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Safety and Security of Pakistan's Nuclear Weapons

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CHAPTER SEVEN

Safety and Security of Pakistan's Nuclear Assets

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Abstract

Pakistan has been in the eye of the storm ever since it embarked on the nuclear weapon program in early 1970s. Beginning with the US pressures to roll back its nuclear program and economic/military sanctions to the cancellation of the French reprocessing plant, Pakistan's quest for restoring a balance of power in the region has met with stiff opposition from the Western states. More importantly, in the aftermath of 9/11, the regional and global security environment and the disclosure of AQ Khan episode, Pakistan has been under intense international scrutiny about the safety and security of its nuclear weapons. International media reports, academic analyses, intelligence commentaries and world leaders have been pointing towards the fragility of Pakistan's nuclear arsenal. There are three reasons cited for concern: (1) deteriorating law and order situation in the wake of growing militancy and terrorism, (2) collapse of the plural democratic political system and (3) nuclear weapons or materials falling in the hands of militants with insider-outsider scenarios.

However, despite the negative propaganda and concerns raised about its nuclear weapons, Pakistan has been following a strict and secure national command and control system. Although Pakistan is a non-signatory to the Nuclear Non-Proliferation Treaty (NPT) it complies with all international conventions and agreements concerning safety and security of nuclear materials. This chapter endeavours to analyze the safety and security of Pakistan's nuclear weapons in the light of international concerns and propaganda. To achieve this objective the chapter empirically evaluates Pakistan's command and
control system, the multilayered safety mechanisms and contingency planning to meet any unforeseen eventuality. It also addresses international concerns on the safety and security of Pakistan's nuclear weapons and material raised in various international independent and official assessment reports in an effort to evaluate Pakistan's nuclear safety and security regime.

Introduction

Pakistan's nuclear journey has been long and arduous. Forced by the circumstances of its threat perception, Pakistan was a reluctant entrant into the nuclear weapons club. The separation of former East Pakistan, now Bangladesh, in 1971 and the Indian Pokhran-I nuclear test in 1974, created a whole set of events that eventually led to the shaping of Pakistan's determination to acquire nuclear weapons capability of its own. Prime Minister Zulfiqar Ali Bhutto’s promise to the nation in the gloomy post-1971 era pioneered the determination to build the bomb at any cost. The rest, as is typically said, is history. The nuclear weapons capability of the two South Asian nations remained largely covert until India decided to carry out a set of nuclear explosions in May 1998, which were swiftly followed by Pakistan's own tests within a span of two weeks, to restore the regional balance. Ten years of overt nuclearization from 1998–2008 in Pakistan has been an experience of numerous challenges and significant achievements. The position that Pakistan was a reluctant entrant in the nuclear weapons club stands to reason, since it was spread over 24 years from 1974–98.1

Since May 1998, perceptions about Pakistan’s nuclear program have changed in myriad ways. In view of the opacity about its nuclear program, a perception of a “risk-acceptant” Pakistan developed, ostensibly due to Indian perceptions. Despite the negative overtone of this perception, it can be argued that it was helpful in stabilizing deterrence, such as during the 2001–02 escalation as, despite the presence of war-ready forces on both sides of the border, deterrence did not fail. After 10 years of overt nuclearization, this definition merits revision. Pakistan has taken significant measures to strengthen the Command and Control (C2) of its nuclear forces post-1998. This past decade stands witness to painstakingly created and carefully maintained nuclear management and capabilities.
Pakistan has come a long way in its first decade of nuclearization. The setting-up of the National Command Authority (NCA), with its highly professional secretariat, the Strategic Plans Division (SPD); the establishment of the Pakistan Nuclear Regulatory Authority (PNRA) to address nuclear safety issues and the creation of a highly versatile Bureau, the Security Division, to regulate and administer security in four tiers — physical, human, technical and counter intelligence — are some of the extraordinary steps that define the professionalism in which the nuclear establishment operates. Pakistan has adopted the doctrine of credible minimum deterrence and the operational readiness of its nuclear weapons program safely entails a “force in being” bordering on the “always-never” nexus. In its nuclear policy, Pakistan always maintains that its weapons are not for war. Even after a decade of nuclearization, this realization is still the main pillar of Pakistan’s “rationality and restraint” logic that a survivable, small nuclear force can and will thwart any future nuclear blackmail or coercion. The progress achieved in this ten-year period provides the confidence that the vulnerabilities of the formative years no longer exist. While unfounded fears might still persist about possibilities of a rollback through coercion, Pakistan’s nuclear establishment is confident that no one can thwart its nuclear capability.

A declassified US State Department document summarized the progress of Pakistan’s nuclear weapons program by identifying that there was “unambiguous evidence” that Pakistan was actively pursuing a nuclear weapons development program. It went on to suggest that Pakistan’s long-term goal was to establish a nuclear deterrent to aggression by India, which was Pakistan’s greatest security concern. This assessment, which was declassified in 1983, correctly predicted that Pakistan wanted to achieve nuclear weapons capability in response to the threat it perceived from India. The Indian-led dismemberment of Pakistan in 1971 was followed by the famous Multan meeting on January 20, 1972, in which Bhutto urged the Pakistani scientist community to embark upon the journey of acquiring nuclear weapons capability, providing Pakistan with a nuclear deterrent to curb military asymmetry vis-à-vis India. Bhutto appointed Munir Ahmed Khan as Chairman of the Pakistan Atomic Energy Commission (PAEC) and entrusted him with the responsibility to undertake this arduous challenge. Munir Ahmed Khan was thus the pioneer of the nuclear weapons program in Pakistan,
with many significant milestones to his credit. Much to the dismay of the international community, Pakistan’s nuclear development continued with great intensity during the 1990s, eventually leading to overt nuclearization in 1998. In 1993, the New York Times quoted Prime Minister Benazir Bhutto as saying, “We will protect Pakistan’s nuclear program and will not allow our national interest to be sacrificed.” This statement, however, was denied by Pakistan’s press attaché in Washington. In tacit acknowledgement, he identified that during the process of developing its peaceful nuclear program, “Pakistan has acquired a certain technical capability in the nuclear field.” Thus it was through the use of effective ambiguity that Pakistan managed nuclear testing in 1998 to counter the Indian explosion. As a non-NPT state, like India and Israel, Pakistan had no legal obligation to refrain from acquiring nuclear capability. Nevertheless, the achievement of this capability, despite decades of severe international criticism and sanctions, was no mean feat.

The broader contours of Pakistan’s nuclear doctrine are determined by its adherence to a policy of credible minimum deterrence, which is often thought to be India-centric. Pakistan does not subscribe to the NFU (No First Use) doctrine that India does, suggesting that just like the NATO, Pakistan has chosen to keep its options open. Consequently, the nuclear doctrine does not preclude the option of choosing any counter-value targeting, with a “force-in-being” arsenal (implying “ready to use” posture) and the institutionalized nuclear “command and control” structure, which is assertive rather than being delegative in nature. The command and control system has been designed to circumvent all possible eventualities related to human and material management.

Command and Control

Soon after the nuclear explosions in May 1998, Pakistan’s command and control structure was informally put in place (in 1999). On February 2, 2000, the National Security Council approved the establishment of the National Command Authority (NCA). Pakistan’s nuclear command organization is a multi-layered system, which is structurally grouped in three tiers — the NCA, the SPD and the Strategic Forces Commands.
Pakistan's National Command Authority

The first constituent, the NCA, is the pinnacle decision-making organ for strategic matters in Pakistan. It is comprised of the top highest decision-makers of the country and is a mix of political and military leadership. The NCA is responsible for nuclear policy formulation and is the central authority for the development, deployment and employment of strategic assets. In a re-promulgated ordinance of NCA 2009 issued on November 27, 2009, the President is no longer the Chairman of NCA. It is believed that the rest of the arrangement remains the same, which is described below. One can, however, assume that the post of the Vice Chairman now stands abolished. According to the new arrangement, with the Prime Minister of Pakistan as the Chairman of the NCA, it operates with two main committees, the Employment Control Committee (ECC) and the Development Control Committee (DCC). The two committees function separately for operational and developmental aspects. The Director General of SPD is a member and secretary of both Committees.

Committees of the NCA

The Employment Control Committee (ECC) of the NCA is a superior committee that functions to review strategic weapons program deployment and employment issues and also decides on various response options in the face of continuous developments. The composition of the ECC is politico-military. On the political side, apart from the Prime Minister, are four federal ministers that are elected civilian representatives from the parliament. These are Foreign, Defence, Interior and Finance Ministers. The military members are the Chairman of the Joint Chiefs of Staff Committee (CJCSC) and the three services chiefs. The ECC is entrusted with the responsibility for providing policy direction during peacetime, whereas in wartime, it would exercise complete authority to order, control and direct the use or employment of the three services strategic forces. Therefore, ECC ensures fail-safe command and control during both peace- and wartime as well as during periods of crisis. The Development Control Committee (DCC) of the NCA is a subordinate committee, which oversees implementation of the policies and decisions taken by the ECC. This is a military-scientific committee, with the scientific
The structure of NCA with its constituent committees represented in Figure 7.1 is a widely circulated source. However, the change in the structure after re-promulgation is authors own construction whereby we assume that the post of Vice Chairman may now no longer exist in the structure.

**Figure 7.1 Pakistan’s National Command Authority**

component represented by the heads of strategic commissions. The major strategic organizations include PAEC, KRL, NESCAl and SUPARCO. The committee exercises complete control over day-to-day technical, financial and administrative matters of strategic organizations. It also ensures that the systematic development of the strategic weapons program is executed according to the approved developmental strategy.11

**Strategic Plans Division (SPD)**

The SPD is the second constituent of the command and control organization. As the secretariat of the NCA, the SPD manages Pakistan’s nuclear capability in an all-encompassing manner, including all dimensions-policy formulation,
operations, plans, weapons development, arms control and disarmament, command and control, storage, budgets, safety and security. "On behalf of the NCA, SPD exercises firm control over all strategic organizations and coordinates their financial, technical, developmental, and administrative aspects. SPD is also responsible, in collaboration with the foreign ministry, for providing military inputs in the formulation of Pakistan's position on disarmament, non-proliferation and arms control issues."

The SPD undertakes measures to ensure the safety and security of strategic assets in both the short and long term. While coordinating financial, technical, developmental and administrative matters, the SPD helps the NCA to exercise effective control over strategic organizations, facilities and assets. On the inter-agency side, it coordinates its work with the Foreign Office and key Pakistani ambassadors at the Conference on Disarmament (CD) Geneva, IAEA Vienna, the UN Headquarters at New York, and at the major capitals around the world, to provide strategic inputs. Similarly, coordination to establish a C4I2SR system for command and control of strategic assets for the NCA, with real-time linkages to the Services C4I2SR networks and Strategic Forces, is another responsibility of this division. The security bureau function that is accomplished by the SPD's Security Division, is another significant, and in some ways, stand-alone achievement.

In brief, the SPD's functions include formulation of nuclear policy, nuclear strategy and nuclear doctrine. It envisions safety and security of Pakistan's nuclear program including strategic assets in the short and long term. This involves technical solutions, human factor reliability and counter intelligence. It conceives and facilitates advanced development, expansion and coordination of nuclear power and other peaceful uses of nuclear energy. Finally, it assists in implementing national obligations relating to non-proliferation, safety, security, accidents and WMD terrorism.

As depicted in Figure 7.2, the Operations and Plans Branch of the SPD resembles the structure of a military headquarters with operations, plans, intelligence and C4I2SR as essential elements. The Strategic Weapons Development (SWD) function provides the linkage to the classified side of the program, whereas Conventional & Open Programmes (COPD) was created to separate the civilian and peaceful uses of nuclear technology as well as the conventional spin-offs from the engineering outfits. Arms Control
& Disarmament Affairs (ACDA) provides the linkage with the federal government's policy elements, i.e. the Ministry of Foreign Affairs (MFA) and Pakistan's Ambassadors in major capitals and UN headquarters. It is also a nuclear establishment's research outfit and keeps a watch on Pakistan's international obligations as well as the evolving geo-strategic environment.\textsuperscript{14}

The Strategic Forces Commands at three service levels represent the third constituent of the NCA. Independent and operationalized Strategic Forces Commands have been raised in the Pakistan Army, Air Force and Navy to handle and operate nuclear weapons, when required. The three services retain responsibility for training, technical and administrative control of respective strategic forces. This notwithstanding, the NCA is solely responsible for operational planning and executive control over these forces, under the overall command of the CJCSC. For all operations-related aspects, the SPD is the main coordinating agency for the three services.\textsuperscript{15}

\textit{Security Division}

The security mechanism in Pakistan's nuclear establishment has been significantly augmented in the last few years. Physical security is multi-layered and has an elaborate system of access control. The current system comprises more than 10,000 specialized workers,\textsuperscript{16} with multi-faceted training in
counter-intelligence, human factor oversight, technical solutions, state of the art equipment and training facilities and special security directorates for each scientific commission.

An elaborate mechanism called a personnel reliability program (PRP) has been instituted to ensure a good "induction to grave" arrangement of oversight.\textsuperscript{17} This system also serves as an effective enforcement measure for internal compliance. Since Pakistan's strategic organizations are all state-controlled or public organizations, it becomes relatively easier to implement enforcement measures.

With regard to physical security of Pakistan's nuclear assets, well-developed multi-tiered physical security mechanisms are in place, with firewalls in weapons and in the chain of command, to ensure that no unauthorized or inadvertent use can take place. Just like other aspects of the program, access control to the sensitive places is on "need basis." This makes the physical security system easier to manage. Similarly, when the radiation sources are on the move, elaborate transportation security arrangements designed in full consideration of the international standards ensure foolproof security.

The NCA ordinance, which was promulgated on December 14, 2007 and re-promulgated in November 2009, is an overarching legislation.\textsuperscript{18} The safety and security system that Pakistan has created for the management of its nuclear capability continues to be improved, with various additional measures incorporated in it. One such measure is an view on the scientific manpower; Pakistan realized the need to regulate the movements of scientific manpower from its nuclear establishment. Through a system of reporting, approvals and monitoring of key personnel possessing sensitive information, the entire scientific community is under the strict control of the SPD. Furthermore, for any international travel to IAEA or any other international agencies, for either educational or private purposes, a clearance from SPD is a requirement that is provided after extensive scrutiny. Regular intelligence updates ensures an overview of all aspects.

Pakistan follows a strict regime of material control and accounting on modern scientific lines, which makes pilferage unlikely. Surprise checks are reportedly carried out on a regular basis to check sensitive material production and account for wastes to the last gram. For ensuring transportation security, Pakistan has instituted special measures to ensure transportation of
sensitive materials through the acquisition of specialist vehicles with theft and tamper proofing under professionally organized escorts. A “two man rule” is operational and Pakistan has installed indigenously designed Permissive Action Links (PALs) on its nuclear weapons. With specific reference to “the two man rule,” it is a concept whereby control mechanism is established and thus no single individual is authorized with access codes where materials and operations of nuclear weapons are concerned. While no details about the nature of Pakistani PALs are available, generically speaking PALs are 6- or 12-digit-long alphanumerical codes, which according to various sources protect the weapon from detonating even if it has been accidentally dropped. The weapon automatically becomes disabled if the codes are fed incorrectly too many times.

Although mechanisms to thwart any inadvertent use of nuclear weapons are in place, the weapons will be ready when and if they are required at a short notice. This mechanism in itself ensures strategic stability because unlike the Cold War model, Pakistan's nuclear weapons are not on hair trigger alert but rather in a “force-in-being mode.” Also, on the classified side, the weapon system security remains stand-alone and independent. However, being a
member of the PNRA, the Director General of the SPD remains a high tier, formal link that enables staying apace with international best practices.\textsuperscript{21}

\textit{Technology Controls}

While Pakistan's state structures and the existing legislations remained effective from its formative years, it undertook a review of its export control instruments soon after the May 1998 nuclear tests. It is noteworthy that while the international concerns arose out of the traumatic experience of the 9/11 attacks, Pakistan had already embarked upon structuring a new legislation in view of its overt nuclear capability. While the spade work commenced on legal review process, the SPD issued elaborate export policy guidelines to its strategic organizations in September 2000. Considering that the NCA was formalized in February 2000, issuance of export policy guidelines was speedy work. The Ministry of Foreign Affairs (MFA), however, interacted closely with the SPD to incorporate availability of technical inputs into the initial drafting of the legislation.

Pakistan's "Export Control on Goods, Technologies, Material and Equipment related to Nuclear and Biological Weapons and their Delivery System Act 2004," or simply, the Export Control Act 2004, includes all important elements of an effective national export control system.\textsuperscript{22} It enhances control over exports, re-exports, trans-shipment and transit of goods, technologies, material and equipment. It also prohibits the diversion of controlled goods and technologies and provides for penalties up to 14 years' imprisonment, a Rs. 5 million fine and confiscation of property in Pakistan or elsewhere.\textsuperscript{23}

Pursuant to the enactment of the Export Control Act 2004, a National Export Control List (NCL) was notified on October 19, 2005 (S.R.O. 1078(I)/2005).\textsuperscript{24} It contains items that are to be subjected to strict regulatory requirements. It is consistent with the scope of export controls maintained by the Nuclear Suppliers' Group (NSG) as it incorporates items listed in NSG Part I and II; the Australia Group (as related to biological agents, toxins and associated dual use technologies); and the delivery systems and components according to the Missile Technology Control Regime (MTCR) lists.

As a measure of enforcement of the export control act, the Strategic Export
Control Division (SECDIV)\(^{25}\) was created at MFA. The SECDIV is run through a multi-disciplinary approach where experts from Pakistan Customs, Ministries of Foreign Affairs, Commerce, Defence, on one hand, and Federal Board of Revenue (FBR), PAEC, PNRA and SPD on the other, work closely to ensure successful implementation of export control mechanism.

An Oversight Board, comprising senior officials of the Government of Pakistan, was established in July 2007. This Board is mandated to independently review the implementation of export controls, in particular the Export Control Act 2004 and to supervise the functioning of the SECDIV. The Board is chaired by the Foreign Secretary and includes members from the Ministries of Foreign Affairs, Defence, Interior, Cabinet Division, Federal Board of Revenue, PNRA and the SPD.\(^{26}\) Finally, within the strategic organizations, an internal compliance mechanism has been introduced. All together, the stringent export control mechanism not only provides a comprehensive structure within Pakistan, it also matches with the international requirements in general and acts as a swift response to UN obligations in particular.

**Pakistan Nuclear Regulatory Authority (PNRA)**

The PNRA was established under the PNRA Ordinance No. III of 2001. Its core goals are safety and security of radioactive materials, radiation protection, ensuring physical protection of radioactive materials as per IAEA INFCIRC/225, transport safety, waste safety. PNRA was created in 2001 “...
for regulation of nuclear safety and radiation protection in Pakistan and the extent of civil liability for nuclear damage resulting from any nuclear incident."\textsuperscript{27}

The PNRA was created partly in compliance of Pakistan's obligations under the Convention on Nuclear Safety (CNS). It is the main agency in Pakistan that coordinates emergency preparedness at a national level and also collaborates with international agencies for nuclear and radiological emergencies. In order to strengthen and enhance the existing regulatory capabilities towards safety and security of nuclear/radioactive materials and facilities Pakistan has launched a five-year National Nuclear Security Action Plan (NSAP). Approved by the Government in May 2006, the NSAP implementation commenced in July 2006, for which the PNRA remains the sponsor agency. Pakistan has taken various steps towards ensuring the safety and security of its nuclear installations.\textsuperscript{28} The NSAP has five main objectives, which include the management of radioactive sources and evaluation of vulnerable facilities; the establishment of Nuclear Safety and Security Training Centre; the establishment of National Nuclear Security Emergency Co-ordination Centre; detection equipment at entry/exit points to obviate chances of illicit trafficking; and locating and securing orphan sources.

The establishment of the Nuclear Safety and Security Training Centre is one such step. The training centre imparts training in nuclear safety and security. Its laboratories are equipped with state-of-the-art equipment. Besides imparting training to the first responders, the centre also trains customs and border officials for nuclear and radioactive material detection at borders. A memorandum of understanding (MoU) has been signed between the PNRA and the Federal Board Revenue (FBR) "to promote cooperation and organize mutual assistance against illicit trafficking of radioactive and nuclear materials."\textsuperscript{29} Another step in securing Pakistan's nuclear complex is the creation of National Nuclear Security Emergency Co-ordination Centre (NuSECC).\textsuperscript{30} The main objective of establishing this center, which functions round the clock, is to assess, coordinate and respond in case of a nuclear security emergency in Pakistan. The level of preparedness for any radiological or nuclear emergency exhibits Pakistan's consciousness about disaster management in case of a nuclear accident.

In order to ensure nuclear safety, the Nuclear Security Directorate (NSD)\textsuperscript{31}
Figure 7.5 Organizational Chart of PNRA
Source: www.pnra.org
was established to undertake licensing of nuclear power plants, including modifications; periodic safety reviews and re-licensing; licensing and inspections of nuclear grade equipment manufacturing facilities; establishing and maintaining regulatory framework for nuclear safety; reviews and assessments; self assessment; coordinating with regional directorates in activities related to nuclear safety; maintaining and disseminating information on nuclear safety within PNRA; preparation of regulations, working procedures and guidelines.

_Pakistan and the Nuclear Security Instruments_

Following are the international instruments that contribute to the framework of the nuclear security regime, of which Pakistan is a responsible state party, the Convention on the Physical Protection of Nuclear Material (CPPNM);\(^\text{32}\) Convention on Nuclear Safety;\(^\text{33}\) UN Security Council Resolution 1540;\(^\text{34}\) and the IAEA Code of Conduct on Safety and Security of Radioactive Sources.\(^\text{35}\) Pakistan is amongst many countries that have made a political commitment with regard to the Code of Conduct and the supplementary guidance on the import and export of radioactive sources.

The CPPNM was opened for signature on March 3, 1980 and entered into force on February 8, 1987. "Pursuant to Article 2, the Convention applies to nuclear material used for peaceful purposes while in international nuclear transport."\(^\text{36}\) Pakistan acceded to CPPNM on September 12, 2000.\(^\text{37}\) Following are the legal instruments that constitute Pakistan's export control framework, the Import and Exports (Control) Act, 1950 (Act No. XXXIX of 1950).\(^\text{38}\) Through this act the Federal Government is authorized to prohibit, restrict or control the import/export of goods and regulate practices and procedures connected therewith. Provisions for control of import/export of nuclear substances and radioactive materials are laid down under this ordinance the Pakistan Nuclear Safety and Radiation Protection (PNSRP) Ordinance of 1984 and Regulation of 1990;\(^\text{39}\) Statutory Notification No. SRO-782 (1), 1998 to prohibit the export of fissionable materials; the Chemical Weapons Convention Implementation Ordinance 2000 to regulate and control import and export of chemicals in accordance with the provisions of CWC and penalties in case of violations; the Export Control Act on Goods, Technologies,
Material and Equipment related to Nuclear and Biological Weapons and their Delivery Means, 2004. Export control guidelines were issued to strategic organizations in September 2000 and the National Control List (NCL) was notified in October 2005.

Challenges to Pakistan’s Nuclear Security Framework

According to the IAEA, nuclear security framework is referred to as “the combination of international binding and non-binding legal instruments together with IAEA nuclear security guidance.” Pakistan adheres to this legal framework and is an active participant on all IAEA forums of training, information exchange, legislative assistance and capacity-building that constitutes its nuclear security regime. The insinuations raised in the international media about the safety and security of Pakistani nuclear weapons, assets, materials and personnel have crossed all limits of projecting worst-case doomsday scenarios but none of the reports that have been published about Pakistan’s nuclear weapons program can highlight tangible issues with the system.

The insider threat, the outsider threat, the insider-outsider collusion, the wrong hands, the rogue hands and the theorizing about militant extremists eyeing Pakistani nuclear weapons — all these have become a standard to bash Pakistan and pressurize it into accepting programs akin to those of Cooperative Threat Reduction (CTR) between the US and the former Soviet Union. But Pakistan is not the Soviet Union. The kind of transparency that the West or the international community demands of Pakistan’s nuclear establishment is unprecedented. Despite having fulfilled all obligations as ascertained by IAEA nuclear security framework, confidence in Pakistan’s ability to secure its personnel and assets remains questionable. Pakistan is a signatory of both the Biological and Toxin Weapons Convention and Chemical Weapons Convention and does not produce or possess biological or chemical weapons. Yet as unfortunate as it remains, reports like “World at Risk” by the Commission on the Prevention of WMD Proliferation and Terrorism continue to speculate that Pakistan poses a grave danger of WMD attack, given the alleged vulnerability of its nuclear stockpile. Such reports derail confidence-building mechanisms and thus render the entire process counterproductive.
A considerable amount of speculation regarding Pakistan's nuclear security culture arose after the AQ Khan revelations of an illicit nuclear proliferation network. However, according to some scholars "The nuclear security culture was originally designed to protect the autonomy of the scientists so that their work could continue unhindered. Because of the significance of the cause, managers of the program had no authority to question the motives and practices of the scientists. This enabled Khan to take advantage of the lack of proper accountability."43

Conclusion

Pakistan maintains a reasonable amount of strategic ambiguity where its nuclear policies, doctrines and strategy are concerned "No one knows the location of our weapons. The system is close-looped and the rules very stringent due to a strict 'need to know' policy. Such strict compartmentalization of knowledge facilitates strategic ambiguity."44 However, Pakistan has been transparent about its command and control structure, its nuclear safety arrangements, and the processes involved in physical safeguarding of the assets and the materials. The security of its facilities and the safeguarding of its nuclear materials are according to the internationally established norms followed by all nuclear and non-nuclear states. The most commonly known information is about the civil-military structure of the NCA itself, which brings in a balanced mix of civil and military personnel where the decision-making of the NCA is concerned.

Pakistan has survived several political and technical challenges and made significant achievements. In the political dimension, Pakistan has achieved a demonstrable nuclear weapons capability, managed its nuclear assets by creating a robust command and control infrastructure, instituted nuclear safety and security regime, fulfilled its international non-proliferation obligations, established credible minimum deterrence and taken considerable steps in support of strengthening strategic stability in South Asia. The creation of the NCA consequent to the May 1998 tests signifies a well-conceived and well-deliberated management structure. It projects Pakistan as a responsible nuclear weapons state in complete control of its security arrangements. On the technical side, the successful and safe achievement of the nuclear
tests, soon after the Indian tests, moving swiftly to establish technologically feasible C2 structures, ensuring that a “force-in-being” remains credible and relevant and launching an elaborate nuclear safety and security regime have been ensured with consistency. Pakistan’s nuclear program continues to be India-specific given its past and present threat perception but reliance on minimum deterrence, which is credible, will remain the central pillar of Pakistan’s nuclear policy thereby reasserting Pakistan’s seriousness towards maintaining strategic stability in South Asia.

Since Pakistan has been engaged in fighting the US-led war on terrorism since 2001, speculation of an extreme nature have been conducted in the international media. Although the US has the most extensive nuclear security infrastructure in the world, cases of lack of oversight and errors have managed to over-blow the concerns for new nuclear states like Pakistan. Despite Pakistan’s emphasis on its nuclear safety and security arrangements and its command and control structure before the world, a significant amount of unease still exists in the international community — simply because Pakistan stands grossly misunderstood. For Pakistan’s nuclear establishment, the doomsday scenarios are dismissed with an air of confidence, “We have the advantage of hindsight. We have worked hard, we have trained hard, and we are very sure of what we have. We have learned from the best international practices.” Since no security system in the world is foolproof, there can never be absolute measures in place to counter the unforeseen. However, contingency planning is constantly being reviewed and tested with all possible threat scenarios catered for. To put it simply, Pakistan’s nuclear weapons are as vulnerable or as safe as any other country with such capabilities, including the P5 states. The approach has been all-encompassing, with special emphasis on nuclear safety and physical and other aspects of security. Much of this has been acknowledged by international observers.

There is a dire need for the creation of an atmosphere of trust and confidence with Pakistan’s nuclear establishment and the people of Pakistan, who take pride in being a responsible nuclear state. Pakistan is outside the fold of the NPT yet follows all international non-proliferation norms, follows IAEA safeguards on all its civilian nuclear facilities in letter and spirit, has no record of smuggling or trafficking of uranium or other fissile materials that can be confirmed from IAEA’s Illicit Trafficking Database (ITDB), has no record of
nuclear accidents, maintains an impeccable record of nuclear safety and is part of various binding and non-binding international instruments on nuclear safety and security. The most immediate and significant political challenge that Pakistan will continue to face for some time, given the constant pressure by the international community, is battling international misperceptions, and convincing the world that the problem of internal stability that Pakistan faces today does not and will not lead to vulnerability of its nuclear assets.

Notes

1 Despite the fact that Pakistan's nuclear program is highly secretive in nature with very little information available about its various arrangements; the authors would like to thank DG Strategic Plans Divisions Lt. Gen. (Retd) Khalid Ahmed Kidwai and his outreach team in the SPD for providing transparency on issues of physical safety and security of Pakistan's nuclear assets.


2 The expression of "force in being" is borrowed from Ashley Tellis's views regarding India, which in the author's opinion is equally applicable to Pakistan. According to Tellis "force in being" is defined as a nuclear posture which "exhibits a deterrent capability based on available but dispersed components capable of being constituted into usable nuclear weapon systems during a supreme emergency, and even after enduring an enemy nuclear strike." For a detailed discussion on "force in being" please see Ashley Tellis, "Toward a 'force-in-being': the logic, structure, and utility of India's emerging nuclear posture," Journal of Strategic Studies, vol. 25, December 4, 2002, pp. 61–108.


Available at: www.nytimes.com/1993/12/02/opinion/l-pakistan-isn-t-building-any-
nuclear-weapons-011193.html

7 These views were expressed by Air Commodore Khalid Banuri, Director Arms Control
and Disarmament Affairs (ACDA) SPD at a Seminar in National Defense University,

Available at: www.globalsecurity.org/wmd/library/news/pakistan/2000/000203-
pak-app1.htm (accessed November 06, 2009). For a detailed reference on Pakistan’s
management structure of nuclear capability see Mahmud Ali Durrani, “Pakistan’s
Strategic Thinking and the Role of Nuclear Weapons,” Cooperative Monitoring
Center Occasional Paper 37, Sandia National Laboratories, July 2004. Available at:
2009).

9 Khalid Banuri and Adil Sultan, “Managing and Securing the Bomb,” Daily Times,

10 “President sheds powers of NCA Chairman,” The Nation, Pakistan, November 28,
2009. Available at: www.nation.com.pk/pakistan-news-newspaper-daily-english-
online/Politics/28-Nov-2009/President-sheds-powers-of-NCA-Chairman

11 Air Commodore Khalid Banuri’s lecture on Pakistan’s Command and Control struc-
tures at Fatima Jinnah Women University Rawalpindi on April 2009.

12 Banuri and Sultan, op. cit.

13 The authors were present at the background brief given to the local and foreign jour-
nalists by the Director General of the SPD on February 4, 2008.

14 Ibid.

15 Ibid.

16 “10,000 men protecting the nuclear assets,” Dawn, May 28, 2009. Air Commodore
Khalid Banuri quoted on security of nuclear assets. Available at: www.dawn.com/wps/
wcm/connect/dawn-content-library/dawn/news/pakistan/13+10000+men+protectin
g+n-assets+official-za-09

17 For a Western perspective on nuclear security pattern, see Peter Wonacott, “Inside
Pakistan’s Drive to Guard it’s a-Bombs,” The Wall Street Journal, November 29, 2007.

php?id=663841&currPageNo=1&query=&search=&term=&supDate

19 Peter Wonacott, op. cit.

20 S. M. Bellovin, “PALs, Nuclear Weapons and History of Cryptography,” 2005 lecture
notes from Department of Computer Science, Columbia University. Available at: www.
stanford.edu/class/ee380/Abstracts/060315-slides-bellovin.pdf

21 For comments on Pakistan’s nuclear security and the role of DG SPD, see Ashley J.
Tellis, Testimony to US House Committee on Foreign Affairs, Sub-Committee on
Middle East and South Asia, January 16, 2008.

Ibid.

For the complete text of the NCL, see IAEA INFCIRC/669.

IAEA INFCIRC 712 Pakistan's Export Control Act, op. cit.

SRO 693(I)/2007 Establishment of the oversight board. Available at: www.mofa.gov.pk/SECDIV/Oversight%20Board.PDF


Nuclear Safety Directorate. Available at: www.pnra.org/ns.asp


PNSRP Ordinance text. Available at: www.pnra.org/legal_basis/1984.pdf


A plethora of material is available on the worldwide web on Pakistan's nuclear security, mostly targeting Pakistan's nuclear safety and security arrangements and dismissing its capability to deal with any eventuality. Latest reports include Seymour P. Hersh's "US nuclear security plan" New Yorker, November 8, 2009, speculating on Pakistan compromising nuclear secrecy, which was rebutted very strongly both by the Foreign Office and Chairman of the Joint Chiefs of Staff Committee (CJCSC) General Tariq Majid, who stated, "I reiterate in very unambiguous terms that there is absolutely no question of sharing or allowing any foreign individual, entity or state any access to sensitive information about our nuclear assets," quoted in DAWN Report "N-assets report mischievous, absurd: Gen Majid" DAWN, November 10, 2009. Available at: http://www.dawn.com/wps/wcm/connect/dawn-content-library/dawn/news/pakistan/13+gen+tariq+majid+calls+hersh+article+mischievous-za-01+ (accessed December 03, 2009).


Authors' interview with Air Commodore Khalid Banuri, Director Arms Control and Disarmament, Strategic Plans Division (SPD), JSHQ on December 18, 2009.


"Nuclear parts sent to Taiwan in error." See: www.washingtonpost.com/wp-dyn/content/article/2008/03/25/AR2008032501309.html (accessed December 12, 2009).

Air Commodore Khalid Banuri Director Arms Control and Disarmament Strategic Plans Division (SPD) in a televised interview 2007–2008. Transcript can be accessed at: www.globalpolitician.com/24013-pakistan