Since the first edition of this book went to press in late 2002, a number of missile and nuclear developments have taken place in Iraq, Libya, North Korea, Iran, and other countries.

Missile Restraints in Iraq and Libya

Iraq had been limited to 150 km range missiles after the 1991 Gulf War, and it worked on several such missiles in the 1990s. One was the 1.2 ton solid-fuel al-Fatah, previously called Ababil-100, which had a 0.5 m diameter. It flew beyond 150 km in eight of its thirty-two flight tests (between September 2000 and October 2002) and reached 161 km in one test. Unable to develop a guidance system for this missile, Iraq deployed an unguided version with its army in late 2001. In total, Iraq built 100 to 120 of these missiles—60 were consumed in development and testing; 12 to 16 were fired on coalition forces; and 10 were recovered after the war.

Another Iraqi missile, the 1.8 ton liquid-fuel al-Samoud (initially also called Ababil-100), had a 0.5 m diameter. It reportedly reached 150 km in three of its forty-six flight tests (between October 1997 and September 2001). The small diameter design was unstable, and Iraq therefore discontinued the missile and developed an al-Samoud-2 with a 0.76 m diameter. This missile used an SA-2 engine (Iraq imported 360 such engines from Polish and Russian entities in 2001-2) and components from the HY-2 cruise missile (which had a 0.76 m diameter). The missile flew beyond 150 km in thirteen of its twenty-six tests (between August 2001 and November 2002), reaching 183 km in one test. Iraq built some 130 of these missiles, of which 22 to 27 were used in flight tests; UN inspectors destroyed 72 in March 2003; 5 were fired against coalition forces; 15 were damaged or captured in the war; and the remainder are unaccounted for. During the March 2003 war, Patriot missile defense interceptors reportedly hit nine of Iraq’s ballistic missiles. Missile defenses did not intercept or engage five HY-2 Seersucker cruise missiles and two unmanned air vehicles.

Beyond its al-Samoud programs, Iraq sought to buy the 280 km range SS-26 Iskander missiles from Russia in 2002. Further, in discussions with North Korea between 1999-2002, Baghdad sought technology for 1,300 km range (Nodong-type) ballistic missiles and 300 km range anti-ship cruise missiles. In late 2001, it signed contracts worth $9 million with (and made a downpayment of $1.3 million to) North Korean firms for missile components such as guidance and control systems and test stands. Iraq did not receive North Korean technology or missiles by the time UN inspections resumed in October 2002.

Libya declared, in December 2003, that it would eliminate its weapons of mass destruction programs and limit itself to 300 km range missiles. Libya also revealed that it had eighty to a few hundred Soviet-built Scud-Bs; a North Korean-assisted production line for 600-800 km range Scud-Cs; and five complete Scud-Cs, which were shipped to the United States for destruction in March 2004.

Missile Developments in North Korea and Iran

North Korea and Iran did not test new missiles in 2003 and 2004, but they continued other missile activity and also advanced their nuclear programs.

Iran conducted the sixth and seventh tests of its 1,300 km range Shehab-3 missile in July 2003 and August 2004 and inducted the missile into its armed forces. Iran’s defense minister also announced the cancellation of the longer range Shehab-4 satellite launch rocket but, in January 2004, declared that Iran would launch a satellite within eighteen months. It remained unclear whether Iran would use a foreign or indigenous rocket to launch this satellite.

North Korea continued both missile development and missile exports. In November 2002, U.S. and Spanish naval vessels intercepted and then released a North Korean freighter carrying fifteen Scud missiles to Yemen.
Further, press reports indicated that North Korea airlifted Nodong missiles or missile components to Iran and Pakistan in 2002-3. Other press reports noted that North Korea was developing a new 3,000 km range missile based on the Soviet SS-N-6 (a 14 ton liquid-fuel missile deployed in the 1970s). Further, new details emerged of a July 1999 interdiction of a North Korean vessel in an Indian port. This vessel was apparently heading to Libya with an assembly line for the production of Scud missiles and carried tips of nose cones, sheet metal for rocket frames, machine tools, guidance systems, and engineering drawings labeled “Scud B” and “Scud C.” Finally, North Korea tested naval cruise missiles (believed to be the HY-2 Seersucker) on February 24, March 10, and April 1, 2003.

India, Pakistan, Brazil, Israel
Pakistan and India tested new and existing missiles in 2003 and 2004, while during the same period Israel and Brazil experienced satellite launch failures.

India conducted the third test of its 2,000 km range Agni-2 in August 2004 and the second and third tests of its 700 km range Agni-1 in January 2003 and July 2004. It also conducted the twenty-first to twenty-fourth tests of its 150-250 km range Prithvi missile in March and April 2003 and January and March 2004. Further, it conducted the third test of its 300 km range Prithvi-3 in October 2004. Another Indian missile, the 290 km range Brahmos antiship cruise missile, was first tested in June 2001, with six additional tests in April 2002; February, October, and November (two tests) 2003; and June 2004.

Pakistan first tested its new two-stage 2,500 km range Shaheen-2 in March 2004. It also conducted the second test of its 180 km range Abdali in March 2003; the second test of its 300 km range Ghaznavi in October 2003; the second and third tests (October 2002), and then the fourth and fifth tests (October 2003), of its 700 km range Shaheen-1 missile; and the fourth to sixth tests of the 1,000-1,500 km range Ghauri missile in May, June, and October 2004. It formally handed over the Shaheen-1 (in March 2003) and the Ghauri (in January 2003) to the Pakistan army’s Strategic Force Command.

Brazil failed for the third time in three attempts to place a satellite in orbit when, in September 2003, its VLS rocket exploded on the launch pad two days before a planned flight. In October 2004, Brazil successfully launched a smaller two-stage VSB-30 rocket into space. Israel’s sixth launch of its Shavit rocket failed in September 2004, resulting in the loss of its Ofek-6 satellite.

Missile Nonproliferation Efforts
In 2003, eleven countries (Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, the United Kingdom, and the United States) initiated a Proliferation Security Initiative (PSI). The initiative sought to interdict ships and aircraft carrying missiles and weapons of mass destruction (WMD) to states of concern, and it aimed to halt North Korean missile and WMD exports. In October 2003, PSI members interdicted a shipment of uranium enrichment technology to Libya. Separately, the United States sanctioned Chinese firms in 2003 and 2004 for missile-relevant technology transfers to Iran.

On another front, more than a hundred subscriber states to The Hague Code of Conduct on Ballistic Missile Proliferation held a technical meeting in June 2003 and then held their second annual meeting in October 2003. Finally, in 2004, the MTCR admitted Bulgaria as its thirty-fourth member and was considering admitting nine additional states (mostly new entrants to the European Union). The MTCR also held detailed technical discussions with China, which indicated that it was willing to join the regime.

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