nuclear terrorism undeniably exists, but the risk of nuclear terrorism is determined by factoring both probability and consequence. To enable state policy and regional discourse to address nuclear terrorism with the maximum effectiveness, an assessment of the risk – not just the threat – is necessary. This article will first outline the evolution of the threat of nuclear terrorism both globally and regionally. Next, we will describe South Asian threat perceptions and the impacts on nuclear safety and security. Then, the article will evaluate the threats based on probability and consequence, and finally identify the highest risk threat. Focusing on this threat, we will assess the current tools available and offer policy recommendations and ideas for regional cooperation between India and Pakistan to combat this threat.

EVOLUTION OF THE THREAT

While fears of nuclear weapons date back to the genesis of the weapons themselves, nuclear terrorism has largely gained attention as a substantial threat to national and international security since the mass casualties and destruction of the September 11, 2001 terrorist attacks against the United States. Nuclear proliferation, security, and safety have historically been concerns, but only recently has terrorism added a new dimension and elevated nuclear terrorism to the top tier of U.S. national security concerns. For the purposes of this article, nuclear terrorism is designated as the use or threat of use of nuclear material in order to achieve a political goal.²

The threat from nuclear terrorism has for the most part mirrored historical trends. The

development of nuclear weapons and then the destruction of Hiroshima and Nagasaki created an existential fear of nuclear weapon use by state actors throughout the Cold War. The post-Cold War era saw a rise in the regulation of nuclear materials, followed by post-2001 strengthening of nuclear sites in hopes of preventing the “loose nukes” syndrome many had predicted.³ In its place, proliferation to weak states and the stability of nuclear states became the greatest concerns in nuclear policy.

In the 21st century terrorism has been linked to all U.S. national security-related policies, including nuclear security policy. The Obama Administration’s 2011 *National Strategy for Counterterrorism* states, “the danger of nuclear terrorism is the greatest threat to global security.” Preventing terrorists from acquiring WMDs and nuclear materials is ranked as one of the top overarching counterterrorism goals.⁴ Furthermore, the United States tied nuclear security to terrorism by stewarding biannual Nuclear Security Summits where member states pledge and work towards safeguarding nuclear materials in order to prevent their transfer to terrorists.

Meanwhile another significant development is the proliferation of nuclear facilities due to the rise of nuclear energy and the expanding ring of legitimacy for nuclear trade. Nuclear energy was seen as a “solution” to the environmental concerns associated with non renewable resources, but fear of terrorism has soured this view. After the Fukushima Daiichi disaster, nuclear energy facilities are seen in a new light as vulnerable to security threats emanating from both natural disasters and man-made attacks.⁵ This fact brings South Asia into focus in a curious way.

India is the beneficiary of a civilian nuclear agreement with the United States

permitting it to retain and develop nuclear weapon capabilities and expand civilian nuclear facilities, with international cooperation in nuclear trade. This sets a precedent for the expansion of civilian nuclear facilities, as well as vertical proliferation of nuclear weapons in the region. Pakistan has responded to the perceived legitimacy conferred upon India's nuclear weapons program by this agreement by offsetting conventional military force weakness with nuclear deterrence, and plans to increase its civilian nuclear power plants to meet its energy shortages. As a result, nuclear facilities in South Asia are multiplying at the very moment the threat of nuclear terrorism is also growing.

Nuclear Terrorism in South Asia

The waves of terrorism currently afflicting South Asia flow from a long, complex history. Since their independence, both India and Pakistan have used proxies to affect each other's internal dynamics. This has led to wars, crises, and even secessionism with the creation of Bangladesh in 1971. Before 2001, India and Pakistan were the focus of attention due to proliferation concerns and the implications of being self-declared nuclear powers after the 1998 tests. After 2001, South Asia became the epicenter for the war against al-Qaeda. The problem of terrorism has become so complex that a spectacular terrorist attack could happen in any part of the region. South Asia has



A radiation hotspot after the Fukushima nuclear plant began releasing substantial amounts of radioactive materials in March 2011.

already seen such dramatic terrorist attacks as the 2001 attack on India's Parliament, the 2008 Mumbai attacks, the 2008 Marriott bombing in Islamabad, as well as various attacks on Pakistani government and military facilities. The region has come under even greater scrutiny for nuclear terrorism since the revelation that Osama bin Laden met two retired Pakistani scientists and showed interest in acquiring nuclear technology.⁶ In addition, both Indian and Pakistani nuclear arsenals have grown at a steady pace. Thus, the fears of WMD terrorism have added to the previous concerns of proliferation and stability, and generated heightened allegations and scrutiny. The permissive regional environment for terrorism is not easily reversed – it requires concerted, time-consuming, and costly efforts. Given the nature of these attacks and the growing nuclear arsenals and civilian nuclear facilities, nuclear terrorism is at the crosshairs of multiple regional trends.

Placing “nuclear” as a prefix to terrorism dilutes the complexity and makes it difficult to differentiate between a hyped threat and a realistic threat.

In South Asia overall threat perception has mirrored trends in nuclear politics. The popular perception of nuclear terrorism combines nuclear safety, nuclear security, and terrorism into one issue. As any one of these issues becomes inflamed, the general fear of nuclear terrorism rises. In reality these three issues are distinct concerns with unique causes, solutions, and policy implications. First, nuclear safety management relates to the technical steps needed to prevent nuclear accidents and

ensure optimal and safe operations. Second, nuclear security pertains to prevention of unauthorized access, tampering, accounting, and protection, as well as numerous preventive and reactive steps that require both technical and military security instruments and practices. Third, terrorism pertains to the presence and activities of violent extremist organizations operating with impunity across state borders; this of course is a central concern and its reduction and elimination require different tools and measures. Regardless of its nuclear status, a state is responsible for eliminating terrorism within its borders. The failure to mitigate or eliminate terrorism does not absolve a state from its safety and security responsibilities; rather all nuclear capable states must be committed to the highest standard of nuclear safety and security regardless of the internal or external threats. Without addressing the factors that allow terrorism to exist, nuclear terrorism will always remain a concern.

Another challenge for nuclear terrorism is that it is plagued by an imprecise lexicon. Placing “nuclear” as a prefix to terrorism dilutes the complexity and makes it difficult to differentiate between a hyped threat and a realistic threat. This is compounded by the propensity to use nuclear terrorism and nuclear security interchangeably. The rhetorical tensions result in increased hype concerning the nuclear terrorism threat and are often used by countries as a propaganda tool to defame states with which they have adversarial relationships. At the same time, nuclear security measures such as ratification of international treaties, legislation, and regimes allows nuclear-armed states to gain diplomatic mileage without identifying the realistic threat and constructing an adequate response. In order to fully understand the threat of nuclear

terrorism in South Asia it is necessary to understand the complexity of the threat matrix: the external threat, the internal threat, and the extent of international scrutiny.

ASSESSMENT OF THREAT PERCEPTIONS

The presentation of a balanced assessment of both India's and Pakistan's threat perceptions must address a central question: Why have India and Pakistan developed different parameters for nuclear security? We assess that this is primarily due to their differing threat perceptions and distinctive international involvement and approaches to each state.

Pakistani Threat Perceptions

From the outset, Pakistan confronted obstacles and opposition to its nuclear weapons ambitions that affected the nuclear security regime of the country. Over time three threat perceptions emerged that shaped Islamabad's nuclear security management. First, beginning in the late 1970s, several incidents forced Islamabad to focus on the external threat of a sudden disarming attack that could prevent the nascent buildup of its capabilities.⁷ Second, like all nuclear weapon states, an "insider threat" was feared – a mole or spy from an external hostile intelligence agency determined to compromise nuclear secrets or sabotage the program from within. Pakistan had a special reason to focus on this threat because its official policy denied the existence of a military nuclear program due to repressive nuclear sanctions and attempts by Western intelligence agencies to spy on Pakistani centrifuge facilities.⁸ The third perception developed after 2001, when violent radical threats within the state became rampant in Pakistani society in general while specific incidents occurred that targeted Pakistani security forces.⁹

Today, Pakistan perceives threats to its nuclear facilities from a host of both external and internal threats. Recent events that exacerbate these fears include the fatal attack on Osama bin Laden in Abbottabad; reports of CIA covert operations disguised as vaccination campaigns to collect DNA in the search for bin Laden; CIA contractor Raymond Davis's killing of civilians in Lahore; relentless drone strikes; and border incidents on the Salala post of the Afghan-Pakistan border. The regional security situation deteriorated further after the Mumbai terror attack and continuing terrorist operations in Afghanistan – especially those led by Afghan Taliban. While external threat percep-

Today, Pakistan perceives threats to its nuclear facilities from a host of both external and internal threats.

tions deepened, the Pakistani internal situation has also deteriorated exponentially. The 2007 operation in Lal Masjid and the establishment of Tehrik-i-Taliban Pakistan (TTP) and other violent extremist groups and sectarian religious groups have challenged the writ of the state. For over a decade, Pakistan has faced a separatist violent movement in Baluchistan. The combination of tribal border region tensions and al-Qaeda attacks has embroiled Pakistan's military in multiple counterinsurgency contingencies.¹⁰ Given these multiple complex threats, the Pakistani nuclear security regime has evolved much differently in the past decade than was the case in the earlier decades of its nuclear program.

Indian Threat Perceptions

In contrast, India's nuclear security discourse has developed an entirely different narrative.

While Pakistan braces for both internal and external threats, India is relatively spared from either. China remains India's primary external threat and India's worst case threat perceptions are rooted in the persistent belief in Sino-Pakistani collusion on everything from economic deals to intelligence matters. However, this belief does not play a significant role in Indian nuclear security perceptions. India does fear an external attack emanating from China by aircraft or missile, though it has never been subject to a deep aerial attack directly from China. Thus, fear of a preventive strike linked to China or another external power does not compute in India's threat calculus. Although India's relationship with China is antagonistic and its threat perceptions are based on long-term perceptions, India's immediate security focus is on Pakistan. With a bitter history of wars and crises, the most significant perceived

threat is a terror attack master-minded by a Pakistan-based extremist organization that India believes is state-sponsored. In any case, even as India's adversarial relationships with China and Pakistan are likely to continue with ups and downs, the prospect of an external power attacking India's nuclear facility is perceived as unlikely. Further India's internal security situation is qualitatively different than Pakistan's, and as such India's nuclear security culture has evolved differently.

The composition of India's internal threat is vastly different from the domestic threats within Pakistan. India is home to a host of secessionist, fifth column, saboteur, and radical extremist groups. These groups range from socio-revolutionary groups like the Naxalites in the "red corridor" in Eastern India, to secessionist movements and centrifugal forces from Kashmir in the north to Tamil Nadu in the



An Indian Agni-II intermediate range ballistic missile on a road-mobile launcher displayed at the Republic Day Parade in New Delhi on January 26, 2004.

south. These movements and the associated tensions have existed with sporadic intensities throughout almost the entire history of independent India. Further, terrorist groups such as Jaish-e-Mohammed (JeM) and Lashkar-e-Taiba (LeT) are supporting operations in the Kashmiri struggle and elsewhere in India. India is also experiencing a rise of Hindu extremist groups which always have the potential to ignite a communal conflict; sparks have ignited in Mumbai, Gujarat, and the “train terror” (Samjhota Express). These groups have been proven to operate within India and wage high-consequence terror attacks including major ones such as the 2001 Indian Parliament and the 2008 Mumbai attacks.

While these groups within India are numerous, they are of a different level of magnitude than their counterparts in Pakistan, which is threatened internally by terrorist organizations both within Pakistan itself as well as across the porous border in Afghanistan. It is unknown whether a radical insider from any of these movements could possibly penetrate India’s nuclear facilities, though such a possibility cannot be ruled out. From India’s viewpoint its internal threats are primarily those sponsored by external agencies. The 2008 Mumbai terror attack re-confirmed the belief that the internal terror threat is due to terrorists infiltrating from neighboring states or externally sponsored sleeper cells. However, India does not fear the same challenge from rampant instability that is evident in Pakistan. India’s nuclear security culture has a greater emphasis on an outside sponsored terror attack on its facilities rather than an insider instigating a nuclear security breach.

Quite apart from differing threat perceptions, another factor that has affected Pakistan’s and India’s respective approaches to

nuclear security is the nature of the international approach towards terror in the region during the past decade.

Implications of the International Approach

The international community has dramatically influenced nuclear threat perceptions in Pakistan. In the context of the American-led Global War on Terror, the flourishing terror infrastructure has adversely affected U.S.-Pakistan relations. Internal threats have raised American and international concerns over the legacy and possible survival of the A.Q. Khan proliferation network, and the level of central control over government facilities. In reaction to Pakistani military operations in tribal areas, terrorist organizations have proven their ability to retaliate in kind against both military bases and soft civilian targets. Specifically, terror attacks against military headquarters and bases have undermined the authority of the military and intelligence institutions and widened the opening for international scrutiny and conjecture about nuclear terrorism in Pakistan.

Although Pakistan operates under continuous intense international scrutiny, it has made substantial gains in bolstering its nuclear architecture, safety, and security. Pakistan has developed a Center of Excellence and offered to provide counterpart training in nuclear security practices. Pakistan has also selectively opened its Center and its training facilities to respond to nuclear security incidents. Recently Pakistan allowed the International Atomic Energy Agency (IAEA) Secretary General to visit the Center of Excellence, who was reportedly very impressed.¹¹ These accomplishments have been recognized and acknowledged by the international community as shown in the recently released 2014 Nuclear Threat Index

(NTI).¹² Still, the heightened levels of scrutiny undermine Pakistan’s ability to overcome its nuclear legacy and reduce international fears of nuclear terrorism in Pakistan.

The international community has had a profoundly different role in the formulation of India’s nuclear security infrastructure. The

most significant factor shaping the international community’s approach towards Indian nuclear safety and security today is the U.S.-India Civil Nuclear Agreement, which governs civilian nuclear trade between the United States and India. The international community has interpreted this agreement as an indicator



2014 NTI Nuclear Materials Security Index – www.ntiindex.org

Results from the 2014 Nuclear Threat Index showing that Pakistan has surpassed India in nuclear materials security. (14-15)

of legitimacy and tacit approval of India's nuclear program, as well as symbolic verification of India's superior nuclear safety and security. Therefore, India faces considerably less international scrutiny than Pakistan.

As noted above, India is not entirely immune from nuclear safety and security concerns; it is only afforded a relative degree of confidence compared to Pakistan. Even though India has demonstrated a past track record of effective nuclear management, this must be understood in the context of the limited tools to measure of effectiveness.¹³ There is general international agreement with India's perception that any threat to its nuclear security is likely to originate from an external source and any such threat will be sufficiently addressed before escalating to a nuclear incident. It is likely that India has taken significant steps to ensure nuclear security in an environment of internal and external threats. However, compared to Pakistan, India's measures and response are less widely known as it does not advertise its nuclear security best practices. This is not likely to change due to the aforementioned international approach that has created an environment where India has little incentive to further improve nuclear safety and security.¹⁴ Despite these positive perceptions and modest improvements, India ranked lower than Pakistan in the 2014 NTI Index.¹⁵

As a result of both India's and Pakistan's perceived external threats and their long-standing strategic rivalry, South Asia does not have a culture of openness on nuclear security. Spotless performance in the absence of meaningful measures of effectiveness does not necessarily equate to nuclear security.¹⁶ Rather, India and Pakistan choose to veil site security in secrecy and boast about achievements. If terrorist attacks have been thwarted at these

facilities, they are not publicized for a host of reasons: (1) a sensitive site could be compromised; (2) intelligence methods on site protection could be publically revealed; (3) admitting vulnerability reinforces propaganda about site insecurity. Without a public record of measured effectiveness or information on how current site security measures have been performed, nuclear site security remains a serious concern and must be acknowledged as a factor leading potentially to a breakout of nuclear terrorism.

A balanced and objective assessment should conclude that the threats facing India and Pakistan respectively are qualitatively different. Pakistan faces a greater internal threat than India and also endures significantly greater international scrutiny on nuclear safety and security. Therefore it is not surprising that Pakistani measures to deal with safety and security are correspondingly greater. India is not subject to the same level of international scrutiny, and experiences less pressure to publicize its nuclear security arrangements and advertise its best practices. From a performance perspective, as recognized in public acknowledgements worldwide concerning both nuclear armed South Asian states, there is a degree of confidence. However, there is little to no public source to analyze measures of effectiveness.

EVALUATING THE RISK

Calculating the risk of nuclear terrorism in South Asia must take into account an understanding of both Pakistani and Indian threat perceptions, as well as their respective internal nuclear politics. The phrase, "nuclear terrorism," creates the specter of nuclear catastrophe with severe consequences. The fear of these consequences and the dissemination of histrionic literature on the possibilities cause

policymakers, academics, and the public to lose sight of the probability and focus only on the devastating outcomes.

Policy proposals should be based on a realistic assessment of the threat in order to maximize effectiveness and cost-savings. To calculate the risk of nuclear terrorism, this article uses the formulation of risk equals probability times consequence. The majority of the current assessment and preventive steps for nuclear terrorism base risk solely on the severity of the consequence instead of factoring in probability. If the probability is zero or near zero, the consequence is irrelevant because the risk is the same as that of the level of probability. To avoid complacency, a sober assessment of probable scenarios is necessary to evaluate the risks and to encourage constructive thinking towards realistic solutions.

The expansion and strengthening of international nuclear safeguards along with an increased commitment and buy-in from the state to tackle terrorism are the pathways towards reducing the conditions for terrorism.

Therefore, the increase in terrorism in South Asia in the last decade does not necessarily correlate to an increase in the likelihood of nuclear terrorism. The expansion and strengthening of international nuclear safeguards along with an increased commitment and buy-in from the state to tackle terrorism are the pathways towards reducing the conditions for terrorism. In our assessment, many of the nuclear terrorism scenarios in the public debate have been substantially exaggerated and overblown in the post-2001 era.

Hyped Threats

Predictably, the buzzword of nuclear terrorism transforms into an imaginative and hyped proposition. Sifting realistic and probable threats on the question of nuclear terrorism challenges from overestimated and improbable assertions allows sober assessment of probable scenarios, reduces complacency, and encourages constructive and forward thinking in the international community.

The most realistic threat is determined by an evaluation based on technical and security rationales. We use Ferguson and Potter's four "faces" of nuclear terrorism to survey the threats: (1) theft of an intact nuclear weapon; (2) theft of fissile material leading to the development of an improvised nuclear device (IND); (3) acquisition of radioactive material to fashion a radiation dispersion device (RDD) or radiation emission device (RED); and (4) an attack on a nuclear facility that releases radioactive materials.¹⁷

We assess that the first two of Ferguson and Potter's scenarios are of high consequence, but the least probable. One of the most pervasive hyped assertions is that the radical religious groups or TTP in Pakistan could usurp state power and gain access to Pakistan's nuclear arsenal. Instead of basing the risk on a measured assessment, these fears are based on multiplying two trends; the rise of religious extremism and TTP in tribal areas, and the growth of Pakistan's nuclear arsenal. The combination conjures up images of exponentially increased likelihood and consequence. The surge of religious groups, intolerance towards minorities, and TTP are an outgrowth of three decades of religiously based guerilla wars waged in the tribal lands of Pakistan and Afghanistan. The core of violent radical threats

resides in these borderlands, and military operations continue there at the time of this writing. Pakistanis have borne the brunt of terror attacks across the entire country and have repeatedly rejected radical religious parties in its two democratic political transitions. While it is true that Pakistan faces unprecedented threats from radical forces the probability of a takeover of the state is hyperbole and near zero. Similarly, the drivers of growth of nuclear weapons are related to the strategic competition with India and its deterrence requirements, and have no correlation to the threat in the tribal areas. Nevertheless, it is important that this internal threat is recognized and not ignored by the state.

Another exaggerated threat is based on the fear that Islamic militants in the Federally Administered Tribal Areas (FATA) will gain access to nuclear materials and either auction them on the black market or develop an IND. This fear is based on previous examples of militants utilizing ransom, kidnappings, and drug sales to gain revenue. In an era of increased localized autonomy of al-Qaeda offshoots, there is an increased need for local self-financing.¹⁸ The potential for enormous payoff makes selling stolen fissile material a logical venture. However, it is impractical to acquire, transport, safely store, and transfer nuclear weapons materials because this highly sensitive process would be fraught with safety and security dangers that terrorist groups with limited resources would be unable to surmount.¹⁹ To date there is no evidence such a theft has occurred in South Asia. States consider nuclear weapons as their national crown jewels and guard them with utmost secrecy and protection. Significant dangers are associated with the acquisition and transportation of such materials and both accounting and protection

are receiving greater attention.²⁰ While this threat is exaggerated, the development of a dirty bomb with radioactive materials and conventional explosives cannot be ruled out.

While it is true that Pakistan faces unprecedented threats from radical forces the probability of a takeover of the state is hyperbole and near zero.

How probable is it then that such a threat would materialize? Even if the most unlikely scenario occurs, what are the consequences and what are the most realistic risks to evaluate? In order to effectively meet the challenges of South Asian nuclear terrorism, the most realistic threats in the region must be separated from the hyperbolic threats.

Most Realistic Threat

The third and the fourth scenarios fall into the higher probability categories, with a spectrum of possible consequences.²¹ An RED or RDD attack will have immediate economic and psychological consequences and might constitute the classic definition of terrorism. Similarly, an attack on a nuclear facility, whether or not it succeeds, would create a psychological specter of terrorizing the state, as could holding the nuclear facility or material hostage. The psychological impact of a penetration of a nuclear installation will instantly create an international panic based on the possibility of insider-outsider collusion.

First, it is technically less difficult to make an RED or RDD than an IND. In our assessment, an attempt to make an IND by a terrorist group is more likely to result in an RDD due to the scientific design challenges, which are not as simple as some scholars believe. If

an RED or RDD were achieved in a terror attack originally designed to detonate as an IND, it would still have significant radiological dispersal consequences. In South Asia, an RED or RDD can be used to replace the conventional terror response such as a car bomb or suicide attack. Over a period of time, Indian and Pakistani security forces have developed counterterror tactics to expose and prevent conventional terrorist attacks; therefore, an RDD is an adaptive replacement. Especially in Pakistan, terrorists have claimed to have carried out attacks on soft targets in cities and military garrisons in retaliation for ongoing operations or drone strikes conducted by the United States. Should a conventional terror attack fail because of countervailing strategies by security forces, an RED or RDD could be the new tool.

Though far short of “success,” the hype and fear created by such events evokes a serious psychological impact that allows terrorists to achieve other objectives.

In South Asia, we assess an armed attack on a nuclear installation as the threat with the highest combination of probability and consequence. Unlike the other scenarios, there has been evidence of terrorists employing this strategy with some success. In this situation, the probability is high due to the evidence of similar style attacks in both India and Pakistan. A commando-type siege would not show signatures that would exist in the theft or movement of a nuclear weapon or nuclear material. Both India and Pakistan have experienced several attacks on military facilities,

government sites, and symbolic soft targets. In Pakistan, examples include the 2012 attack on the Minhas Air Force Base in Kamra, the May 2011 TTP raid on Pakistan Naval Station (PNS) Mehran in Karachi, and the 2009 TTP attack and hostage crisis at the Pakistan Army General Headquarters.²² Examples of attacks on military and government facilities in India include the 2001 Parliament attack, the 2002 attack on an Indian army base in Kaluchak, and the 2008 synchronized attacks and hostage siege in Mumbai.²³ Such attacks may not have succeeded in their respective missions, and each resulted in only modest destruction. However, though far short of “success,” the hype and fear created by such events evokes a serious psychological impact that allows terrorists to achieve other objectives.

We believe that such an attack would result in a moderate consequence level – less devastating than the detonation of a nuclear bomb on a population, but more damaging than a radiological attack. Since the probability of the first through third scenarios is close to zero, the probability of this attack is a more important factor than the level of destruction that would result. It is important to note that our threat assessment does not anticipate a situation where the terrorists accessed radioactive materials at the facility. We assess the probability of an attack on the nuclear facility resulting in the release of substantial radiation as small. Ultimately, the actual attack on the facility is the most probable situation; the high consequence interaction with radioactive materials would only confirm and compound the already evident consequence.²⁴

On the other hand, Rajesh Basrur and Friedrich Steinhäusler evaluated such attacks in India and identified security risks for Indian nuclear power plants. They offer scenarios

including attackers gaining access to a base and detonating a bomb that releases radioactivity, suicide truck attacks on facility entry points, and a suicide attack on the nuclear facility's spent fuel storage pool by a civilian aircraft.²⁵ Due to India's three-pronged approach for its civilian nuclear infrastructure, the different types of reactors have different strengths and vulnerabilities.²⁶

The most probable threat in South Asia is an attack on nuclear infrastructure as its expansion provides more targets for terrorists. The growing number of facilities also increases the potential of vulnerabilities from insider threats. Despite the rigor of personnel reliability screening programs, there inevitably remains a potential for violent attacks from insiders. This has previously occurred in India, for example when Indira Gandhi was killed by her own bodyguards.²⁷ Similarly, Pakistan Governor Salman Taseer was assassinated by his own bodyguard in January 2011.²⁸ Personnel reliability programs are very important in South Asian states and provide opportunities for assurance and cooperation in both countries, but as these examples show they are far from perfect.

Site security is intrinsically linked to site selection. In South Asia, site selection must balance the external and internal threat matrix with the proximity of resources and response capacity. All these factors must be considered from the safety and security standpoints. First, major research centers must be in close proximity to technological hubs and the availability of top scientists and technicians as well as access to reinforcement from military garrisons. Second, power plants have different requirements for water and cooling resources. Plants must be located at a sufficient depth from borders to provide adequate warning of

external attack – especially from the air – but cannot be too close to volatile borderlands and hostile areas. Third, storage sites selection may have different criteria to limit vulnerabilities without compromising security. These criteria include limited access, camouflage requirements and proximity to deployment areas. Compared to India's vast territory, Pakistan's geography and terrain do not allow the luxury of a wide choice of locations. However, the nature of the terrain and the proximity of garrisons and water sources provide well-controlled venues where site protection and security parameters can be developed into a robust system. And given Pakistani threat perceptions and the role of nuclear weapons as the source of ultimate national achievement as well as a tool for survival, it is not imaginable that these crown jewels would be managed in a lackluster manner.²⁹ On site security, India has the luxury of space and fewer internally disturbed areas which afford it more flexibility. Pakistan is limited by space restrictions and pervasive domestic instability that increases the pressure as arsenals grow.

We recommend that both India and Pakistan respond directly to terrorism, nuclear security, and nuclear safety through a combination of the existing international and multilateral regimes, as well as implementing national legislation to establish future bilateral steps.

An attack on a South Asian nuclear facility has not occurred for several reasons. First, existing outward security deters terrorists from waging an assault. It is likely that the trend toward a growing number of nuclear facilities, and as other targets previously deemed imperious to attack are compromised, terrorists will

be emboldened to attack even seemingly well-guarded nuclear facilities in the future. A highly guarded facility would be logistically difficult to attack due to multiple rings of security. However, terrorist organizations have proven adaptable and capable of circumventing even the best guarded infrastructure. Another possible explanation is that the locations of many nuclear storage sites are highly classified and unknown to terrorists. It would be reasonable for terrorist groups, having done a cost-benefit analysis, to conclude that conventional weapons are sufficient to create a high-consequence terror attack.

India's and Pakistan's international obligations require both states to take legislative measures, physical responses, and international cooperation on issues in nuclear safety, security, and terrorism.

South Asian nuclear facilities are not uniquely vulnerable to terrorist attack. There have been multiple attacks on South Africa's Pelindaba nuclear facility which is believed to contain the national stocks of highly enriched uranium (HEU). Although the attacks appear to have been crimes of opportunism, they have exposed the deficiencies in protective measures that could be devastating when combined with terrorist motivation.³⁰ Other examples include the 1972 and 1977 attacks on nuclear facilities in West Germany by the Baader-Meinhof Gang (Red Army Faction). The group bombed U.S. military facilities and attempted to seize tactical nuclear weapons. In response to this attack, the U.S. military implemented site consolidation measures and heightened security.³¹

Given the prospects of realistic terror threats in South Asia and examples in other areas of the world, we recommend that both India and Pakistan respond directly to terrorism, nuclear security, and nuclear safety through a combination of the existing international and multilateral regimes, as well as implementing national legislation to establish future bilateral steps.

Regional Response

South Asia has a long history of developing innovative Confidence Building Measures (CBMs).³² Yet so far, there has been no substantive progress on conflict resolution or the structuring of an arms control regime that encompasses conventional force balances, nuclear restraint measures, and other forms of risk reduction. Worse, the menace of terrorism that has increasingly bedeviled the region for multiple decades has been met with an inappropriate and inadequate response by both India and Pakistan; terrorism should be elevated as the highest priority to South Asian security and must be effectively addressed. This article has portrayed terrorism as a stand-alone issue and nuclear terrorism as a component of the broader terrorism challenge in the region. We recommend that India and Pakistan deal with regional terrorism above all other cross-border or other disputes. All nuclear arms control negotiations and CBMs must include discussions of terrorism, as well as of nuclear safety and security, cooperation, and bilateral consensus.

In order to identify future steps, we examine below the existing multilateral initiatives that contain binding obligations. By identifying the highest risk, both countries can re-purpose and expand the established mechanisms

to deal directly with the nuclear security environment in the region.

Existing International Tools and Obligations

As a first step, India's and Pakistan's international obligations require both states to take legislative measures, physical responses, and international cooperation on issues in nuclear safety, security, and terrorism. This creates the foundation for both states to build on their existing individual responses and to cooperate bilaterally and regionally on these topics. Regional responses are necessary because terrorism and the implications of nuclear expansion do not recognize political boundaries.

Taking into account the highest risk nuclear terrorism attack and the threat from terrorism itself, there are many tools to equip the international community to prevent and mitigate nuclear terrorism. However, most of the existing international initiatives and United Nations Security Council Resolutions (UNSCR) regulate proliferation and the transfer of materials. A first proposal is to create a regional regime derived from the UNSCR 1540 (discussed below). A second recommendation is to develop a regime focusing on terrorism utilizing the existing structure created in the 1999, 2004, and 2007 bilateral regional agreements that will each be explained in detail below. In combination, we propose the recently incoming Indian and Pakistani governments develop a regional security response to a potential nuclear incident or nuclear terror attack.

UNSCR 1540 mandated the development and enforcement of legal and regulatory mechanisms for proliferation of nuclear materials and criminalization of non-state actor involvement with nuclear weapons.³³ Although this resolution mainly addresses proliferation, it is

derived from a series of UNSC resolutions regulating international terrorism. As part of this regime, UNSCR 1540 aims to incorporate counter-terrorism into the nuclear and proliferation legislation and set forth standards for implementation under Chapter VII of the United Nations Charter.³⁴ Therefore, non-state actor involvement with anything related to nuclear weapon safety and security is a criminal act recognized as such by both states because the domestic legislation in both India and Pakistan has been brought into line.³⁵ A criminal activity or accidental activity in either territory or in a geographically proximate region obliges both countries to develop a response and cooperate with international efforts. We propose that the domestic and international components should be transformed into a regional obligation in the case of a threat to a nuclear installation. As part of a future regional cooperative agreement, both India and Pakistan must act in a transparent manner and cooperate with international measures.

We propose the recently incoming Indian and Pakistani governments develop a regional security response to a potential nuclear incident or nuclear terror attack.

To weave together a regional regime on nuclear terrorism, existing regional agreements are already available to India and Pakistan. The foremost document is the 1999 Lahore Memorandum of Understanding (MOU) which was coincidentally signed by the two parties now in power – the Bharatiya Janata Party (BJP) in India and the Pakistan Muslim League (Nawaz). Part III of the Lahore MOU commits both states to reducing the risk of accidental or

unauthorized use of nuclear weapons and to notify the other of the risk of any decision or actions that would result in adverse consequences. Although at the time this was restricted to unauthorized use of weapons or a nuclear accident, this could now be expanded to incorporate the UNSCR 1540 requirements on terrorism. Second, during the 2004 joint India-Pakistan statement following the Twelfth SAARC Summit, both countries pledged to prevent terrorism in the region and are bound to not support terrorism in any manner.³⁶ In addition, the Islamabad Declaration reaffirmed the commitment to a SAARC Regional Convention on the Suppression of Terrorism, and included the signing of an Additional Protocol on terrorist financing.³⁷ The third instrument was the 2007 CBM between India and Pakistan for the “Agreement on Reducing the Risk from Accidents Relating to Nuclear Weapons.” This agreement pledged each to notify the other in the case of an accident involving nuclear weapons.³⁸ This agreement was originally established for five years and reaffirmed in 2012 for a five-year extension.³⁹

There have been no major steps, dialogues, or even the exchange of CBMs and nuclear risk reduction measure ideas since the 2007 bilateral broad based agreement.

POLICY RECOMMENDATIONS

During the Cold War, the United States and the Soviet Union agreed to multiple CBMs to prevent situations in which non-state actors gained control of any part of their respective nuclear arsenals. These CBMs existed in an environment with limited internal terrorist threats and extensive nuclear security and

safety systems to keep the arsenals secure. As discussed above, India and Pakistan have numerous reasons to create a regional nuclear security architecture. Yet there have been no major steps, dialogues, or even the exchange of CBMs and nuclear risk reduction measure ideas since the 2007 bilateral broad based agreement. The shroud of secrecy surrounding nuclear weapons in South Asia must be removed to establish necessary CBMs on nuclear security, nuclear safety, and nuclear terrorism.

Based on UNSCR 1540 and the existing bilateral agreements, we offer a list of policy recommendations to combat the most realistic threat from nuclear terrorism in South Asia:

- **Committed military and political leadership:** Combatting all strains of terrorism requires considerable political will and dedicated leadership from both the political apparatus and the military. While lower levels of bureaucratic engagement can contribute to progress, routine senior meetings dedicated exclusively to terrorism issues are necessary to generate results. Although the Indian and Pakistani Prime Ministers meet on the sidelines of international meetings, there is a need for periodic regional bilateral meetings between the Prime Ministers, Directors General of Military Operations (DGMO), and heads of intelligence agencies.
- **Regional bilateral engagement:** We recommend direct regional bilateral contact between the chairmen of the Pakistani Atomic Energy Commission (PAEC) and the Indian Atomic Energy Commission (IAEC), as well as between the Pakistani Nuclear Regulatory Authority (PNRA) and the Indian Nuclear Regulatory Authority (INRA).

- National risk reduction centers: Since a host of confidence building measures and nuclear risk reduction measures have failed to create durable peace, nuclear risk reduction centers (NRRCs) should be established. NRRCs can build on the existing CBM and NRRM framework to serve as coordination centers to facilitate communication, identify triggers for escalation, and negotiate conflict resolution. NRRCs are intended to bolster official lines of diplomatic or military communication in the event of a nuclear emergency, not replace established communication.⁴⁰
- Exchange of radiation data: We recommend sharing radiation data around nuclear power plants of each country and the exchange of documents that identify steps for protective measures against accidents taken by each country.
- Civil society summits: In order to incorporate valuable subject matter expertise from regional think tanks and universities, the major think tanks in India and Pakistan should hold joint seminars to directly address regional nuclear questions and issues.
- Indefinite extension of nuclear agreements: The Agreement on Reducing the Risk from Accidents Relating to Nuclear Weapons was initially signed in 2007 and extended for an additional five years in 2012. This agreement should be extended indefinitely and include an additional protocol agreement to deal with consequence management of a terrorist incident at a nuclear installation and any incidents of nuclear terrorism.⁴¹ **PRISM**

Notes

¹ The first Nuclear Security Summit was held in Washington, DC in 2010 with the aim of preventing nuclear terrorism around the globe. Succeeding summits were held biannually in Seoul, South Korea in 2012 and in The Hague, Netherlands in 2014.

² A full definition of nuclear terrorism is found in the 2005 International Convention on the Suppression of Acts of Nuclear Terrorism: "The convention defines the act of nuclear terrorism as the use or threat to use nuclear material, nuclear fuel, radioactive products or waste, or any other radioactive substances with toxic, explosive, or other dangerous properties. The definition includes the use or threat to use any nuclear installations, nuclear explosive, or radiation devices in order to kill or injure persons, damage property, or the environment, or to compel persons, States, or international organizations to do or to refrain from doing any act. The unauthorized receipt through fraud, theft, or forcible seizure of any nuclear material, radioactive substances, nuclear installations, or nuclear explosive devices belonging to a State Party, or demands by the threat or use of force or by other forms of intimidation for the transfer of such material would also be regarded as acts of nuclear terrorism." <http://www.un.org/en/sc/ctc/docs/conventions/Conv13.pdf>.

³ Justin Bresolin, "Fact Sheet: The Nunn-Lugar Cooperative Threat Reduction Program," *The Center for Arms Control and Non-Proliferation*, (July 2013), http://armscontrolcenter.org/publications/factsheets/fact_sheet_the_cooperative_threat_reduction_program/.

⁴ 2011 National Strategy for Counterterrorism.

⁵ "Nuclear security after Fukushima," *International Institute for Strategic Studies* (August, 2011).

⁶ David Albright, Kathryn Buehler, and Holly Higgins, "Bin Laden and the bomb," *Bulletin of the Atomic Scientists*, 58 no. 1 (January 2002); see information on Dr. Sultan Bashiruddin Mahmood in Feroz Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, CA: Stanford University Press, 2012): 360-63.

⁷ Such threat perception was reinforced when Israel successfully destroyed Osirak reactor in Iraq in 1981. India then contemplated mimicking Israel to destroy Pakistani centrifuge facility program. See Khan, *Eating Grass*, 212-13.

⁸ For an example, see Adrian Levy and Catherine Scott-Clark, *Deception: Pakistan, the United*

States, and the Secret Trade in Nuclear Weapons (New York: Walker Publishing Company, 2007), 92-93.

⁹ A detailed analysis is given in Feroz Hassan Khan "Nuclear Security in Pakistan: Separating Myths from Reality," *Arms Control Today* (July/August 2009); Also see Naem Salik and Kenneth N. Luongo, "Challenges for Pakistan's Nuclear Security," *Arms Control Today* (March 2013).

¹⁰ Pakistan has often alleged Indian intelligence agencies to be involved in the support for Baluch insurgency just as India alleges Pakistani intelligence agency involvement in internal instability within India.

¹¹ "Visit of DG IAEA Pakistan's Center of Excellence for Nuclear Security," Inter Services Public Relations Pakistan Press Release, March, 12, 2014, https://www.ispr.gov.pk/front/t-press_release.asp?id=2499&print=1.

¹² See the 2014 NTI Index at <http://ntiindex.org/data-results/2014-findings/>; Salik and Luongo, "Challenges for Pakistan's Nuclear Security."

¹³ For more information on Indian regulatory non-practices, see M V Ramana, "Flunking Atomic Audits: CAG Reports and Nuclear Power," *Economic & Political Weekly*, 47 no. 39 (September 29, 2012).

¹⁴ Almost like a default response to any Western publication or assertion of nuclear security concern, Pakistani official reaction is to contemptuously dismiss the report and state that its nuclear security regime is foolproof and iron-clad. For example, see "Pakistan: Nuke security fool-proof," *CNN*, January 26, 2008.

¹⁵ 2014 NTI Index at <http://ntiindex.org/data-results/2014-findings/>.

¹⁶ Conversely, the United States has a culture of openness and is able to publicize shortcomings in site security. One example is a May 2014 admission that the U.S. Air Force failed to effectively respond to a simulated assault on a nuclear missile silo. Although questions are raised regarding the implications of security, ultimately it has allowed corrective measures and do not undermine the missile's safety. See http://hosted.ap.org/dynamic/stories/U/US_NUCLEAR_MISSTEPS?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT&CTIME=2014-05-22-02-54-38.

¹⁷ Charles D. Ferguson and William C. Potter, *The Four Faces of Nuclear Terrorism* (Monterey, CA: Center for Nonproliferation Studies, 2004), 3.

¹⁸ State Department Country Reports on Terrorism.

¹⁹ Abdul Manan, "Preventing Nuclear Terrorism in Pakistan: Sabotage of a Spent Fuel Cask or a

Commercial Irradiation Source in Transport," in ed. Henry D. Sokolski, *Pakistan's Nuclear Future: Worries Beyond War* (Carlisle, PA: Strategic Studies Institute, 2008), 221-276.

²⁰ The 2014 Nuclear Security Summit in The Hague recognized the significance of accounting process. See Jonas Siegel, "How Nuclear Material Accounting Can Contribute to Nuclear Security" Nuclear Security Matters Project at Harvard Kennedy School's Belfer Center for Science and International Affairs, May 16, 2014.

²¹ An IND manufactured by a terrorist group is more likely to behave like a RDD than a full-fledged nuclear explosive device with nuclear explosion and chain reaction.

²² Declan Walsh, "Militants Attack Pakistani Air Force Base," August 16, 2012; Salman Masood and David E. Sanger, "Militants Attack Pakistani Naval Base in Karachi," *The New York Times*, May 22, 2011; Hassan Abbas, "Deciphering the attack on Pakistan's Army headquarters," *Foreign Policy*, October 11, 2009.

²³ Celia W. Dugger, "Suicide Raid in New Delhi; Attackers Among 12 Dead," *The New York Times*, December 14, 2001; Luke Harding, "Kaluchak keeps the flag of vengeance flying," *The Guardian*, June 7, 2002; CNN Library, "Mumbai Terror Attacks," *CNN*, September 18, 2013.

²⁴ See "Releasing Radiation: Power Plants and Other Facilities," in Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 190-258.

²⁵ Rajesh M. Basrur and Friedrich Steinhäusler, "Nuclear and Radiological Terrorism Threats for India: Risk Potential and Countermeasures," *Journal of Physical Security*, 1 no. 1 (2004).

²⁶ The three-pronged approach includes utilizing indigenous uranium to fuel thermal reactors, harvesting the plutonium produced in the thermal reactors for fast breeder reactors, and created thorium-reactors to produce uranium-233 to power these reactors. For more information, see Charles D. Ferguson, "Assessing the Vulnerability of the Indian Civilian Nuclear Program to Military and Terrorist Attack" in ed. Henry D. Sokolski, *Gauging US-Indian Strategic Cooperation* (Carlisle, PA: Strategic Studies Institute, 2007), 131-185.

²⁷ Basrur and Steinhäusler, "Nuclear and Radiological Terrorism Threats for India."

²⁸ Salman Masood and Carlotta Gall, "Killing of Governor Deepens Crisis in Pakistan," *The New York Times*, January 4, 2011.

²⁹ Some western writings have made comical assertions. See "The Ally From Hell," Jeffrey Goldberg

and Marc Ambinder, *Atlantic Monthly*, October 28, 2011

³⁰ "Another Infiltration Reported at South African Atomic Site," Nuclear Threat Initiative, July 13, 2012. <http://www.nti.org/gsn/article/new-infiltration-reported-south-african-atomic-plant/>

³¹ Leslie Cockburn and Andrew Cockburn, *One Point Safe* (New York: Doubleday, 1997), 1-12.

³² For a full list of CBMs in South Asia, see the Stimson Center "South Asia Confidence-Building Measures (CBM) Timeline" at <http://www.stimson.org/data-sets/south-asia-confidence-building-measures-cbm-timeline/>.

³³ United Security Council Resolution 1540 (2004), http://www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/1540%20%282004%29.

³⁴ Peter van Ham and Olivia Bosch, eds. *Global Non-Proliferation and Counter-Terrorism: The Impact of UNSCR 1540* (Baltimore, MD: Brookings Press, 2007), 6-8.

³⁵ "South Asia 1540 Reporting," Nuclear Threat Initiative, <http://www.nti.org/analysis/reports/south-asia-1540-reporting/>.

³⁶ Full text of the joint statement between Pakistani President Pervez Musharraf and Indian Prime Minister Atal Behari Vajpayee during the Twelfth SAARC Summit at http://news.bbc.co.uk/2/hi/south_asia/3372157.stm.

³⁷ "Islamabad Declaration," Twelfth SAARC Summit, Islamabad, 4-6 January 2004.

³⁸ Full text at <http://www.stimson.org/research-pages/agreement-on-reducing-the-risk-from-accidents-relating-to-nuclear-weapons/>.

³⁹ "Pakistan, India Renew Nuke Accident Accord," Nuclear Threat Index, February 22, 2012, <http://www.stimson.org/research-pages/agreement-on-reducing-the-risk-from-accidents-relating-to-nuclear-weapons/>.

⁴⁰ Rafi uz Zaman Khan, "Nuclear Risk-Reduction Centers," in *Nuclear Risk Reduction in South Asia*, ed. Michael Krepon (New York: Palgrave MacMillan, 2004), 171-81.

⁴¹ <http://www.stimson.org/research-pages/agreement-on-reducing-the-risk-from-accidents-relating-to-nuclear-weapons/>

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