

ATTACHMENT A

Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions,

1 July Through 31 December 2001

Scope Note

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Chemical, Biological, Radiological, and Nuclear Terrorism:

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Scope Note

The Director of Central Intelligence (DCI) hereby submits this report in response to a Congressionally directed action in Section 721 of the FY 97 Intelligence Authorization Act, which requires:

"(a) Not later than 6 months after the date of the enactment of this Act, and every 6 months thereafter, the Director of Central Intelligence shall submit to Congress a report on

- (1) the acquisition by foreign countries during the preceding 6 months of dual-use and other technology useful for the development or production of weapons of mass destruction (including nuclear weapons, chemical weapons, and biological weapons) and advanced

conventional munitions; and

(2) trends in the acquisition of such technology by such countries."

At the DCI's request, the DCI Weapons Intelligence, Nonproliferation, and Arms Control Center (WINPAC) drafted this report and coordinated it throughout the Intelligence Community. As directed by Section 721, subsection (b) of the Act, it is unclassified. As such, the report does not present the details of the Intelligence Community's assessments of weapons of mass destruction and advanced conventional munitions programs that are available in other classified reports and briefings for the Congress.

Acquisition by Country

As required by Section 721 of the FY 97 Intelligence Authorization Act, the following are summaries by country of acquisition activities (solicitations, negotiations, contracts, and deliveries) related to weapons of mass destruction (WMD) and advanced conventional weapons (ACW) that occurred from 1 July through 31 December 2001. We have excluded countries that already have substantial WMD programs, such as China and Russia, as well as countries that demonstrated little WMD acquisition activity of concern.

Iran

Iran is vigorously pursuing programs to produce indigenous WMD—nuclear, chemical, and biological—and their delivery systems as well as ACW. To this end, it seeks foreign materials, training, equipment, and know-how that have enabled it to produce some complete weapon systems, with their means of delivery, and components of other weapons. During the reporting period, Iran focused particularly on entities in Russia, China, North Korea, and Europe.

Despite Iran's status in the Treaty on the Nonproliferation of Nuclear Weapons (NPT), the United States is convinced Tehran is pursuing a nuclear weapons program. To bolster its efforts to establish domestic nuclear fuel-cycle capabilities, Iran has sought assorted foreign fissile materials and technology. Such capabilities also can support fissile material production for Tehran's overall nuclear weapons program.

Despite Bushehr being put under IAEA safeguards, Russia's provision of expertise and manufacturing assistance has enabled Iran to develop its nuclear technology infrastructure—which, in turn, can benefit directly Tehran's nuclear weapons R&D program. In addition, Russian entities continued associations with Iranian research centers on other nuclear fuel-cycle activities.

Iran has attempted to use its civilian nuclear energy program, which is quite modest in scope, to justify its efforts to establish domestically or otherwise acquire assorted nuclear fuel—cycle capabilities. Such capabilities, however, are well suited to support fissile material production for a weapons program, and we believe it is this objective that drives Iran's efforts to acquire relevant facilities. For example, Iran has sought to obtain turnkey facilities, such as a uranium conversion facility (UCF), that ostensibly would be used to support fuel production for the Bushehr power plant. But the UCF could be used in any number of ways to support fissile material production needed for a nuclear weapon—specifically, production of uranium hexafluoride for use as a feedstock for uranium enrichment operations and production of uranium compounds suitable for use as fuel in a plutonium production reactor. In addition, we suspect that Tehran is interested in acquiring foreign fissile material and technology for weapons development as part of its overall nuclear weapons program.

Facing economic pressures, some Russian entities have shown a willingness to provide assistance to

Iran's nuclear projects by circumventing their country's export laws. Enforcement of export control laws has been inconsistent and ineffective, but the US Government continues to engage the Russian Government in a cooperative export control dialogue. For example, an institute subordinate to the Russian Ministry of Atomic Energy (MINATOM) had agreed to deliver in late 2000 equipment that was clearly intended for atomic vapor laser isotope separation, a technology capable of producing weapons-grade uranium. As a result of US protests the Russian Government halted the delivery of some of this equipment to Iran, and as of the end of the reporting period, these shipments remained suspended.

China is completing assistance on two Iranian nuclear projects: a small research reactor and a zirconium production facility at Esfahan that will enable Iran to produce cladding for reactor fuel.^[1] As a party to the NPT, Iran is required to accept IAEA safeguards on its nuclear material. The IAEA's Additional Protocol requires states to declare production of zirconium fuel cladding and gives the IAEA the right of access to resolve questions or inconsistencies related to the declarations, but Iran has made no moves to bring the Additional Protocol into force. Zirconium production, other than production of fuel cladding, is not subject to declaration or inspection.

Ballistic missile-related cooperation from entities in the former Soviet Union, North Korea, and China over the years has helped Iran move toward its goal of becoming self-sufficient in the production of ballistic missiles. Such assistance during the reporting period has included equipment, technology, and expertise. Iran, already producing Scud short-range ballistic missiles (SRBMs), is in the late stages of developing the Shahab-3 medium-range ballistic missile (MRBM). In addition, Iran publicly has acknowledged the development of follow-on versions of the Shahab-3. It originally said that another version, the Shahab-4, is a more capable ballistic missile than its predecessor but later characterized it as solely a space launch vehicle with no military applications. Iran's Defense Minister has also publicly mentioned a "Shahab-5." Such statements strongly suggest that Tehran intends to develop a longer-range ballistic missile capability.

Iran is a party to the Chemical Weapons Convention (CWC). Nevertheless, during the reporting period it continued to seek chemicals, production technology, training, and expertise from entities in Russia and China that could further efforts at achieving an indigenous capability to produce nerve agents. Iran already has stockpiled blister, blood, and choking agents—and the bombs and artillery shells to deliver them—which it previously has manufactured. It probably also has made some nerve agents.

Foreign dual-use biotechnical materials, equipment, and expertise, primarily, but not exclusively, from entities in Russia and Eastern Europe, continued to feature prominently in Iran's procurement efforts. Such materials have legitimate uses, but Iran's biological warfare (BW) program also could benefit from them.

Iran continues to seek and acquire conventional weapons and production technologies, primarily from Russia, China, and North Korea. Since Russia announced in November 2000 that it was abrogating the Gore-Chernomyrdin Agreement, the Russian and Iranian Governments and firms have engaged in high-level discussions on a wide variety of military services and equipment — including air defense, naval, air and ground weapons, and technologies. In October 2001, Tehran and Moscow signed a new military-technical cooperation agreement, which laid the groundwork for negotiations and created a commission for future arms sales, but did not itself include sales contracts.

Contract negotiations, which can take years to complete, continued in the following months but only one sale—apparently for helicopters—was concluded. Various Russian officials and academicians have suggested that sales under this new agreement could, in the next few years, make Iran Russia's third-largest arms customer, after China and India. Until that agreement is concluded, Russia will continue to deliver on existing contracts, but few new weapons contracts are likely to be completed. Iran and Russia

have agreed on the transfer of additional Mi-8, Mi-17, and Mi-171 transport helicopters. Estimates of conventional arms sales to Iran of \$300 million per year would put Iran's share of Russian sales worldwide at roughly 10 percent, compared to more than 50 percent going to China and India.

To facilitate new arms agreements, Russian oil enterprises entered an agreement with the Russian state arms trading firm Rosoboronexport to promote arms exports. Russian and Iranian arms dealers are to include such firms as Lukoil to coordinate "commercial conditions" and participate in projects proposed by the customer.

Outside the Russian market, Iran's search for conventional weapons is global and continues to meet with results. In particular, Iran capitalizes on the specialized weapons services and lower prices China and North Korea have to offer. Elsewhere, Iran seeks out products, particularly weapons components and dual-use items, that are superior in quality to those available from Russia or that have proven difficult to acquire through normal government channels.

Iraq

Baghdad has refused since December 1998 to allow UN inspectors into Iraq as required by Security Council Resolution 687 and subsequent Council resolutions, and no UN inspections have occurred during this reporting period. Moreover, the automated video monitoring systems installed by the UN at known and suspect WMD facilities in Iraq are not operating. Furthermore, Iraq has engaged in extensive concealment efforts and has probably used the period since it refused inspections to attempt to reconstitute prohibited programs. Without UN-mandated inspectors in Iraq, assessing the current state of Iraq's WMD and missile programs is difficult.

Saddam's repeated publicized exhortations to his "Nuclear Mujahidin" to "defeat the enemy" added to our concerns that since the Gulf war Iraq has continued Research and Development work associated with its nuclear program. A sufficient source of fissile material remains Iraq's most significant obstacle to being able to produce a nuclear weapon. The Intelligence Community is concerned that Baghdad is attempting to acquire materials that could aid in reconstituting its nuclear weapons program.

Iraq continues to develop short-range ballistic missile (SRBM) systems that are not prohibited by the United Nations and is expanding to longer-range systems. Pursuit of UN-permitted ballistic missiles allows Baghdad to improve technology and infrastructure that could be applied to a longer-range missile program. The appearance of four Al Samoud SRBM transporter-erector-launchers (TELs) with airframes at the 31 December 2000, Al Aqsa parade indicates that this liquid-propellant missile program is nearing deployment. Two new solid-propellant "mixing" buildings at the al-Mamoun plant—the site originally intended to produce Badr-2000 (that is Condor) solid-propellant missiles—appear especially suited to house large, UN-prohibited mixers of the type acquired for the Badr-2000 program. In fact, we can find no logical explanation for the size and configuration of these mixing buildings other than an Iraqi intention to develop longer range, prohibited missiles (that is, to mix solid propellant exclusively geared for such missiles). In addition, Iraq has begun reconstructing the "cast and cure" building at al-Mamoun, which contains large and deep casting pits that were specifically designed to produce now-proscribed missile motors.

If economic sanctions against Iraq were lifted, Baghdad probably would increase its attempts to acquire missile-related items from foreign sources, regardless of any future UN monitoring and continuing restrictions on long-range ballistic missile programs. With substantial foreign assistance and an accommodating political environment, Baghdad could flight-test an MRBM by mid-decade. In addition, Iraq probably retains a small, covert force of Scud ballistic missiles, launchers, and conventional,

chemical, and biological warheads. We assess that, since December 1998, Iraq has increased its capability to pursue chemical warfare (CW) programs. After both the Gulf war and Operation Desert Fox in December 1998, Iraq rebuilt key portions of its chemical production infrastructure for industrial and commercial use, as well as former dual-use CW production facilities and missile production facilities. Iraq has attempted to purchase numerous dual-use items for, or under the guise of, legitimate civilian use. Since the suspension of UN inspections in December 1998, the risk of diversion of such equipment has increased. In addition, Iraq appears to be installing or repairing dual-use equipment at CW-related facilities. Some of these facilities could be converted fairly quickly for production of CW agents.

UNSCOM reported to the Security Council in December 1998 that Iraq also continued to withhold information related to its CW program. For example, Baghdad seized from UNSCOM inspectors an Iraqi Air Force document discovered by UNSCOM that indicated that Iraq had not consumed as many CW munitions during the Iran-Iraq war in the 1980s as had been declared by Baghdad. This discrepancy indicates that Iraq may have hidden an additional 6,000 CW munitions.

During this reporting period, Baghdad continued to pursue a BW program. Iraq in 1995 admitted to having an offensive BW program, but UNSCOM was unable to verify the full scope and nature of Iraq's efforts. UNSCOM assessed that Iraq was maintaining a knowledge base and industrial infrastructure that could be used to produce quickly a large amount of BW agents at any time. In addition, Iraq has continued dual-use research that could improve BW agent R&D capabilities. In light of Iraq's growing industrial self-sufficiency and the likely availability of mobile or covert facilities, we are concerned that Iraq may again be producing BW agents.

Iraq is pursuing an unmanned aerial vehicle (UAV) program that converts L-29 jet trainer aircraft originally acquired from Eastern Europe. In the past, Iraq has conducted flights of the L-29, possibly to test system improvements or to train new pilots. We suspect that these refurbished trainer aircraft have been modified for delivery of chemical or, more likely, biological warfare agents.

Iraq aggressively continues to seek advanced conventional warfare (ACW) equipment and technology. A thriving gray arms market and porous borders have allowed Baghdad to acquire smaller arms and components for larger arms, such as spare parts for aircraft, air defense systems, and armored vehicles. Iraq also acquires some dual-use and production items that have applications in the ACW arena through the Oil-For-Food program.

North Korea

During this time frame, P'yongyang has continued attempts to procure technology worldwide that could have applications in its nuclear program. The North has been seeking centrifuge-related materials in large quantities to support a uranium enrichment program. It also obtained equipment suitable for use in uranium feed and withdrawal systems.

North Korea probably has produced enough plutonium for at least one, and possibly two, nuclear weapons. Spent fuel rods canned in accordance with the 1994 Agreed Framework contain enough plutonium for several more weapons.

North Korea also has continued procurement of raw materials and components for its ballistic missile programs from various foreign sources, especially through North Korean firms based in China. North Korea continues to abide by its voluntary moratorium on flight tests, which it has said it would observe until at least 2003.

In April 2001, P'yongyang signed a Defense Industry and Military-Technical Cooperation Agreement with Russia, laying the groundwork for potential arms sales and transfers to North Korea. Weapons sales and deliveries will remain dependent on P'yongyang's ability to pay.

Libya

An NPT party with full-scope IAEA safeguards, Libya continues to develop its nuclear infrastructure. The suspension of UN sanctions has provided Libya the means to enhance its nuclear infrastructure through foreign cooperation and procurement efforts. Tripoli and Moscow continued talks on cooperation at the Tajura Nuclear Research Center and a potential power reactor deal. Such civil-sector work could present Libya with opportunities to pursue technologies that also would be suitable for military purposes. In addition, Libya participated in various technical exchanges through which it could try to obtain dual-use equipment and technology that could enhance its overall technical capabilities in the nuclear area. In 2001, Libya and other countries reportedly used their secret services to try to obtain technical information on the development of weapons of mass destruction, including nuclear weapons. Although Libya is making political overtures to the West in an attempt to strengthen relations, Libya's continuing interest in nuclear weapons and ongoing nuclear infrastructure upgrades raise concerns.

The suspension of UN sanctions in 1999 has allowed Libya to expand its efforts to obtain ballistic missile-related equipment, materials, technology, and expertise from foreign sources. Outside assistance—particularly from Serbian, Indian, Iranian, North Korean, and Chinese entities—has been critical to its ballistic missile development programs. Libya's capability probably remains limited to its Scud B missiles but with continued foreign assistance it will probably achieve an MRBM capability—a long-desired goal—or extended-range Scud capability.

Libya remains heavily dependent on foreign suppliers for CW precursor chemicals and other key related equipment. Following the suspension of UN sanctions, Tripoli reestablished contacts, primarily in Western Europe, with sources of expertise, parts, and precursor chemicals abroad. Tripoli still appears to be working toward an offensive CW capability and eventually indigenous production. Evidence suggests that Libya also is seeking to acquire the capability to develop and produce BW agents.

Following the suspension of UN sanctions, Libyan and Russian firms have completed contracts for conventional weapons, munitions, and upgrades and refurbishment for Libya's existing inventory of Soviet-era weapons.

Syria

Syria—an NPT signatory with full-scope IAEA safeguards—has a nuclear research center at Dayr Al Hajar. Russia and Syria have approved a draft cooperative program on cooperation on civil nuclear power. In principal, broader access to Russian expertise provides opportunities for Syria to expand its indigenous capabilities, should it decide to pursue nuclear weapons. During the second half of 2001, Damascus continued to receive help from abroad on establishing a solid-propellant rocket motor development and production capability. Syria's liquid-propellant missile program has and will continue to depend on essential foreign equipment and assistance—primarily from North Korean entities and Russian firms. Damascus also continued its efforts to assemble—probably with considerable North Korean assistance—liquid-fueled Scud C missiles.

Syria sought CW-related precursors and expertise from foreign sources during the reporting period. Damascus already holds a stockpile of the nerve agent sarin but apparently is trying to develop more toxic and persistent nerve agents. Syria remains dependent on foreign sources for key elements of its

CW program, including precursor chemicals and key production equipment. It is highly probable that Syria also is developing an offensive BW capability.

Syria continues to acquire relatively small quantities of ACW—mainly from Russia and other former Soviet-bloc suppliers. But Damascus' outstanding debt to Russia and inability to fund large purchases have hampered negotiations for the large quantity of equipment Syria needs to revitalize its aging defense forces. Damascus is interested in acquiring Russian SA-10 and SA-11 air defense systems, MiG-29 and Su-27 fighters, and T-80 or T-90 main battle tanks, as well as upgrades for the aircraft, armored weapons, and air defense systems already in its inventory. No breakthroughs in the sales or debt issue have been noted since Syria's Defense Minister met with high-level Russian officials in Moscow in May 2001, although high-level delegations continued to discuss weapons trade.

Sudan

Sudan, a party to the CWC, has been developing the capability to produce chemical weapons for many years. It historically has obtained help from foreign entities, principally in Iraq. Sudan may be interested in a BW program as well.

During the reporting period, Sudan sought to acquire a variety of military equipment from various sources. In the long-running civil war, Khartoum is seeking older, less expensive ACW and conventional weapons that nonetheless offer more advanced capabilities than the weapons of its opponents and their supporters in neighboring countries. We remain concerned that Sudan may seek a ballistic missile capability in the future.

India

The underground nuclear tests in May 1998 were a significant milestone in India's continuing nuclear weapons development program. Since the 1998 tests, New Delhi has continued efforts intended to lead to the development of more sophisticated nuclear weapons. During this reporting period, India continued to obtain foreign assistance for its civilian nuclear power program, primarily from Russia.

India still lacks engineering or production expertise in some key missile technologies. Entities in Russia and Western Europe remained the primary conduits of missile-related and dual-use technology transfers during 2001. During the reporting period, India flight-tested the Dhanush ballistic missile, continued work with the Russians on the Brahmos cruise missile, and moved nuclear-capable Prithvi missiles and launchers together within range of Pakistan as part of its military mobilization.

ACW acquisitions, primarily from Russia, continue to play an important role in India's across-the-board modernization of its armed forces. Many key programs have been plagued by delays, but New Delhi has received two MiG-21-93 fighter aircraft, with Hindustan Aeronautics, Limited, beginning the licensed upgrade of 123 more aircraft. In 2001, New Delhi concluded an \$800 million contract with Russia for 310 T-90S main battle tanks and a smaller contract for KA-31 helicopters. India is in negotiations with Russia for nuclear submarines and an aircraft carrier. India also continues to explore options for leasing or purchasing several airborne early warning systems. In addition to purchasing the Green Pine radar from Israel, New Delhi also signed a \$270 million contract with Tel Aviv for the Barak-1 missile defense system. The Indian Air Force has reopened the competition for jet trainer aircraft and is considering bids from the Czech Republic, France, Italy, Russia, and the United Kingdom.

Israel is also seeking to expand its defense cooperation with India. In recent months, India and Israel have engaged in negotiations for the sale of the Arrow-2 anti-tactical-ballistic missile. Negotiations are

also underway regarding the proposed sale of the three PHALCON airborne early warning (AEW) aircraft for approximately \$1 billion. India has already taken delivery of the Israeli Greenpine radar for installation at a ground site for use as an early warning platform. The Greenpine radar is a component of the PHALCON AEW aircraft. Israel has also reportedly sold the Harpy unmanned aerial vehicle (UAV) to India.

Pakistan

Pakistan's nuclear weapons tests in late May 1998 demonstrated its well-developed nuclear weapons program. During the reporting period, it continued to acquire nuclear-related equipment, some of it dual use, and materials from various sources—principally in Western Europe. If Pakistan chooses to develop more advanced nuclear weapons, seeking such goods will remain important. China provided extensive support in the past to Islamabad's nuclear weapons and ballistic missile programs, but in May 1996 it pledged not to provide assistance to unsafeguarded nuclear facilities in any state, including Pakistan. We cannot rule out, however, the possibility of continued contacts between Chinese and Pakistani entities on Pakistani nuclear weapons development.

Pakistan's ballistic missile program continued to benefit from significant Chinese entity assistance during the reporting period. With Chinese entity assistance, Pakistan is moving toward serial production of solid-propellant SRBMs, such as the Shaheen-I and Haider-I. Although Pakistan last conducted ballistic missile flight tests in 1999, it plans to flight-test the Haider-I ballistic missile in 2002. Successful development of the two-stage Shaheen-II MRBM will require continued assistance from Chinese entities or other potential sources.

Pakistan continues to rely on China and France for its ACW requirements. Islamabad received delivery of upgraded Mirage IIIs from France and negotiated to purchase 40 additional F-7 fighters from China.

Chemical, Biological, Radiological, and Nuclear Terrorism

The threat of terrorists using chemical, biological, radiological, and nuclear (CBRN), materials appears to be rising—particularly since the 11 September attacks. Several of the 30 designated foreign terrorist organizations and other nonstate actors worldwide have expressed interest in CBRN—although terrorists probably will continue to favor proven conventional tactics such as bombings and shootings. In addition, unmanned aerial vehicles (UAVs) and other types of cruise missiles present a serious and growing threat as potential WMD delivery vehicles.

CBRN information and technology is more widely available, especially from sources like the Internet, scientific publications, and conferences.

Increased publicity surrounding the anthrax incidents since the September 11 attacks has highlighted the vulnerability of civilian and government targets to CBRN attacks.

Although the September 11 attacks suggest that al-Qa'ida and other terrorists will continue to use conventional weapons, one of our highest concerns is their stated readiness to attempt unconventional attacks against us. As early as 1998, Bin Ladin publicly declared that acquiring unconventional weapons was "a religious duty."

Terrorist groups worldwide have ready access to information on chemical and biological, and to some extent, even nuclear weapons, via the Internet, publicly available scientific literature, and scientific conferences, and we know that al-Qa'ida was working to acquire some of the most dangerous chemical

agents and toxins. A senior Bin Ladin associate on trial in Egypt in 1999 claimed his group had chemical and biological weapons. Documents and equipment recovered from al-Qa'ida facilities in Afghanistan show that Bin Ladin has a more sophisticated biological weapons research program than previously discovered.

We also know that al-Qa'ida has ambitions to acquire or develop nuclear weapons and has been receptive to any outside nuclear assistance that might become available. In February 2001, during the trial on the al-Qa'ida bombings of the American Embassies in Tanzania and Kenya, a government witness—Jamal Ahmad Fadl—testified that al-Qa'ida pursued the sale of a quantity of purported enriched uranium (which in fact probably was scam material) in Sudan in the early 1990s.

We assess terrorist use of radiological dispersal devices to be a highly credible threat. In addition, we must be alert to the possibility that al-Qa'ida or other terrorist groups might also try to launch conventional attacks against the chemical or nuclear industrial infrastructure of the United States to cause panic and economic disruption.

Key Suppliers:

Russia

Russia's cash-strapped defense, biotechnology, chemical, aerospace, and nuclear industries are eager to raise funds via exports and transfers. In addition, some Russian universities and scientific institutes have shown a willingness to earn much-needed funds by providing WMD or missile-related teaching and training for foreign students. Given the large potential proliferation impact of such exports, transfers, and training, monitoring the activities of specific entities as well as the overall effectiveness of the Russian Government's nonproliferation regime remains a high priority.

Russia has played a key role in supporting civilian nuclear programs in Iran, primarily the Bushehr Nuclear Power Plant project. Even though the ostensible purpose of Russian assistance to Iran's nuclear infrastructure is for civilian applications, we assess that such support enhances Tehran's ability to support a nuclear weapons development effort. The Intelligence Community closely monitors Moscow's nuclear cooperation with Tehran for any direct assistance in support of nuclear weapons efforts.

President Putin in May 2000 amended the presidential decree on nuclear exports to allow Russia in exceptional cases to export nuclear materials, technology, and equipment to countries that do not have full-scope IAEA safeguards. The move cleared the way for expanding nuclear exports to certain countries that do not have full-scope safeguards. For example, Russia supplied India with material for its civilian nuclear program in 2001.

Russian entities during the reporting period continued to supply a variety of ballistic missile-related goods and technical know-how to countries such as Iran, India, and China. Iran's earlier success in gaining technology and materials from Russian entities has helped to accelerate Iranian development of the Shahab-3 MRBM, and continuing Russian entity assistance most likely supports Iranian efforts to develop new missiles and increase Tehran's self-sufficiency in missile production.

During 2001, Russian entities remained a significant source of dual-use biotechnology, chemicals, production technology, and equipment for Iran. Russia's biological and chemical expertise makes it an attractive target for Iranians seeking technical information and training on BW and CW agent production processes.

Russia continues to be a major supplier of conventional arms. Following Moscow's abrogation of the Gore-Chernomyrdin agreement in November 2000, Russian officials stated that they see Iran as a significant source of potential revenue from arms sales and believe that Tehran can become Russia's third-largest conventional arms customer after China and India. In 2001, Russia was the primary source of ACW for China, Iran, Libya, and Sudan, and one of the largest sources for India.

Russia continues to be the main supplier of technology and equipment to India's and China's naval nuclear propulsion programs. In addition, Russia has discussed leasing nuclear-powered attack submarines to India.

The Duma enacted new export control legislation in 1999, and Putin in 2000 reorganized the export control bureaucracy. In August 2001, Putin signed into effect several of the new law's implementing decrees, which updated export control lists for biological pathogens, chemicals, missiles, and related dual-use technologies and equipment.

Despite progress in creating a legal and bureaucratic framework for Russia's export controls, lax enforcement and insufficient penalties for violations remain a serious concern. To reduce the outward flow of WMD and missile-related materials, technology, and expertise, top officials must make a sustained effort to convince exporting entities—as well as the bureaucracy whose job it is to oversee them—that nonproliferation is a top priority and that those who violate the law will be prosecuted.

North Korea

Throughout the second half of 2001, North Korea continued to export significant ballistic missile-related equipment, components, materials, and technical expertise to the Middle East, South Asia, and North Africa. P'yongyang attaches high priority to the development and sale of ballistic missiles, equipment, and related technology. Exports of ballistic missiles and related technology are one of the North's major sources of hard currency, which fuel continued missile development and production.

China

During this reporting period, Beijing continued to narrowly interpret its bilateral nonproliferation commitments with the United States. In the nuclear area, China has made bilateral pledges to the United States that go beyond its 1992 NPT commitment not to assist any country in the acquisition or development of nuclear weapons. For example, in May 1996, Beijing pledged that it would not provide assistance to unsafeguarded nuclear facilities. We cannot rule out, however, some continued contacts subsequent to the pledge between Chinese entities, perhaps acting without Beijing's knowledge or permission, and entities associated with Pakistan's nuclear weapons program.

In October 1997, China gave the United States assurances regarding its nuclear cooperation with Iran. China agreed to end cooperation with Iran on supplying a uranium conversion facility (UCF) and to undertake no new cooperation with Iran after completion of two existing projects. We are concerned that some interactions between Chinese and Iranian entities may run counter to Beijing's bilateral commitments to the United States.

In the missile-related area, Beijing on several occasions has pledged not to sell Missile Technology Control Regime (MTCR) Category I systems but has not recognized the regime's key technology annex. China is not a member of the MTCR.

In November 2000, China committed not to assist, in any way, any country in the development of

ballistic missiles that could be used to deliver nuclear weapons, and to enact at an early date a comprehensive missile-related export control system. Chinese entities provided Pakistan with missile-related technical assistance during the reporting period. Pakistan has been moving toward domestic serial production of solid-propellant SRBMs with Chinese entity help. Pakistan also needs continued Chinese entity assistance to support development of the two-stage Shaheen-II MRBM. In addition, firms in China have provided dual-use missile-related items, raw materials, and/or assistance to several other countries of proliferation concern—such as Iran, North Korea, and Libya.

Chinese firms are supplying dual-use CW-related production equipment and technology to Iran. The US sanctions imposed in May 1997 on seven Chinese entities for knowingly and materially contributing to Iran's CW program remain in effect. Evidence during the current reporting period shows that Iran continues to seek such assistance from Chinese entities.

China is a primary supplier of advanced conventional weapons to Pakistan and Iran, among others. Beijing and Islamabad also have negotiated the sale of an additional 40 F-7 fighters for delivery to Pakistan.

Western Countries

Western European countries maintain rigorous and effective export controls on WMD and missile-related goods and materials. Iran and Libya continued to approach entities in Western Europe to provide needed acquisitions for their WMD and missile programs but had little success. Proliferators and associated networks nonetheless continue to seek machine tools, spare parts for dual-use equipment, and widely available materials, scientific equipment, and specialty metals. In addition, several Western countries announced their willingness to negotiate ACW sales to Libya.

Western countries are an important source for the proliferation of WMD related information and training. The relatively advanced research of western institutes, the availability of relevant dual-use studies and information, the enthusiasm of scientists for sharing their research, and the availability of dual-use training programs and education may have shortened development time for some WMD programs, particularly those of terrorist organizations.

Trends

Some key WMD and missile programs are becoming more advanced and effective as they mature and as countries of concern become more aggressive in pursuing a range of technologies.

Key WMD proliferators are taking steps toward becoming more self-sufficient. They are better able to shield their programs against interdiction and disruption. To this end, they are seeking greater indigenous capabilities, including more advanced production technologies. Such domestic capabilities may not always be a good substitute for foreign imports, but in many cases they may prove to be adequate.

Furthermore, many WMD and missile proliferators are becoming more adept at denial and deception efforts, including hiding transactions and using dual-use technology and underground facilities in indigenous developments. For example, they are pursuing dual-use materials and technologies with WMD as well as legitimate applications that can be incorporated into commercial facilities and converted to WMD uses fairly quickly.

Under economic pressure, the need for lucrative foreign sales is a strong incentive to supplying entities,

particularly in the case of dual-use items and technology. Weak export-control enforcement in some countries such as Russia and China encourages this trend. Furthermore, some traditional recipients of WMD and missile-related technology, particularly maturing state-sponsored programs, are beginning to supply technology and expertise to other proliferators. Such "secondary proliferators" as India, Iran, North Korea, and Pakistan are not members of control regimes like the Nuclear Suppliers Group, Australia Group, and Missile Technology Control Regime and do not adhere to their export constraints.

Nuclear, chemical, biological, and ballistic missile-applicable technology and expertise continues to gradually disperse worldwide. Nuclear fuel-cycle and weapons-related technologies have spread to the point that from a technical standpoint, additional proliferators may be able to produce sufficient fissile material for a weapon and to develop the capability to weaponize it. On the other hand, important political disincentives to nuclear weapon development will remain in place for most countries. As developing countries expand their chemical industries into pesticide production, they also are advancing toward at least latent chemical warfare capability. Likewise, additional nonstate actors are becoming more interested in the potential of using biological warfare as a relatively inexpensive way to inflict serious damage. The proliferation of increasingly capable ballistic missile designs and technology poses the threat of more countries of concern eventually breaching the 1,000-km range of SRBMs and posing greater risks to regional stability.

Finally, most countries of proliferation concern are continuing efforts to develop indigenous designs for advanced conventional weapons and to expand production capabilities, although most of these programs usually rely heavily on foreign technical assistance. Many of these countries—unable to obtain newer or more advanced arms—are pursuing upgrade programs for existing inventories. In addition, some of the recipient countries, such as Iran, have in turn become suppliers to those countries and entities that are unable to purchase weapons elsewhere.

[1] See pages 13 and 14 for a further discussion of possible interaction between Chinese and Iranian entities with regard to China's pledge to halt assistance to Iran's nuclear programs after these projects are complete.