

Pakistani nuclear forces, 2006*

The estimate presented here—that Pakistan possesses approximately 60 nuclear weapons—is a conservative one, based on the size of Pakistan’s estimated military inventory of fissile material¹ and on assessments made by the US intelligence community. The US Defense Intelligence Agency estimated in July 1999 that Pakistan had up to 25 nuclear weapons.² Pakistan is believed to be working to increase and diversify its nuclear forces, which are under the control of a National Command Authority that was established by the military government in 2000. In March 2005 President Pervez Musharraf pledged to upgrade the country’s nuclear capability, which he said ‘was here to stay’ and would ‘continue to receive the highest national priority’.³ Pakistani officials have stated that the country ‘subscribes to the principle of minimum credible deterrence and opposes nuclear proliferation and an arms race in the region’.⁴ However, because of Pakistan’s fears of being overrun by India’s larger conventional forces in a military conflict, Pakistan has consistently rejected a no-first-use nuclear policy.

Ballistic missiles

Pakistan will most likely remain dependent on external suppliers for its medium-range ballistic missile programmes in the short and medium terms.⁵ The National Defence Complex (NDC), a subsidiary body of the National Engineering and Scientific Commission, and the Kahuta Research Laboratories have vigorous research and development and procurement programmes under way for MRBMs, based on imported missiles and production technology. Pakistan has received considerable technical assistance from China and North Korea in the past. Former Prime Minister Benazir Bhutto acknowledged in July 2004 that Pakistan had purchased missile technology from North Korea but denied that it aided the latter with nuclear technology.⁶

* Excerpt from Shannon N. Kile, Vitaly Fedchenko and Hans M. Kristensen, ‘World nuclear forces’, SIPRI Yearbook 2006: Armaments, Disarmament and International Security, (Oxford University Press: Oxford, 2006).

¹ It is assumed that Pakistan’s nuclear weapons are of solid core, implosion-type designs requiring 15–20 kg of HEU each, but it is likely that Pakistan has used only part of its inventory of military fissile material in assembled warheads. At the end of 2003 Pakistan’s inventory of HEU for military programmes was estimated to be c. 1000–1250 kg. Albright, D., ‘ISIS estimates of unirradiated fissile material produced in de facto nuclear weapon states, produced in nuclear weapon programs’, revised 30 June 2005, Institute for Science and International Security (ISIS), *Global Stocks of Nuclear Explosive Material*, URL <http://www.isis-online.org/global_stocks/end2003/de_facto_nws.pdf>.

² US Defense Intelligence Agency, ‘A Primer on the Future Threat: The Decades Ahead: 1999–2020’, July 1999, p. 38, reproduced in Scarborough, R., *Rumsfeld’s War* (Regnery: Washington, DC, 2004), pp. 194–223.

³ Gilani, M., ‘Pakistan vows to strengthen nuclear program’, Agence France-Presse, 21 Mar. 2005, URL <<http://www.defensenews.com/story.php?F=735622&C=asiapac&P=true>>.

⁴ Shaukat Aziz, Prime Minister of Pakistan, quoted in ‘PM warns of arms race in South Asia’, *Dawn* (Internet edn), 25 Jan. 2006, URL <<http://www.dawn.com/2006/01/25/top3.htm>>.

⁵ For a description of Pakistan’s missile design and production capabilities see Kampani, G., ‘Pakistan profile: missile overview’, Nuclear Threat Initiative, Country Profiles, updated Feb. 2005, URL <http://www.nti.org/e_research/profiles/Pakistan/Missile/index_3066.html>.

⁶ Takeishi, E., ‘Bhutto: we bought missile technology’, *Asahi Shimbun* (Internet edn), 19 July 2004, URL <<http://www.asahi.com/english/world/TKY200407190155.html>>.

Pakistan has deployed three families of ballistic missiles that may have a nuclear delivery role, and it continues to develop more advanced versions. The Ghaznavi (Hatf-3) ballistic missile was formally inducted into service with the Pakistani Army in 2004. It can deliver a 500-kg payload to a maximum range of 290 km. Its single-stage, solid-propellant design, which can be transported by road on a modified Scud-B wheeled transporter–erector–launcher (TEL), is believed to be a domestically produced copy of the Chinese M-11 missile.

The Shaheen I (Hatf-4), which has been declared to be nuclear-capable, entered into service with the Pakistani Army in 2003. Analysts remain divided over whether the single-stage, solid-fuel Shaheen I is a version of the Chinese M-9 missile or an improved Chinese M-11 missile. It uses the same wheeled TEL as the Ghaznavi and has a range of 600–800 km, depending on the payload. The two-stage Shaheen II (Hatf-6) is believed to use the Shaheen I missile as its second stage and may be able to carry multiple warheads. Its reported range of 2000–3000 km means that it can reach targets across India. On 19 March 2005 Pakistan announced that it had successfully test-fired a Shaheen II ballistic missile. Pakistan said that it had given India prior notice of the test, in accordance with the informal practice that they agreed in 1999. Development flight-tests are expected to continue in 2006.

Pakistani defence officials have stated that the medium-range Ghauri missiles have a nuclear delivery role. The 1500 km-range Ghauri I (Hatf-5) missile and a longer-range variant, the Ghauri II, are based on North Korea's No-dong 1/2 missile technology and reportedly have been developed with extensive design and engineering assistance from North Korea. The Ghauri I was first successfully test-launched in April 1998. Pakistani defence sources indicate that limited production of the Ghauri began in late 2002 and that it entered into service in January 2003, although developmental work was still continuing. A Ghauri II (or Hatf-5A) missile is under development by the NDC and the KRL and will feature improved propellants and a new motor assembly. The status of the programme is unclear. Pakistan is also reportedly developing a Ghauri III missile with a design range of 3500 km, which would make it the longest-range ballistic missile in the country's inventory. In May 2004 Pakistani officials indicated that the first test-launch of the Ghauri III would be conducted in the near future; however, the test had not taken place by the end of 2005. Some analysts have speculated that the Ghauri III may either be a North Korean Taepodong missile or draw extensively on components and technologies from the latter programme.⁷ On 11 August 2005 Pakistan carried out the first test-flight of a ground-launched cruise missile, designated the Babur (Hatf-7), at a new test range in Baluchistan.⁸ Pakistani officials indicated that the 500-km range cruise missile was capable of carrying a nuclear warhead, although it has not been confirmed that the Babur will have a nuclear role.

Strike aircraft

The aircraft of the Pakistani Air Force that is most likely to be used in the nuclear weapon delivery role is the F-16. Other aircraft, such as the Mirage V or the Chinese-produced A-5, could also be used.

⁷ Kampani (note 5).

⁸ Sharif, A., 'Pakistan test-fires its first cruise missile', *Dawn* (Internet edn), 12 Aug. 2005, URL <<http://www.dawn.com/2005/08/12/top2.htm>>.

Table 1. Pakistani nuclear forces, January 2006

Type	Range (km) ^a	Payload (kg)	Status
<i>Aircraft</i>			
F-16A/B	1 600	4 500	32 aircraft, deployed in 3 squadrons; most likely aircraft to have a nuclear delivery role
<i>Ballistic missiles</i>			
Ghaznavi (Hatf-3)	290	500	Entered service with Pakistani Army in 2004. Believed to be a copy of M-11 missile acquired from China in 1990s
Shaheen I (Hatf-4)	600–800	750–1 000	Entered service with Pakistani Army in 2003
Ghauri I (Hatf-5)	1 200	700–1 000	Entered service with Pakistani Army in 2003

^a Missile payloads may have to be reduced in order to achieve maximum range. Aircraft range is for illustrative purposes only; actual mission range will vary according to flight profile and weapon loading.

Sources: International Institute for Strategic Studies, *The Military Balance 2004–2005* (Routledge: London, 2004); US Air Force, National Air and Space Intelligence Center (NASIC), *Ballistic and Cruise Missile Threat* (NAIC: Wright-Patterson Air Force Base, Ohio, Aug. 2003), URL <<http://www.nukestrat.com/us/afn/NAIC2003rev.pdf>>; US Central Intelligence Agency, *Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions*, 1 January through 30 June 2002', Apr. 2003, URL <http://www.cia.gov/cia/publications/bian/bian_apr_2003.htm>; US Central Intelligence Agency, National Intelligence Council, 'Foreign missile developments and the ballistic missile threat through 2015' (unclassified summary), Dec. 2001, URL <http://www.cia.gov/nic/pubs/other_products/Unclassified_ballisticmissilefinal.pdf>; 'NRDC Nuclear Notebook', *Bulletin of the Atomic Scientists*, various issues; and Authors' estimates.

Pakistan currently maintains 32 F-16s in service, deployed in 3 squadrons. In 1988–89 Pakistan had contracted with the USA to buy 71 F-16s to augment its existing inventory of 40 F-16A/B aircraft. However, in October 1990 the US Government announced that it had embargoed any further deliveries in accordance with the Pressler Amendment.⁹ As a result, only 28 of the 71 aircraft were ever built and none was delivered.

On 26 March 2005, the Bush Administration announced that it was notifying Congress of plans to sell 75 F-16s to Pakistan.¹⁰ US officials said that the deal, which was intended to reward Pakistan for its cooperation in the war on terrorism, would not affect the military balance in the region—in part because India would probably proceed with its own purchase of advanced aircraft, either from the USA or from another supplier.¹¹

⁹ Approved by the US Congress in 1984, the Pressler Amendment barred military sales to foreign countries unless the president could certify that the country was not pursuing the acquisition of nuclear weapons.

¹⁰ Baker, P., 'Bush: US to sell F-16s to Pakistan', *Washington Post* (Internet edn), 25 Mar. 2005, URL <<http://www.washingtonpost.com/wp-dyn/articles/A800-2005Mar25.html>>.

¹¹ On international arms transfers see chapter 10 in this volume.

In August 2005 the Pakistani Air Force's Deputy Chief of Air Staff (Operations), Air Vice Marshal Shehzad Aslam Chaudary, said that the USA had offered to give Pakistan two F-16 aircraft as a goodwill gesture; they arrived in Pakistan before the end of the year. He added that the aircraft were not part of the deal to purchase 75 F-16s from the USA.¹² In November 2005 Pakistan announced that it would postpone the purchase in order to make available more financial resources to provide relief to victims of the previous month's devastating earthquake.¹³

¹² 'F-16 deal update', PakistaniDefence.com, Aug. 2005, URL <<http://www.pakistanidefence.com/news/MonthlyNewsArchive/2005/August2005.htm>>.

¹³ 'Musharraf postpones F-16 purchase to provide more quake relief', Voice of America (VOA) News (Internet edn), 4 Nov. 2005, URL <<http://www.voanews.com/english/archive/2005-11/2005-11-04-voa10.cfm?CFID=27784474&CFTOKEN=85289695>>.