

## Appendix C

### Summary of China's Nuclear Weapons and Policies

*The text below is excerpted from the chapter on China in Tracking Nuclear Proliferation, A Guide in Maps and Charts, 1998, by Rodney W. Jones and Mark G. McDonough, with Toby F. Dalton and Gregory D. Koblenz, (Washington, D.C.: Carnegie Endowment for International Peace, 1998).*

China, a nuclear-weapon state since 1964, opened itself to wider exchange and trade in the late 1970s and began to export arms and military technology on a significant scale. It also became a supplier of sensitive nuclear technology. China's exports posed major problems for the non-proliferation regime both because of their indiscriminate nature and because of China's failure to apply the safeguards and controls exercised by states compliant with the Nuclear Non-Proliferation Treaty (NPT). As a result, the United States and other countries began sustained efforts to draw China into the international non-proliferation regime. Over the more than two decades since China's "opening," these efforts have achieved incremental but important progress.

Nonetheless, China continues to pose formidable challenges to the international non-proliferation regime. As a May 1996 Pentagon report points out, China has been a contributor to proliferation "primarily because of the role of Chinese companies in supplying a wide range of materials, equipment and technologies that could contribute to NBC [nuclear, biological, and chemical] weapons and missile programs in countries of proliferation concern." China disregarded international norms during the 1980s by selling nuclear materials to countries such as South Africa, India, Pakistan, and Argentina, without requiring that the items be placed under International

Atomic Energy Agency safeguards. Although China joined the NPT in 1992, and pledged to the United States in the same year and again in 1994 that it would abide by the Missile Technology Control Regime (MTCR), it was slow to adopt and publish nuclear export control laws.

China's nuclear exports to two particular countries, Pakistan and Iran, have been the leading causes of concern. Even though Pakistan is not a party to the NPT, has had a nuclear weapons program since 1972, and is believed to have had a small arsenal ready to assemble for a number of years, China has been its principal supplier of nuclear equipment and services since the late 1970s. Similarly, even though Iran is believed to have started a nuclear weapons program in the mid-1980s, China supplied it with key nuclear equipment. Although Iran is a member of the NPT, the United States has led an international effort to prevent the supply of nuclear technology to Iran and has placed pressure on China (and other suppliers) to cancel nuclear deals with Iran. With respect to China, by 1997 this U.S. pressure apparently had made a difference.

### **Missile Export Activities**

In the missile export field, China reportedly has aided the missile programs of Libya, Saudi Arabia, Syria, Iraq, Iran, Pakistan, and possibly North Korea. In Pakistan's case, China evidently transferred key components in the early 1990s for short-range, nuclear-capable M-11 surface-to-surface missiles. In June 1991, the United States imposed MTCR Category II sanctions against entities in Pakistan and China for missile technology transfers. These sanctions were lifted in March 1992 after the United States received written confirmation from China that it would abide by the MTCR "guidelines and parameters." Washington took this oral confirmation to mean China would not export either the M-9 or the M-11 missile. Since the latest sanctions were lifted, however, several reports have emerged that China continues to aid Pakistan's and Iran's ballistic missile programs.

### **China's Fissile Material Stockpile**

A frequently overlooked proliferation threat posed by China is the large stockpile of weapons-usable fissile material it has produced

over the past thirty years. Although the situation in China currently seems more stable than in Russia, increased political and economic instability could raise the risk of diversion of fissile material from China's nuclear complex. The possibilities run the spectrum from a breakup of China into multiple states, the breakdown of central authority and the rise of regional warlords, or a steady deterioration of central authority that would increase the opportunity for theft and smuggling of nuclear material or weapons.

There are several unofficial estimates on how much weapons-usable fissile material China has produced, but Beijing has not disclosed the size of either its nuclear weapon or fissile material stockpiles. Experts believe that China has tested about forty-five nuclear explosive devices and built about 300 strategic warheads and 150 tactical warheads. Together with materials used in the fuel for civil and military reactors, a considerable portion of the fissile materials produced must have been consumed or must be otherwise unavailable for weapons. According to the most recent estimates, it is believed that by the end of 1994, China's residual fissile material stockpiles may consist of as much as 4 metric tons of plutonium and 23 metric tons of highly enriched uranium—enough fissile material for approximately 2,700 nuclear weapons.

Information on China's material protection, control, and accounting (MPC&A) system is scarce, but the United States has been concerned enough to initiate discussions on MPC&A, among other issues, between the U.S. and Chinese national nuclear laboratories. There have been contacts between the nuclear weapons laboratories in the United States and China since 1994, and five joint workshops were scheduled for 1996 with the Chinese Academy of Engineering Physics, China's main nuclear weapons research center. Although China's MPC&A system is modeled after the Soviet system, an expert at one of the U.S. national laboratories ranked China's MPC&A system as better than that of the Soviet Union before it collapsed. In 1996, China commissioned a computerized "national nuclear materials accounting system" at about twelve nuclear facilities to improve its ability to prevent the illegal loss, theft, or transfer of nuclear materials.

### **China's Nuclear Weapons**

China's nuclear arsenal of approximately 450 weapons would make it the third largest nuclear military power today. China has only

seven intercontinental ballistic missiles (ICBMs) capable of striking the continental United States (the DF-5s). It has a single nuclear submarine, the Xia, based on the Shandong Peninsula. China is currently modernizing its strategic missile force with three new solid-fuel ballistic missiles, including a submarine-launched missile. A new generation of nuclear-powered submarines (Type 094) reportedly are scheduled for construction after the year 2000 and would carry 16 JL-2 missiles. Some reports indicate that China's new DF-31 ICBMs, first tested in 1995, will be deployed with multiple warheads, but there has been no official confirmation that China has developed MIRV capability. China's attempts to acquire advanced SS-18 missile-guidance technology from Russia and Ukraine may have been linked to the pursuit of MIRV capability.

China has expressed concern that current U.S. missile defense programs could neutralize China's ICBMs, its principal strategic deterrent against the United States. The combination of a national missile defense covering the United States and the sale of advanced theater missile defense systems to America's Asian allies would greatly complicate China's nuclear planning. China has reportedly tested intermediate-range ballistic missiles with penetration aids to foil missile defenses, and similar measures are expected to be added to China's new generation of long-range ballistic missiles.

### **China's Non-Proliferation Commitments**

With China an established nuclear-weapon state and permanent member of the UN Security Council, Beijing's nuclear policies, attitudes toward the non-proliferation effectiveness of export controls, and quality of participation in global non-proliferation regimes naturally carry weight in the decision making of other countries. Having been an outsider to most international arms control initiatives during the cold war, China never signed the 1963 Partial Test Ban Treaty, only became a member of the IAEA in 1984, acceded to the NPT as recently as 1992, declined until 1997 to join the international Zangger Committee, and still declines to join the Nuclear Suppliers Group. While it has agreed to observe the published MTCR guidelines of 1987, it still is not a full partner and may not be fully observant of the revised MTCR guidelines of 1993. It also may have a unilateral interpretation of certain MTCR guidelines. It is clear that China

shuns “informal” multilateral control arrangements such as the NSG, MTCR, and, in the chemical weapons area, the Australia Group.

Nevertheless, China made notable strides to join formal arms control regimes in the 1990s—beginning with its accession to the NPT in 1992, its signature in 1993 and ratification in 1997 of the Chemical Weapons Convention (CWC), and its cessation of nuclear weapon explosive testing and signature of the Comprehensive Test Ban Treaty (CTBT) in September 1996. China has supported the multilateral negotiations on a fissile-material production cutoff convention. China also acceded to the Biological Weapons Convention (BWC) in 1984. Moreover, China has gradually clarified and upgraded the commitments it makes through export controls to nuclear and missile non-proliferation objectives. These nuclear export control clarifications and practical improvements are worthy of note, as are the areas of continued divergence.

## Prospects

Compared with its past nuclear export practices, China appeared to have made decisive strides in recent years toward conforming its nuclear export policies, laws, and regulations to international standards. The primary remaining formal shortcomings are that: (1) China still has not agreed to accept full-scope safeguards as an export requirement and has not agreed to join the Nuclear Suppliers Group (which goes further than the Zangger Committee by upholding that requirement); (2) China has not publicly adopted a “catchall” obligation to deny nuclear or nuclear-related exports or assistance to a country that might satisfy formal IAEA and NPT criteria yet have a dubious non-proliferation record for other reasons; and (3) China has not yet demonstrated its commitment to vigilantly follow up and monitor the end-use assurances on its nuclear and nuclear-related exports within recipient states and facilities.

Moreover, formal adherence to legal standards is one thing, while effective enforcement of the underlying purposes is another. Past experience suggests that it will take some time to determine whether China’s practices in nuclear exports and nuclear cooperation will meet international standards for nuclear-related and dual-use equipment, materials, and technology that could be used for nuclear weapon purposes. In addition, it is one thing for the government

of China to promulgate new export control regulations and another to ensure that they are effectively enforced by obtaining the compliance of all nuclear-related domestic manufacturing and trading firms—many of which are connected with the military yet operate as profit centers or revenue-raising mechanisms—as well as the compliance of the more typical, public-sector scientific and technical organizations and laboratories.

The missile and chemical and biological areas will also require diligent attention. Up to 1994, China made progress on MTCR requirements. But it is still not clear that its professed restraint applies, as the MTCR requires, to missile components and technology—nor, indeed, that the restraint applies to more than complete “ground-to-ground” missiles. Compliance in this area, which is not defined by a treaty, is harder to nail down with standards that China can accept politically—and also entails more scope for ambiguities. The chemical area is defined by treaty, provides for declarations, and lists restricted items, but it covers a very large industrial domain. Considerable effort will be required to work out reliable non-proliferation standards in these areas. But progress with China in the nuclear areas should add confidence to such efforts in other areas.