

Building Confidence in Pakistan's Nuclear Security

Pakistani President Pervez Musharraf's decision last month to declare a national emergency and suspend the constitution has ratcheted up concerns about the safety and security of that country's nuclear arsenal. Pakistani officials have categorically rejected speculation that their grip on its nuclear assets is loose, with Musharraf stating that Pakistan's nuclear weapons are under "total custodial controls."¹

Concerns remain, however, including in Western governments, that political volatility could erode the security situation.

Nonetheless, nuclear security in Pakistan has evolved substantially during the past nine years, and although improvements are still needed, both physical security and operational procedures are now stronger.

Following Pakistan's nuclear tests in 1998, the nuclear program emerged from the opaqueness that had surrounded it for the previous 25 years. Pakistani officials recog-

nized that they had not been sufficiently transparent to alleviate concerns regarding proliferation threats from Pakistan and sought to convince the international community that they have taken adequate measures.

This led to the establishment of a central command-and-control system to manage nuclear infrastructure and strategic assets. The two most prominent creations were the National Command Authority (NCA), which began operation in March 1999, and the Strategic Plans Division (SPD), which was

established as the permanent secretariat of the NCA, although the formal announcement in this regard came in February 2000.

The creation of the NCA and the SPD also were important in changing the mindset inside the Pakistani nuclear structure, especially among individuals and facilities that previously had operated autonomously or with minimal oversight or auditing. The actions of Abdul Qadeer Khan from the late 1980s through the 1990s that resulted in the transfer of sensitive technologies to Iran and Libya, among other activities, are an example of the flaws in the previous oversight system.

Islamabad also developed a nuclear doctrine and communication systems that were integrated with intelligence and reconnaissance efforts and brought under the NCA to provide command and control during any crisis. Existing export control regulations were augmented, and safety and security procedures were reviewed and strengthened.

Concerns About Pakistan's Nuclear Security

Pakistani officials are aware that they have not completely alleviated international worries regarding the security of its nuclear arsenal. Four key concerns continue to exist regarding Pakistan's nuclear program, some more acute than others:

Kenneth N. Luongo is executive director of the Partnership for Global Security and a former senior adviser on nonproliferation policy to the secretary of energy. **General (Ret.) Naeem Salik** is currently the South Asia Studies Visiting Scholar at the Johns Hopkins School of Advanced International Studies. He previously served as director of Arms Control and Disarmament Affairs at the Strategic Plans Division of Pakistan's National Command Authority. This article is based in part on the first of a series of workshops on the evolution, status, and future of nuclear security in Pakistan that the authors organized in the spring of 2007. The authors wish to acknowledge the contribution of Isabelle Williams in drafting the results of the workshop.

- *Nuclear assets or technology falling into the wrong hands.* The Pakistani-Afghan border region is known to harbor al Qaeda and Taliban extremists, including possibly Osama Bin Laden. It is also suspected that some percentage of younger physicists and military personnel in Pakistan are more influenced by Islamic radicalism than previous generations. Two physicists from Pakistan with knowledge of the nuclear program, retired Pakistan Atomic Energy Commission (PAEC) scientists Sultan Bashiruddin Mahmood and Abdul Majid, have admitted to speaking with Bin Laden, although they denied that any sensitive information was divulged. Also, the actions of Khan have been well documented. Steps have been taken to improve facility security and to screen personnel who work in the nuclear program more rigorously, but this is an ongoing challenge.

- *Islamist takeover as a result of elections or collapse of government.* At the heart of the current crisis in Pakistan is the question of political elections. A serious question is whether Islamic extremist groups and Islamist political parties could gain power in Pakistan through the election process. According to the International Crisis Group, "Poll after poll has found that if fair and free elections were held under constitutional protections and monitored by national and international observers, the result would be a moderate, pro-Western, anti-extremist government in Pakistan."² Extremist Islamist parties have never won more than 11 percent of the total votes in a Pakistani election.³ Questions have also been raised about the reliability of the Pakistani military, given the ethnic diversity that exists within its ranks. The military in Pakistan has become more ethnically diverse in recent decades and contains Baluchis, Pash-tuns, Punjabis, and Sindhis. This has not been a cause for concern about potential factionalism as the troops are professionally trained and have proven to be cohesive in the current political crisis.

- *Assassination attempt or elimination of key leaders leading to a loss of control of the nuclear program.* Several attempts have been made on Musharraf's life, all unsuccessful. The control system over nuclear assets, however, includes at least 10 senior officials, military and political, who are fully competent to assume responsibility for the nuclear weapons program. Ultimately, the political decision-makers control the budget and are responsible for the development and management of the nuclear program. Their actions are strongly guided by recommendations from the deep professional core of specialists that assist the political representatives with the management of the system.

- *Secondary proliferation.* The discovery of the Khan covert nuclear technology proliferation network revealed serious security weaknesses, but most of his activities predated the establishment of formal command-and-control mechanisms. In the wake of that scandal, Pakistani officials declared that they would

never again let anyone transfer nuclear technology to any country or entity, and actions have been taken to control individuals and facilities in the nuclear complex better.

Nuclear Weapons Assets Authority

Many of these concerns have been eased by the establishment of the NCA and the SPD.

The National Command Authority (NCA)

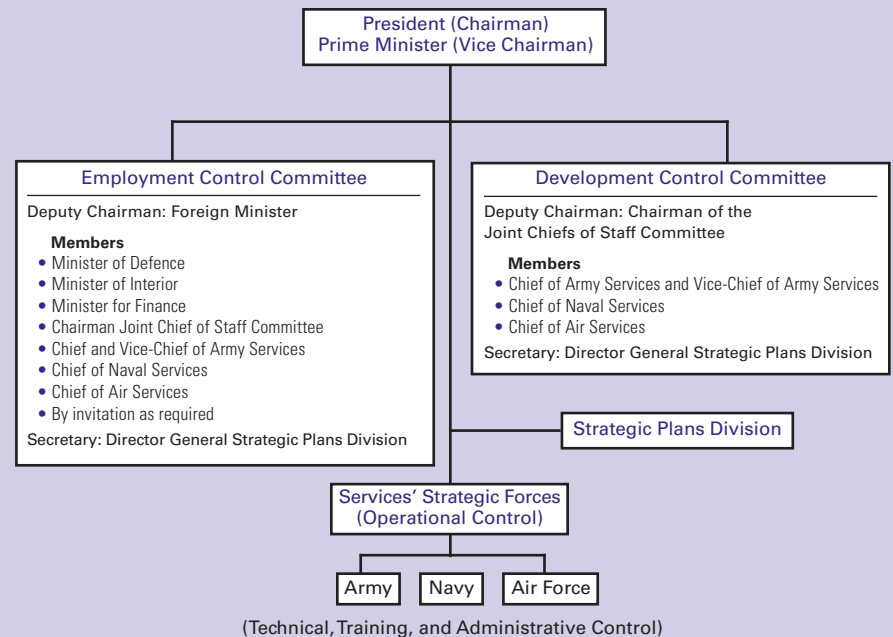
The NCA was established to create an institutionalized command-and-control mechanism over Pakistan's nuclear weapons programs. Responsibilities of the NCA include employment and deployment aspects of the nuclear force, coordination of activities of Pakistan's strategic organizations, arms control and disarmament issues, and oversight of the implementation of export controls and safety and security of nuclear installations and materials.

The NCA has a three-tiered structure with two committees, the Employment Control Committee and the Developmental Control Committee, constituting one tier; the Strategic Plans Division (SPD) another tier; and the three services' strategic forces commands the final tier.

The Employment Control Committee

Figure 1: Organization of Pakistan's National Command Authority (NCA)

Pakistan established a National Command Authority (NCA) in March 1999 to create an institutionalized command-and-control mechanism over its nuclear weapons programs. The NCA is responsible for employment and deployment aspects of the nuclear force, coordination of activities of Pakistan's strategic organizations, arms control and disarmament issues, and oversight of the implementation of export controls and safety and security of nuclear installations and materials.



is the NCA's main policymaking organ. It functions as a political-military committee. It has the president as its chairman, the prime minister as the vice chairman, and the foreign minister as its deputy chairman.

The Development Control Committee is a military-technical committee that translates the policy decisions taken by the Employment Control Committee into force goals and oversees their achievement by the strategic organizations.

The Strategic Plans Division (SPD)

The SPD is tasked with daily management of Pakistan's strategic assets, liaising with all strategic organizations, and oversight of the budgetary and administrative aspects of these organizations. The SPD also oversees a security division of 9,000-10,000 personnel who are responsible for securing all strategic infrastructure.

The SPD itself has four main directorates. The Operations and Planning Directorate, as the name suggests, carries out the operational planning. The CCCCIISR (Computerized Command, Control, Communications, Information, Intelligence and Surveillance Directorate) is responsible for developing and maintaining strategic command and communication links. The Strategic Weapons Development Directorate carries out liaison with the strategic organizations, scrutinizes their budgetary demands, and carries out audits of funds. The Arms Control and Disarmament Affairs directorate provides policy recommendations on all arms control and disarmament issues and participates in relevant bilateral and multilateral nonproliferation discussions.

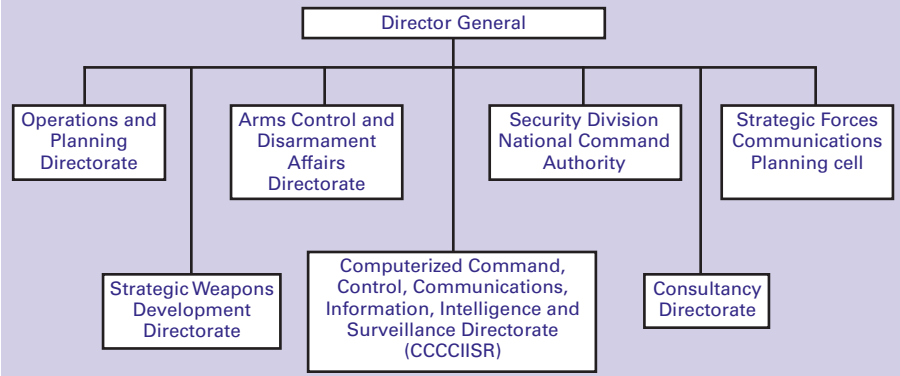
There are some subsidiary organizations, such as the Consultancy Directorate, comprised of technical experts who provide technical advice on all construction projects, and the Strategic Forces Communications Planning (SFCD) cell, comprising communications experts to assist the CCCCIISR directorate. The Security Division is by far the largest component in terms of number of personnel, and its primary responsibility is to provide internal and external security to all sensitive installations and sites.

The Services' Strategic Forces Commands

The third tier of command comprises the three services' strategic forces commands. The primary responsibility of these commands is to exercise technical, training, and administrative control over the strategic delivery systems. The operational control, however,

Figure 2: Organization of the Strategic Plans Division (SPD)

Pakistan established the Strategic Plans Division (SPD) as the permanent secretariat of its National Command Authority in February 2000. The SPD is tasked with daily management of Pakistan's strategic assets, liaising with all strategic organizations, oversight of the budgetary and administrative aspects of these organizations, and arms control and nonproliferation policies.



rests with the NCA. The army strategic force command possesses ballistic and cruise missiles, while the air force strategic command has the aircraft capable of delivering nuclear weapons. The naval strategic force command was the last to be established, and there is no public information as to whether they already have nuclear delivery systems and weapons or whether this capability is still evolving.

Security of Nuclear Weapons Assets and Facilities

The number of Pakistani nuclear weapons and the size of its fissile material stockpiles are not known in detail. It has been estimated that Pakistan has enough fissile material for about 60 weapons and has produced about 1.3 metric tons of highly enriched uranium and slightly more than one-half ton of plutonium.⁴ A number of steps have been taken to protect both the weapons and components in storage as well as nuclear facilities and stockpiles.

Nuclear Weapons Security

Pakistan can deliver its nuclear weapons either by aircraft or by surface-to-surface missiles. The weapons are believed to be kept separate from their delivery systems, with the nuclear cores removed from their detonators.⁵ Some estimates claim that the weapons themselves may be scattered, at up to six separate locations.⁶ It may be difficult to ascertain the number of actual weapon-storage sites, but nuclear weapons certainly would be dispersed at multiple sites.

Despite their disassembled status, General Khalid Kidwai, head of the SPD, has stated that the weapons could be assembled very quickly.⁷ Although not originally equipped with permissive action links (PALs), which

require the entry of a code before the weapon can explode, each Pakistani warhead is now fitted with this code-lock device, according to Samar Mubarakmand, one of Pakistan's top nuclear officials and scientists in an interview with a private TV network in 2004.⁸ The employment of PALs was publicly confirmed in November 2006 by General Kidwai.⁹ In addition, Pakistan follows a two-man rule to authenticate the codes that call for the release of the weapons. It may in fact be a three-man procedure in some cases. Such authentication processes are standard in advanced nuclear-weapon states.

Fissile Material Protection, Control, and Accounting

Since 1998, the SPD has been responsible for conducting external audits on all nuclear inventories and implementing regular and surprise inspections at facilities. Any nuclear or radioactive materials that enters into the safeguarded system comes under the supervision of the International Atomic Energy Agency (IAEA), which monitors and tracks the movement of materials through the system until they are disposed.

Four of Pakistan's nuclear facilities, the Karachi and Chasma-1 power reactors and the Pakistan Atomic Research Reactors I and II in Rawalpindi, currently operate under IAEA safeguards. Several key nuclear weapons-related facilities are not subject to IAEA inspections. One is the Khan Research Laboratory, where weapons-grade uranium is produced. Other uranium-related facilities believed to be at Golra, Sihala, and Gadwal. The Pakistani government has never officially acknowledged the existence of these facilities, and it does not provide them on the list of

facilities exchanged with India on January 1 every year. Plutonium-related facilities not subject to safeguards include the Khushab research reactor, which is estimated to have a capacity of about 50 megawatts, sufficient to produce the plutonium necessary for a few nuclear weapons per year, and New Laboratories, a plutonium-reprocessing plant.¹⁰

ing weapons could penetrate transportation containers and release radioactive materials. Officials are therefore seeking to acquire additional specialized vehicles to prevent sabotage attempts. Pakistan ratified the Convention on the Physical Protection of Nuclear Materials (CPPNM) in October 2000 and is working to ensure it meets all the guidelines

Nuclear security in Pakistan has evolved substantially during the past nine years, **and although improvements are still needed, both physical security and operational procedures are now stronger.**

Sensitive Facility Perimeter Security

Perimeter security is an integral element of all nuclear installations, civilian or military. Central responsibility for the security and physical protection of nuclear facilities resides with the SPD. There is presently a multilayered approach to perimeter security:

- *Inner perimeter.* This has traditionally been the responsibility of the respective organizations, but the security in these facilities is now overseen by the elements of the coordinated security division of the SPD. This division is headed by a two-star general. These forces operate on a permanent basis and receive special training. Certain facilities are also protected by air defense elements and are designated as no-fly zones.
- *Outer perimeter.* Fencing has recently been strengthened at facilities, and new technologies and electronic sensors, including closed-circuit television cameras, have been installed.
- *Third Tier.* Counter-intelligence teams work on identifying external threats to facilities.

Transportation Security

Materials, such as spent nuclear fuel and high-activity radioactive sources are more difficult to defend from adversaries while in transit than when in fixed locations. The key concern in Pakistan is that armor-pier-

ing weapons could penetrate transportation containers and release radioactive materials. Officials are also considering accession to the July 2005 amendments that are intended to strengthen the CPPNM.

Personnel Reliability Program (PRP)

The security clearance and screening processes of individuals for employment in the strategic organizations was a disjointed and fragmented process in the past that has now been consolidated through the institution of a personnel reliability program (PRP). This program covers all persons working in the sensitive areas of the nuclear system. The SPD has overall approval of key personnel and also retains information on all retired personnel. Since 2001, the personnel system has been strengthened and integrated into the nuclear establishment. Also, as the nuclear departments have grown, there is less of a sense of “family bonding” and more accountability. Any individual assigned to a strategic project or a sensitive task now undergoes a security clearance by Interservices Intelligence, Intelligence Bureau, Military Intelligence, and the SPD. This is similar to the U.S. system, and lessons have been learned and adapted from the U.S. PRP. After an initial screening, there are periodic clearance rechecks every two years or when a person is transferred from one area of the program to another. Additionally, random checks can be carried out when required. This process includes complete background checks on family, educational career, political affiliations, and inclinations.

Challenges remain, however, in controlling nuclear expertise. Pakistan has re-employed scientists with potentially sensitive expertise in other areas of the nuclear program to continue to use their knowledge. Once the system becomes more saturated and more scientists leave the program, dealing with these alumni will become more of a problem. Pakistan has spoken with the United States on this issue and is exploring ideas for scientists who leave the program, including retraining them in other areas of expertise. In the United States, scientists have a permanent obligation regarding the protection of sensitive information regardless of whether they have left government employment. This issue needs to be addressed in greater detail in order to devise an effective and sustainable system for Pakistan.

Nuclear Energy and Radiation Security and Authority

The civilian elements of Pakistan’s nuclear program are overseen largely by the Pakistan Nuclear Regulatory Authority (PNRA) and the PAEC.

The Pakistan Nuclear Regulatory Authority (PNRA)

The PNRA was established in January 2001. It is the national statutory nuclear authority responsible for regulating all aspects of radiation and nuclear energy. The PNRA issues licenses for imports and exports of radiological substances and controls, regulates, and supervises all matters relating to nuclear safety and radiation protection. Previously, the PAEC was responsible for overseeing nuclear safety and security. Following the September 11 terrorist attacks, the PNRA tightened its security and physical protection regime. The PNRA Ordinance of 2001 empowers the PNRA to “ensure that appropriate measures for physical protection of nuclear installations and nuclear materials are taken by the licensee.” The federal government retains the authority to create legislation and regulations for imports and exports, and the PNRA is responsible for issuing licenses and conducting inspections of the licensees. Applications are received at the PNRA and reviewed at the Regional Nuclear Safety Directorates. The capacity and expertise of companies are evaluated, and licenses and no-objection certificates are only issued to qualifying companies. The Ministry of Commerce is responsible for issuing the import and export procedures through the chief controller of imports and exports. Customs authorities are then responsible for

controlling the entry and exit of nuclear and radioactive materials.

In 2002 the PNRA streamlined nuclear disaster management by announcing a host of new measures for protecting “the plant and society from hazards that could be man-made or natural.” These measures included stricter quality control and monitoring for infrastructure and equipment, multiple physical barriers to uncontrolled release of radioactive materials, radiation protection and acceptance criteria, and disaster mitigation equipment and arrangements. The PNRA also addressed resource issues in nuclear facilities, including the division of responsibilities and quality of technical staff.

The PNRA has developed a five-year Nuclear Security Action Plan (NSAP) intended to enhance safety and security for all nuclear and radiation facilities and sources. The plan should ultimately boost the confidence of the nuclear energy sector and industry and the international community regarding compliance with international obligations. The key focus areas of the NSAP are:

- *Manage all sources under regulatory control, evaluate vulnerable facilities, and support their efforts.* Inspections are held during use, storage, and transportation of any sources. The PNRA now conducts biannual assessments, and a follow-on process ensures that the findings are adequately implemented. The PNRA is also reassessing existing physical protection measures around facilities and providing guidance and training to strengthen these systems.
- *Establish a PNRA Nuclear Safety and Security Training Center.* The center will focus on training programs related to nuclear security and physical protection of radioactive materials, emergency preparedness, detection equipment, recovery operations, and border monitoring. It will train PNRA staff and first responders, including officials from customs, border, local governments, and other law enforcement agencies. Thus far, the PNRA has been involved in training up to 200 staff.
- *Establish a National Nuclear Security Emergency Coordination Center (NuSECC).* NuSECC has been established in Islamabad to coordinate

government agencies, including customs, border, local governments, and PNRA regional directorates, which are based in Karachi, Chashma, and Islamabad. Three additional directorates are being created, and inspectorates are yet to be established. There is currently one mobile lab, and officials wish to acquire an additional five to be stationed at the directorates and inspectorates. NuSECC will also work on a communications system and evaluate the possibility of continual tracking of high-activity sources during movement.

- *Locate and secure orphan radioactive sources.* Orphan sources are defined as “sources not under regulatory control, either because they have never been under regulatory control or because they have been abandoned, lost, misplaced, stolen or transferred without proper authorization.”¹¹ The PNRA has launched a campaign to locate all sources through physical and nonphysical searches and public outreach. Officials must locate, secure, and dispose of such sources to reduce the risk that they will be used to perpetrate malicious acts.
- *Provision of detection equipment at strategic points.* Detection equipment is intended to help prevent illicit trafficking of radioactive materials and sources and to assist rapid response in the instance of a nuclear or radiological emergency. Equipment will be provided to local governments, emergency response personnel, customs, and rangers at selected border points. Training will also be provided on how to operate the equipment and verify information obtained.

The PNRA evaluates its credibility against a set of performance indicators. These include peer reviews conducted by the IAEA International Regulatory Review Team and the IAEA Radiation Safety Infrastructure Appraisal mission. The PNRA also draws on local universities and other external associates to assist with self-assessments and promote transparency. Results from appraisals are posted on the PNRA website. Reports submitted by Pakistan in compliance with UN Security Council Resolution 1540, which calls for national measures to prevent nonstate actors from obtain-

ing highly dangerous weapons, and Pakistan’s accession to international agreements, including the CPPNM, also demonstrate Pakistan’s commitment toward addressing the challenges posed by nuclear security.

Export Controls

In 2000 the SPD issued internal export control guidelines for all nuclear organizations. Before the issuance of these guidelines, organizations acted independently; and their transactions invariably caused suspicions and concerns, especially given the strategic nature of these entities. Institutions now have to follow established procedures for all exports, including seeking clearance from the SPD and the Ministry of Foreign Affairs.

Still, until 2004, Pakistan’s nuclear export control framework was largely governed by statutory regulatory orders, ordinances, and acts that supported regulations issued by the Ministry of Commerce. In the wake of the Khan scandal, many of these procedures and regulations were consolidated in 2004 in the Export Control Act, enacted to control the exports of goods, technologies, materials, and equipment related to nuclear and biological weapons and delivery systems.

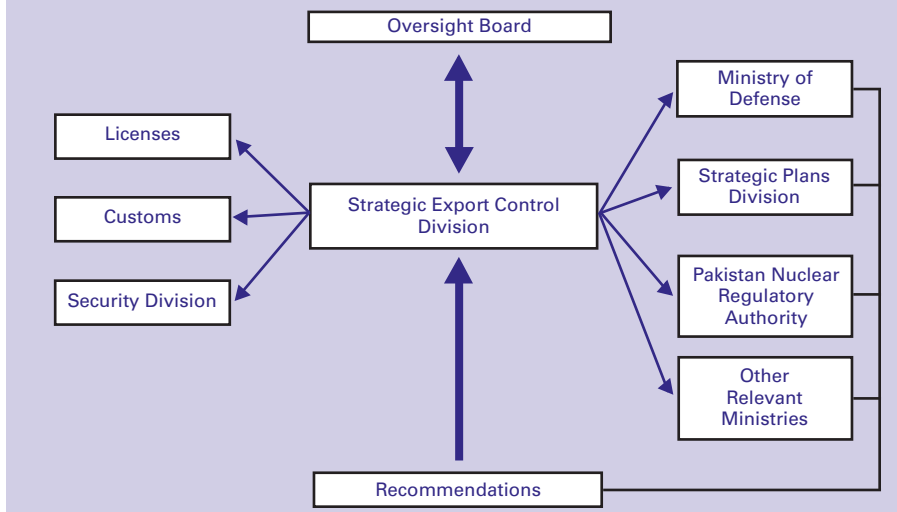
The 2004 act also established controls over re-exports, transshipments, and transfers of goods and technologies that could contribute to the proliferation of weapons of mass destruction and the means of their delivery or contribute to the threat of international terrorism.

The transfer of nuclear-related equipment and technology is not permitted except for disused radioactive sources, empty containers of these sources, equipment for repair or maintenance from these facilities, and samples for analysis or study from national nuclear facilities under IAEA safeguards.

The jurisdiction of the act extends to the entire territory of Pakistan and to any offenses committed by a citizen of Pakistan or person in the service of Pakistan, a Pakistani national visiting or working abroad, a foreign national while on the territory of Pakistan, or any ground transport, ship, or aircraft registered in Pakistan. The control list for the act encompasses the lists and scope of export controls maintained by the Nuclear Suppliers Group, the Missile Technology Control Regime, and the Australia Group (for biological agents). The act also has a catchall clause. (A Chemical Weapons Convention ordinance had already been issued in 2000, which covered

Figure 3: Organization of Pakistan's Strategic Export Control Division (SECDIV)

In the wake of the A.Q. Khan nuclear black market scandal, Pakistan in 2004 enacted an Export Control Act to control the exports of goods, technologies, material, and equipment related to nuclear and biological weapons and delivery systems. The Strategic Export Control Division (SECDIV) is charged with enforcing the act.



import/export requirements for the chemical industry.) The control list will be subject to periodic review, revision, and updating as and when required.

Exporters are required to maintain detailed inventories and records and to notify the relevant authority if they are aware or suspect that goods or technology are intended to be used in connection with weapons. Offenders face tough penalties, which include imprisonment of up to 14 years, a fine of up to five million rupees, and the seizure of all assets and property.

To ensure the successful implementation and enforcement of the act, a Strategic Export Control Division (SECDIV) has been created. This division is housed in the Ministry of Foreign Affairs, but it is multidisciplinary and includes personnel from customs; the Ministries of Foreign Affairs, Commerce, and Defense; the Central Board of Revenue; the PAEC; the PNRA; and the SPD. The division will operate independently so that personnel will not face any conflicts of interest.

The SECDIV will formulate the necessary rules and regulations for its internal functioning and for the implementation of the act. It will develop structures for issuing licenses for all items as per the National Control List and develop an outreach program for industry and the media. There will also be an oversight board, headed by the foreign secretary and consisting of high-level officials who will meet periodically (possibly twice a year) to oversee implementation of the act. The procedures for the oversight board have not yet been established.

Radiological Source Security

The PNRA is tasked with protecting radiation workers, the public, and the environment against accidental or malicious acts involving nuclear materials and facilities that may result in exposure to the harmful effects of radiation. The security of radioactive sources is ensured through periodic physical verification and regulatory inspections. In recent years, the PNRA has conducted numerous, nationwide inspections of nuclear and radiation facilities, identifying weaknesses and recommending countermeasures. The PNRA has also launched an orphan-sources initiative through a public awareness and education campaign.

The PNRA continuously reviews and updates safety and security measures according to recommendations and guidance received from the IAEA. They are also committed to protecting investment in the nuclear industry by specifying stringent design and operational safety targets to help eliminate the probability of major economic loss due to an accident, incident, or malicious act.

The total number of radiological sources in Pakistan is not clear, but 65 percent of the sources are claimed to be stored and 34 percent of sources are in use. Of the amount in use, 49 percent is under the PAEC, of which 26 percent is for medical use and 74 percent for nonmedical use, and 51 percent is non-PAEC, of which 12 percent is for medical use and 88 percent is for nonmedical use. The amount of cat-

egory one, two, and three radioactive materials is claimed to be limited, and once its useful life is over, it must be returned to the government. For example, in hospitals, once a source has ended its effective life, the licensee must release the source to the PNRA, which in turn hands it over to the PAEC, the only government agency equipped to dispose of such materials. The PNRA would be required at some stage to develop its own waste disposal site because the disposal of such sources is its primary responsibility.

Pakistan has been working to ensure accurate tracking of all radioactive sources imported into the country. It is very difficult to secure all of Pakistan's borders against illicit trafficking, especially because there are more than 2,000 miles of open borders with few legal crossing points. Yet, Pakistan has taken action to control the threat of radiological terrorism better. For example, the 2004 Export Control Act includes restrictions and penalties for transshipments. Pakistan has signed the Container Security Initiative, which provided for detectors in Karachi. Officials are engaged in discussions regarding possibly joining the Megaports Initiative. Pakistan also participates in the IAEA Illicit Trafficking Database, which allows countries to share information on incidents involving theft, loss, or pilferage of radiological materials.

Officials claim that Pakistan is working at "optimum speed" to cooperate with the U.S. Department of Energy on export and border control programs. Useful assistance for Pakistan to help meet this challenge would include providing metal detectors for border crossing points and mobile labs to identify any suspicious substances that are intercepted. Pakistani officials note that anyone bringing sources into Pakistan would find it difficult to sell such materials because there are only a small number of end users and they are known to officials, thus making it easier to identify any new sources that appear on the market.

Cooperation With the International Community

The United States and Pakistan initiated a bilateral dialogue on improving nuclear security in the wake of a visit by Secretary of State Colin Powell in October 2001. The results of the discussions have been very closely held, though not strictly secret, as references to the cooperation have been

made in Western and Pakistani news media, in other expert publications, and in briefings to Pakistani parliamentarians.¹² The discussions have been conducted at the expert level and on a nonsensitive and non-intrusive basis, with Pakistan insisting on clear redlines. The scope reportedly includes export and commodity controls, PRPs, nuclear material protection, control and accounting, transportation security, sharing of best practices, training of security personnel, and the provision of equipment. According to the Pakistani Ministry of Foreign Affairs, the cooperation has been “in the nature of rudimentary training and ideas,” and the equipment provided for tracing nuclear materials is of a “basic nature.”¹³

This cooperation does not extend to the “safety” of nuclear weapons because of U.S. legal limitations as well as Pakistan’s insistence on nonintrusiveness and maintaining secrecy related to its nuclear weapons and their locations. Another very sensitive issue is the suggestion that the United States is engaging in contingency planning to “secure” or relocate Pakistani nuclear assets in case of a breakdown of order.¹⁴ This is not part of the U.S.-Pakistani nuclear security dialogue. Pakistan would be very wary of continuing cooperation with the United States on nuclear security improvements should this issue become an official priority. It could raise the question of whether the United States has given up on the objective it had after the 1998 nuclear test of rolling back Pakistan’s nuclear capability. It also would raise questions about the sincerity of statements by knowledgeable current and former officials about the improved security and safety of Pakistan’s nuclear arsenal.

The IAEA is an important avenue for short- and long-term nuclear-security support for the safeguarded nuclear facilities in Pakistan. Pakistan is a member of the IAEA, and the IAEA has already made substantive contributions to their nuclear security efforts. Yet, although the IAEA plays an important role in verifying the implementation of the nuclear Nonproliferation Treaty (NPT), the IAEA is more than just an extension of the NPT. The IAEA was created by a statute more than a decade before the existence of the NPT. That statute states that any country can request the agency to apply safeguards to their nuclear activities, and the IAEA has already done so for four existing Pakistani nuclear reactors as well as to the Chashma-2 power plant, which is under construction.

Additionally, the PNRA, with assistance from the IAEA, has arranged a number of workshops in Pakistan to train personnel and first responders since 2005. Training is provided for many personnel, including customs officials, and is also now aimed at senior administration officials. The PNRA is currently planning additional workshops for 2008. The IAEA statute therefore provides a potentially useful tool for further cooperation in Pakistan.

Conclusion

The political crisis in Pakistan during the fall of 2007 has riveted attention on the security of the nuclear arsenal and infrastructure in that country. The main concerns are nuclear leakage and seizure of nuclear assets by radical groups or individuals.

Yet, Pakistan has significantly evolved its technical and procedural nuclear security operations since its 1998 nuclear test. It also has willingly engaged with international partners in an attempt to further strengthen its security and control processes. The major changes over the past nine years include the creation of the NCA, the establishment of the SPD, the development of a nuclear doctrine, the improvement of export controls, the integration of the command and control system, and the employment of permissive action links on nuclear weapons.

Although the concerns about Pakistan’s nuclear security during the current political crisis raised questions about the adequacy of the system, there have not been any examples to date of systemic failure. In fact, the weapons and facilities have been secure throughout the crisis, providing a measure of assurance that the last decade’s improvements are working.

These actions should build confidence in the international community that the Pakistani government is very serious about nuclear security and reducing the possibilities for proliferation. The evolution of this security system will need to continue well into the future, but a substantial foundation now exists on which these future improvements can be built. **ACT**

ENDNOTES

1. “Pakistan Nukes Under Control: Musharraf,” Agence France-Presse, November 13, 2007.
2. Thomas R. Pickering, Carla Hills, and Morton Abramowitz, “The Answer in Pakistan,” *The Washington Post*, November 14, 2007.

3. Trudy Rubin, “Worldview: Musharraf’s Dangerous Aim,” *The Philadelphia Inquirer*, November 7, 2007.
4. International Panel on Fissile Materials, “Global Fissile Material Report 2007,” October 10, 2007, pp. 8, 10, 14.
5. David Sanger, “What About Those Nukes,” *The New York Times*, November 11, 2007.
6. David Albright, “Securing Pakistan’s Nuclear Complex,” October 2001 (report commissioned and sponsored by the Stanley Foundation for the 42nd Strategy for Peace, Warrenton, VA).
7. Landau Network, “Nuclear Safety, Nuclear Stability, and Nuclear Strategy in Pakistan,” found at <http://lxmi.mi.infn.it/~landnet/Doc/pakistan.pdf> (mission carried out December 3-7, 2001).
8. Samar Mubarakmand recently retired as chairman of the National Engineering and Scientific Commission (NESCOM), which was created in 2001 as an umbrella organization to coordinate and oversee the activities of several independent entities, such as the National Development Complex, the main missile production facility. The interview was aired by Geo TV in April 2004 in the wake of Khan affair. He was a member technical in the PAEC before taking over as NESCOM chairman and was leader of the team that conducted Pakistan’s nuclear tests in May 1998.
9. Lt. General Khalid Kidwai, “Pakistan’s Evolution as a Nuclear Weapons State,” Address to the Center for Contemporary Conflict, November 1, 2006.
10. Joseph Cirincione with Jon B. Wolfsthal and Miriam Rajkumar, *Deadly Arsenal: Tracking Weapons of Mass Destruction* (Washington DC: Carnegie Endowment for International Peace, 2002).
11. CITATION NEEDED;
12. Pakistani Ministry of Foreign Affairs, “New York Times Story on Nuclear Cooperation,” No. 281/2007, Islamabad, November 19, 2007, found at www.mofa.gov.pk/Press_Releases/2007/Nov/PR_281_07.htm; Kenneth N. Luongo and Isabelle Williams, “Seizing the Moment: Using the U.S.-India Nuclear Deal to Improve Fissile Material,” *Arms Control Today*, May 2006; Paul Kerr and Mary Beth Nikitin, “Pakistan’s Nuclear Weapons: Proliferation and Security Issues,” *CRS Report for Congress*, RL34248, November 14, 2007; “Interview With Ambassador Robert Oakley,” *Nightly News with Tom Brokaw*, MSNBC, February 9, 2004; “U.S. Secretly Aids Pakistan in Guarding Nuclear Arms,” *The New York Times*, November 18, 2007.
13. Pakistani Ministry of Foreign Affairs, “New York Times Story on Nuclear Cooperation.”
14. Frederick W. Kagan and Michael O’Hanlon, “Pakistan’s Collapse, Our Problem,” *The New York Times*, November 18, 2007.