

NUCLEAR- AND MISSILE-RELATED TRADE AND DEVELOPMENTS FOR SELECTED COUNTRIES, NOVEMBER 1996-FEBRUARY 1997

by Wyn Bowen, Kimber Cramer, Andrew Koch, and Adam Moody

The material in this overview is drawn from selected abstracts that appear in the Center for Nonproliferation Studies' nuclear and missile databases. Transactions of nuclear and missile technologies, parts, and materials are listed according to the recipient country. Other developments are listed according to the country where the event or development took place. The new, streamlined format of this section indicates a decision by the Monitoring Proliferation Threats Project to focus on only key information in the overview and to offer more in-depth analysis in the "Reports" section of the journal.

ASIA

BRUNEI

Missile

The government of Brunei requested the purchase of 96 RIM-7M vertical-launch Seasparrow missiles, the related Mk 48 canister system, and support from the United States at a total cost of \$52 million. Brunei wants the missiles to arm its new offshore patrol vessels.

Jane's International Defense Review, 11/96, p. 9.

CHINA

Nuclear

Chinese President Jiang Zemin, accompanied by Vice Premier and Foreign Minister Qian Qichen, met with Pakistani leaders on 12/1/96. The meetings were intended to assure Pakistan that China had no intention of discontinuing its nuclear assistance.

News (Islamabad), 12/2/96, p. 1; in FBIS-NES-96-232, 12/2/96.

From 12/5/96 to 12/18/96, Chinese Defense Minister Chi Haotian made his first trip to the United States, meeting with U.S. President Bill Clinton and Secretary of Defense William Perry. Chi discussed recent U.S. weapons sales to Taiwan and China's reported missile and nuclear transfers to Iran and Pakistan.

Washington Times, [Online] <http://www.washingtontimes.com>, 12/10/96; Reuter, 12/12/96; in Executive News Service, 12/12/96.

U.S. officials said China has not met the conditions for presidential certification of its nonproliferation credentials. Certification would enable the 1985 Sino-U.S. nuclear cooperation agreement to enter into force. A possible compromise is a "partial certification," which would permit contracts to be signed but not allow the transfer of components. China's assistance to nuclear programs in Pakistan and Iran is the primary obstacle to certification.

Nucleonics Week, 12/12/96, p. 1.

In Moscow on 12/27/96, Russia and China signed an agreement to build two VVER-1000 units near Lianyungang in China's eastern Jiangsu Province. The original site had

been at Liaoning. The project will be partly financed by a \$2.5 billion loan from Russia. Russian technicians will assist in the construction. Russia and China also discussed the construction of a gas centrifuge plant in China and planned a 4/97 summit meeting.

Washington Times, 12/28/96, p. A1; *Nuclear News*, 12/96, p. 35; BBC Monitoring Summary Of World Broadcasts, 12/11/96; *Nucleonics Week*, 1/23/97, pp. 1, 11.

Armen Abagyan, director of the All-Russian Institute for Nuclear Power Plant Operation (VNIIAES), made his first official visit to China to consolidate the 11/27/96 bilateral nuclear energy framework accord.

Nucleonics Week, 1/23/97, pp. 1, 11.

Chinese and American researchers have completed the conceptual design for a 1,000 MW pressurized water reactor (PWR). Qian Juexin, engineer-in-chief at the Shanghai Nuclear Engineering Research and Design Institute, said that design work was done by his organization in collaboration with the Shanghai Nuclear Power Office, East China Electric Power Design Institute, and Westinghouse.

Xinhua (Beijing), 2/27/97; in FBIS-CHI-97-040, 2/27/97.

Missile

On 11/29/96, China and India signed agreements to limit the quantities and types of missiles and other military equipment deployed along their shared border. The agreements followed official talks between Chinese President Jiang Zemin and Indian Prime Minister Deve Gowda.

Hindu, 12/7/96, p. 1.

The Shanghai Academy of Spaceflight Technology recently completed developmental testing of a medium-range surface-to-air missile (SAM), called LY-60, for export. Liu Xinamin, senior engineer at the academy, said the LY-60 is capable of detecting up to 40 targets, tracking 12, and distinguishing which three are the greatest threats. It is designed to intercept air-to-ground missiles and attack aircraft.

Aviation Week & Space Technology, 12/2/96, p. 61.

Richard Fisher Jr., a senior policy analyst at the Washington-based Heritage Foundation, said that China is adapting GPS technology to improve the accuracy of its Dong Feng-15 (DF-15) ballistic missile and is developing a terminally guided warhead for it. Fisher received this information from an institute engineer while attending China's Zhuhai Airshow, held 11/5/96-11/10/96.

Voice of America, [Online] <http://www.voia.gov>, 1/17/97.

After three years of preparation, the new missile unit of the Chinese army's Second Artillery Corps has reached "fighting" capacity. Previously, the Second Artillery Corps fired four missiles during the 3/96 Taiwan Strait exercises, and six missiles before that.

Ping Kuo Jih Pao (Hong Kong), 2/11/97, p. A12; in FBIS-CHI-97-028, 12/11/97.

According to representatives of the Russian design bureau Antey, Russia is currently providing China with Tor-M1 [NATO designation SA-15] SAM systems and is negotiating to sell them to several other Asian countries.

Segodnya, [Online] <http://www.eastview.com/segodnia>, 2/25/97; *Pravda pyat*, 2/26/97, p. 1.

INDIA

Nuclear

India's civilian nuclear program is suffering a severe budget crisis, losing more than 70 percent of its allocation since 1988. However, the portion for financing research and development is growing — to approximately \$100 million per year.

Bulletin Of The Atomic Scientists, 11/96-12/96, pp. 15-16.

S.B. Bhoje, an official at the Indira Gandhi Centre for Atomic Research (IGCAR), said that the concept design for the 500 MW fast breeder reactor at Kalpakkam is complete. Bhoje added that construction of the reactor would begin in 1999 and be completed by 2007.

Indian Express, 1/24/97, [Online] <http://www.expressindia.com>.

Indian Prime Minister Deve Gowda dedicated a new fuel fabrication plant at the Nuclear Fuel Complex in Hyderabad.

Doordarshan Television Network (Delhi), 1/28/97; in FBIS-NES-97-019, 1/28/97.

In a change of policy, Indian Prime Minister Deve Gowda said that his government intends to allow complete foreign ownership of nuclear plants on Indian territory.

Nihon Keizai Shimbun (Tokyo), 2/8/97, p. 1; in FBIS-NES-97-027, 2/8/97.

During talks with Indian Minister of Foreign Affairs Inder Kumar Gujral, Russian First Deputy Prime Minister Viktor Ilyushin said his country plans to proceed with the sale of two 1,000 MW light water reactors to India. Russia has offered a \$2.6 billion credit.

OMRI Daily Digest, 2/11/97.

Missile

India displayed its Prithvi and Akash missiles at Aero India 1996, as well as an indigenously developed airborne early warning (AEW) system. Abdul Kalam, scientific advisor to India's defense minister, told reporters at the exhibition that India was "fully capable of meeting all the technological requirements of the missile program." According to Kalam, India did not need to approach any of the MTCR member states to acquire missile-related materials. Kalam said the Trishul surface-to-air missile (SAM) would

begin user trials in 1997 and the Prithvi surface-to-surface missile had entered the planned production program.

Deccan Herald (Bangalore), 12/5/96; in FBIS-NES-96-236, 12/5/96; *Asian Age* (Delhi), 12/2/96, p. 1; in FBIS-NES-96-234, 12/2/96.

According to a defense ministry report disclosed in the Indian parliament, Prime Minister Deve Gowda's coalition government plans to shelve the Agni intermediate-range ballistic missile (IRBM) program unless the country's national security is threatened. The announcement came shortly after a visit by Chinese President Jiang Zemin. It has been suggested that New Delhi suspended the missile project in return for concessions from Beijing.

Washington Post, 12/6/96, p. 46.

An Indian Defence Research and Development Organisation (DRDO) source said that a team of specialists at Bharat Dynamics Ltd. in Hyderabad would not need long to assemble and prepare the Agni IRBM for launch if the order were given. The Agni could be fitted with a fuel-air explosive or a pre-fragmented warhead. India has performed extensive computer modeling of several warhead types for the Agni, but it has not been able to test the missile with a live warhead.

Business Standard (Delhi), 12/12/96, p. 3; in FBIS-NES-96-241, 12/12/96.

Indian Defence Minister Mulayam Singh Yadav said there was no chance the Agni IRBM would be shelved; rather it was "very much on." In response to reports that the Agni had been put on hold, DRDO chief Abdul Kalam said that the project was proceeding as planned and previous governments had allocated sufficient funds.

Hindustan Times (Delhi), 12/15/96, p. 9; in FBIS-NES-96-242, 12/15/96; *Deccan Herald* (Bangalore), 12/14/96; in FBIS-NES-96-242, 12/14/96.

DRDO scientists plan to increase the accuracy of the 150 km-range Prithvi surface-to-surface missile by incorporating GPS technology. DRDO scientists hope GPS technology will reduce the Prithvi's circular error probability (CEP) from 150 m to 75 m.

Times Of India (Bombay), 12/25/96, p. 6; in FBIS-NES-96-249, 12/25/96.

India successfully flight tested its indigenously developed Trishul (Trident) SAM, dubbed by analysts as "India's answer to the U.S.-made Patriot." The test took place from a mobile launcher at the interim test range at Chandipur, approximately 15 km from Balasore in Orissa. Indian defense scientists described the "command-guidance flight" as flawless.

AFP (Hong Kong), 12/29/96; in FBIS-NES-96-251, 12/29/96; All India Radio Network (Delhi), 12/30/96; in FBIS-NES-96-251, 12/30/96; Reuter, 12/29/96; in Executive News Service, 12/29/96.

A senior Israeli defense official said that India is negotiating the purchase of Barak-1 vertically launched SAMs. The missiles are being acquired for the navy, primarily to defend against anti-ship missiles, including the Harpoon. Development of the Barak-1 is a joint venture between Israel Aircraft Industries (IAI) and Rafael.

Indian Express (Delhi), 1/6/97; in FBIS-NES-97-004, 1/6/97.

Sources in the Indian Ministry of Defence say that Israel will subcontract to Russia for weapon systems supplied to India, a strategy designed to prevent the Arab world and the United States from criticizing Indian-Israeli cooperation. Israel can provide advanced technology for communication, command, control, and intelligence-gathering systems, as well as specific technical assistance on India's indigenous Akash anti-missile system. In addition to upgrades in air defense and surveillance systems, India plans to acquire two "troops" [platoon-sized units in an armored force] of Hunter and Seeker remotely piloted vehicles. Joint Russian, Israeli, and Indian teams will upgrade more than 120 MiG-21 fighter aircraft and develop state-of-the-art air-to-air missile technology.

Hindustan Times (Delhi), 2/13/97, p. 12; in FBIS-NES-97-030, 2/13/97.

During a visit to Israel, Indian Defence Secretary Taposh Banerji signed an agreement with IAI to purchase 12 Searcher reconnaissance unmanned aerial vehicles (UAVs) for the army. The deal is worth approximately \$18 million. Also, Banerji met with senior Israeli officials and defense industry representatives to discuss acquiring missiles and related equipment. India is particularly in-

terested in Israel's Arrow anti-missile system because of concern about Pakistan's alleged acquisition of M-11 missiles. India also needs advanced launch and guidance systems for the Prithvi and submarine-launched Sagarika missiles. Indian officials said Israeli firms have offered other equipment, including radars, electronic countermeasures systems, GPS navigation, and command-and-control systems.

Defense News, 2/17/97-2/23/97, pp. 1, 40; *Business Standard* (Delhi), 2/25/97, p. 1; in FBIS-NES-97-038, 2/25/97.

According to Indian officials, a delegation from Rosvoorouzhnie, Russia's arms export agency, offered to sell India 150 km-range S-300 [NATO designation SA-10 'Grumble'] air-defense systems. Dmitry Morozov, a Rosvoorouzhnie spokesman, would not give details on numbers of systems or price, but sources in both countries say that Russia plans to sell India six S-300s worth \$1 billion. The S-300 PMU, which can destroy aircraft and SAMs, and the S-300 V [NATO designation SA-12 'Giant'], which can target ballistic missiles, are the variants being offered.

Defense News, 2/24/97-3/2/97, p.6.

India successfully tested the 250 km-range Prithvi-250 surface-to-surface missile at the Interim Test Range near Chandipur-on-sea in Orissa. This test, the sixteenth launch of a Prithvi and the third test-firing of the Prithvi-250, operationalizes the Prithvi system. According to mission director S.C. Narak, all mission objectives were met, including proving the advanced real-time software for trajectory maneuvers. He said that the development phase for the missile is now complete.

Deccan Herald (Bangalore), 2/25/97; in FBIS-NES-97-037, 2/25/97; Doordarshan Television Network (Delhi), 2/23/97; in FBIS-NES-97-037, 2/23/97.

INDONESIA

Nuclear

Indonesia intends to build its first nuclear power plant near Mount Muria, 440 km east of Jakarta, and is investigating the possibility of purchasing Australian uranium.

Asian Defence Journal, 11/96, p. 72.

JAPAN

Nuclear

On 1/20/97, Japan's Nuclear Energy Group issued a report calling for plutonium recycling and the use of mixed-oxide (MOX) fuel in the Japanese fuel cycle. The report also encouraged the continued development of plutonium-burning fast-breeder reactors.

Nucleonics Week, 1/30/97, pp. 6-7.

Missile

According to U.S. administration officials, Japanese officials appear hesitant about joining the United States in developing an anti-ballistic missile system for the Japanese islands. Japan's potential share of the project could amount to \$10 billion annually for four or five years. Japan will not make an official decision until mid-1997.

New York Times, 2/15/97, p. A1.

KOREAN PENINSULA ENERGY DEVELOPMENT ORGANIZATION (KEDO)

On 12/10/96, U.S. and North Korean officials met in New York to discuss issues such as the 9/96 incident in which a North Korean submarine landed commandos south of Kangnung in South Korea, the proposed four-party peace talks [involving North and South Korea, China, and the United States], and the U.S.-North Korean Agreed Nuclear Framework. The U.S. delegation was led by Mark Minton, director of the State Department's Office of Korean Affairs.

Disarmament Diplomacy, 12/96, pp. 43-44.

On 1/8/97, North Korean representative Ho Jong and KEDO Executive Director Stephen Bosworth signed two protocols in New York that will allow work to begin at the light-water reactor site at Sinpo, North Korea. The first protocol addresses the terms under which North Korea will provide goods, services, and facilities on-site at Sinpo. The second addresses the turning over of the site itself from North Korea to KEDO.

Korea Herald, [Online] <http://203.240.240.11/kh0129>, 1/9/97.

KEDO and the European Union agreed on the general terms for E.U. membership in the

organization. The arrangement includes an annual \$16.2 million contribution by the E.U. in exchange for full membership and two seats on KEDO's executive board.

Nucleonics Week, 1/16/97, p. 15.

Equipment for use at the Sinpo, North Korea, light water reactor project was due to leave for North Korea on 1/20/97. This is the first shipment of equipment under the U.S.-North Korean Agreed Nuclear Framework, implemented by KEDO.

Nuclear News, 2/97, p. 44.

KEDO officials from the United States, South Korea, and Japan will meet on 2/12 and 2/13/97 in Tokyo to discuss the North Korean light water reactor project. The officials will discuss the interim evaluation of the project's rough order magnitude (ROM), the dispatch of the seventh site survey team, and the protocol covering steps to be taken in the event of non-compliance.

Yonhap (Seoul), 2/10/97; in FBIS-EAS-97-027, 2/13/97.

KEDO plans to send a seventh land survey team for the North Korean light-water reactor project on 2/22/97, as scheduled, despite the uncertainty of North-South relations. Relations are tense because of the defection by North Korean Worker's Party Secretary Hwang Jang Yop to South Korea. The incident occurred at the South Korean Embassy in China.

Yonhap (Seoul), 2/14/97; in FBIS-EAS-97-031, 2/14/97.

NORTH KOREA

Nuclear

On 1/11/97, Taiwan's state utility, Taipower, signed a contract to ship 60,000 barrels of low-level nuclear waste per year for the next two years to North Korea. Taiwan state television reported that the first shipment may occur by the end of 2/97. Taiwan will pay North Korea approximately \$1,150 per barrel. North Korea's Atomic Safety Commission will provide space (in a final storage facility), supervision, and safety controls, and will be responsible for shipment.

Reuter, 1/27/97; in Executive News Service, 1/27/97.

North Korea has resumed canning nuclear fuel rods at its Yongbyon facility. The U.S. State Department has dispatched a team to the site to supervise the process.

Yonhap (Seoul), 1/30/97; in FBIS-TEN-97-002, 1/30/97.

South Korea's Ambassador Yi Sung-kon met with IAEA Director General Hans Blix on 2/4/97 in Vienna to discuss South Korean concerns about the planned shipment of low-level nuclear waste from Taiwan to North Korea. "The problem," Blix said, "is that neither the IAEA nor other international organizations have the legal tools to control the shipment of low-level nuclear waste from one country to another."

Yonhap (Seoul), 2/5/97; in FBIS-TEN-97-002, 2/5/97.

Missile

North Korea's state-run Lyongaksan General Trade Corporation is responsible for the 4/96 shipment of 200 barrels of ammonium perchlorate from Nampo, North Korea, through Hong Kong, to Pakistan's Space and Upper Atmosphere Research Commission (SUPARCO).

South China Morning Post (Hong Kong), 12/13/96, p. 4; in FBIS-CHI-96-242, 12/13/96.

PAKISTAN

Nuclear

The Pakistan Atomic Energy Commission (PAEC) said the Chashma 300 MW pressurized water reactor (PWR), built with Chinese assistance, is proceeding on schedule, and the nuclear components will be delivered by China in 1997. PAEC personnel are undergoing maintenance and operational training at China's Qinshan nuclear power plant.

Nucleonics Week, 12/5/96, p. 16.

Missile

Pakistan launched its first indigenously built missile craft at the naval dockyard in Karachi. The 200-ton ship is capable of 25 knots and will be equipped with surface-to-surface missiles, modern electronic-warfare systems, fully automatic radar control, and a combat information command center.

PTV Television Network (Islamabad), 11/17/96; in FBIS-NES-96-223, 11/17/96.

SOUTH KOREA

Nuclear

In 1996, South Korea's Yonggwang-4 nuclear power plant began commercial operations, while construction of the Yonggwang-5 and -6 reactors continued. The Wolsong-2 Canadian-designed pressurized water reactor (PWR) is expected to be operational in 6/97. There are currently seven additional reactor units under construction in South Korea expected to begin commercial operations by 2002.

Nukem, 11/96, pp. 33-34.

South Korea's National Assembly passed a law that significantly revises the country's Atomic Energy Law. South Korea's Atomic Energy Commission will be responsible for decisions relating to storage and disposal of spent fuel. The Korea Electric Power Corporation (KEPCO) will take over waste management activities. The Korea Nuclear Fuel Co. will take over the design of pressurized water reactors and the operation of the Korea Atomic Energy Research Institute's (KAERI's) fuel-fabrication facilities.

Korean Atomic Industrial Forum; in NucNet News, 12/3/96, No. 565.

Missile

Responding to the U.S. claim that South Korea test-fired a missile just before the start of U.S.-South Korean missile talks in 12/96, the *Korea Times* reported that the United States probably detected the test flight of a prototype unmanned aerial vehicle (UAV).

Korea Times (Seoul), 1/1/97, p. 21; in FBIS-EAS-97-001, 1/1/97.

In 6/97, the Korea Aerospace Research Institute (KARI) intends to launch a two-stage rocket called the KRS-II from Anhung city in South Chungchong province. The KRS-II, a follow-on to the single stage KRS-I will have a range of 123 km. KARI, the Korea Advanced Institute for Science and Technology, Seoul University, and Hanyang University developed the rocket. Doo-won Heavy Industrial, Hanhwa, Korean Fiber, Danam Industries, and Ace Antenna will produce the KRS-II.

Joong-Ang Ilbo, [Online] <http://www.joongang.co.kr:80/joongang>, 1/23/97; in FBIS-EAS-97-015, 1/23/97.

TAIWAN

Missile

On 1/15/97, six MIM-104 U.S. Patriot missile systems arrived at Keelung in Taiwan. The United States is to deliver the remainder of a total 200 Patriot missiles in 3/97.

AFP, 1/16/97; in FBIS-CHI-97-011, 1/16/97.

Taiwan is preparing for the first test-firing of its Tien Chi (Sky Halberd) surface-to-surface missile. The Tien Chi is reportedly adapted from the Tien Kung-2 (Sky Bow-2) surface-to-air missile (SAM).

Jane's Defence Weekly, 1/29/97, p. 14.

THAILAND

Nuclear

Thailand's Office of Atomic Energy for Peace asked the Thai cabinet to allocate 3.3 billion baht for construction of a 5-10 MW research reactor to be built by the U.S. company General Atomics.

Bangkok Post, 1/2/97, p. 1; in FBIS-EAS-97-001, 1/2/97.

UZBEKISTAN

Nuclear

The director-general of the Uzbek Navoyi mining and metallurgical combine signed an agreement in Washington, D.C. to deliver Uzbek uranium to the United States. According to the agreement, the Navoyi combine will supply a significant quantity directly to the U.S. market and a larger quantity via third-party countries.

Nezavisimaya gazeta, [Online] <http://home.eastview.com/news/ng>, 1/23/97.

VIETNAM

Nuclear

Following a review of documents to be declassified by the U.S. Department of Energy, it was discovered that two U.S. engineers were sent in 3/75 to retrieve uranium fuel and 80 g of plutonium from a U.S.-built reactor in Dalat, South Vietnam. They recovered 26 lb of uranium, but inadvertently left the plutonium behind. The department was not aware of the missing plutonium until the review in late 1996.

Washington Post, 1/16/97, p. A22.

EUROPE

ARMENIA

Nuclear

According to Suren Azatyan, director of Armenia's Metsamor nuclear power plant, France is expected to build Armenia's second nuclear power station for approximately \$2 billion. France will provide equipment for the plant, except for the reactors and steam generators, which will be supplied by Russia.

Segodnya, [Online] <http://www.eastview.com/segodnia>, 1/23/97.

BELARUS

Nuclear

Russian Defense Minister Igor Rodionov and acting Belarusian Defense Minister Alexander Chumakov held a ceremony in a village west of Minsk marking the withdrawal of the last Soviet-era RS-12M [NATO designation SS-25 'Topol'] ICBM from Belarusian territory.

Reuter, 11/27/96; in Executive News Service, 11/27/96.

BULGARIA

Nuclear

Thirteen containers of radioactive material were confiscated from private homes in the Bulgarian towns of Ispirikh and Golyam Porovets. According to preliminary data from the Nuclear Research and Nuclear Power Generation Institute (NRNPGI), the containers held cesium-137, iridium, uranium, and plutonium. Yordan Stamenov, director of NRNPGI, said the contents of the containers were "all isotopes which were produced abroad... and were either smuggled to Bulgaria or stolen."

Novinar, 12/18/96, p. 3; in FBIS-EEU-96-233, 12/18/96.

ESTONIA

Missile

The Anglo-French company Matra BAe Dynamics and the Estonian plant Dvigatel in Tallinn agreed to start preliminary production of surface-to-surface and surface-to-air missiles. The first prototypes are scheduled to be assembled by 1/97.

Pravda pyat, 12/10/96, p. 1.

FINLAND

Missile

One of three Russian Buk M1 [NATO designation SA-10 'Grumble'] SAM systems was delivered to the Finnish Air Defense Network. Finland is acquiring the SAM system to protect the Helsinki region from air attacks. According to representatives of the Russian supplier and the Finnish Air Defense Network, Finland was the first export customer for the Buk M1.

Hufvudstadsbladet, 1/31/97, p. 1; in FBIS-WEU-97-024, 1/31/97; *Pravda pyat*, 1/24/97-1/31/97, p. 1.

GEORGIA

Nuclear

At a press conference on 1/13/97, Russian Minister of Atomic Energy Viktor Mikhailov said that Russia will take back about 9.5 lb of highly enriched uranium and nearly 2 lb of spent fuel from the Georgian Institute of Physics during 2/97 or 3/97. Mikhailov said negotiations are at a "bureaucratic stage." The transaction, estimated to cost \$500,000, has been slowed due to insufficient funds and the inability of Russia and Georgia to resolve a number of "technical issues."

New York Times, 1/5/97, pp. 4-5; *OMRI Daily Digest*, 1/13/97; *New York Times*, 1/14/97, p. 8; *Arms Control Today*, 1/97-2/97, p. 27.

ROMANIA

Nuclear

Romanian police discovered a small amount of uranium in an apartment in Bucharest. Diplomatic sources said that 60 g of "low-grade uranium" were seized. Nine Romanians and one Moldovan were arrested. Another source said that eight suspects were apprehended, 200 g of uranium seized, and that the arrests took place in a Bucharest park, where the suspects were attempting to pass the nuclear material concealed in a loaf

of bread to a Swiss buyer. The Romanian press originally reported that the confiscated material was highly enriched uranium from dismantled Ukrainian nuclear weapons. However, neither Romania nor Ukraine had officially reported the incident to the IAEA, and it had not appeared on the IAEA's nuclear materials smuggling database as of 12/23/96.

NuclearFuel, 12/30/96, p. 14; Kossuth Radio Network, 12/17/97; in FBIS-TAC-97-003, 12/17/96.

In a report to Romanian President Emil Constantinescu and other government officials, the police announced that they confiscated a total of 15 kg of nuclear fuel and 318 kg of radioactive material in 1996.

Rompress, 1/18/97; in FBIS-EEU-97-016-A, 1/18/97.

RUSSIA

Nuclear

Italian law enforcement agencies foiled a plan to illicitly sell Russian nuclear material to countries in North Africa. According to Italian officials, a former KGB agent who used the name "Major" had established contact with the Cosa Nostra crime organization. Major intended to sell uranium obtained from Russian weapons stockpiles. Eleven people have been arrested in Italy and Germany in connection with the operation, code-named Tabula Rasa.

Itar-Tass, 11/24/96; in FBIS-SOV-96-229, 11/25/96; *La Nazione*, 11/26/96, p. 6; in FBIS-WEU-96-229, 11/26/96.

A special train carried 29 MT of nuclear waste from Loviisa, Finland, to Chelyabinsk, Russia. This was the last such shipment to Russia. The Finnish parliament passed a law prohibiting the export of radioactive waste, effective January 1997.

Izvestiya, 11/28/96, p. 3; in FBIS-SOV-96-233, 11/28/96; NucNet News, 12/4/96.

The Krasnoyarsk branch of Russia's Federal Security Service (FSB) confiscated 22 MT of "radioactive concentrate" illegally brought to Russia by an unnamed foreign firm. It acquired 26 bags of a radioactive substance, declared as sugar on customs documentation, and transported them to Krasnoyarsk in two railroad cars. FSB officers suspect that the firm was attempting to dump nuclear waste

on Russian territory. The FSB charged the firm with nuclear smuggling, and an investigation is under way.

Izvestiya, 12/25/96, p. 2.

According to Russian officials, in late 1996, the Russian Ministry of Atomic Energy (Minatom) purchased via European middlemen an IBM RS/6000 SP supercomputer for \$7 million and a Challenge superserver, each capable of executing 10 billion operations per second. According to Minatom head Viktor Mikhailov, by early 1997 the supercomputers were in use at Chelyabinsk-70 and Arzamas-16, Russia's primary nuclear warhead R&D centers.

Interfax, 1/13/97; *Russia Today*, [Online] <http://www.russiatoday.com/rtoday/news>, 2/25/97.

In 1/97, the U.S. firm Silicon Graphics shipped two small supercomputers to Chelyabinsk-70, which had informed the company that the computers would be used for "environmental science." The computers were identified as "'parallel processors' equipped with eight R1000 processors" manufactured by MIPS, a firm specializing in high-speed microprocessors. Silicon Graphics said it did not know Chelyabinsk-70 was a nuclear weapon-design facility. The \$650,000 deal was finalized in 1996.

New York Times, 2/19/97, p. 6; *Wall Street Journal*, 2/18/97, p. 4; *Export Practitioner*, 3/97, pp. 10-11.

Missile

The Russian arms exporter Rosvoorouzhnie is likely to consider an offer by the German firm Daimler-Benz to purchase RS-18 [NATO designation SS-19 'Stiletto'] ICBMs for use in launching satellites, according to a source close to the organization. Russian authorities are still negotiating the contract, and its completion depends upon several intergovernmental agreements. Russia will require that "certain classified instruments" be removed from the missiles prior to shipment to Germany.

Moskovskie novosti, 12/8/96-12/15/96, p. 2; *Moscow News*, 12/19/96-12/25/96, p. 16.

Unpaid Russian soldiers are reportedly selling defense matériel to arms dealers, criminal organizations, and terrorists. The current price of a Russian RSD-10 [NATO designation SS-20 'Saber'] ballistic missile is

DM105,000. For months, 1.4 million Russian soldiers have received no salary. Russian Colonel General Muranov had said that, "The situation is dramatic! I know that dealers are already offering nuclear weapons...."

Bild, 2/3/97, p. 2; in FBIS-SOV-97-023, 2/3/97.

SWEDEN

Nuclear

According to Swedish police, 1,025.4 kg of weapons-grade beryllium disappeared from a freight terminal at Arlanda airport in Stockholm as it was being shipped from Estonia to the United States. No additional information was provided.

Reuter, 11/22/96; in Executive News Service, 11/22/96.

UKRAINE

Missile

Volodymyr Karkanytsya, deputy head of Ukraine's military-industrial complex, said that three Ukrainian arms exporting firms (Progress, Ukrinmash, and Ukroboron-service) will be merged into a single company called Ukrspetsexport in order to increase government control over the country's arms sales.

OMRI Daily Digest, 11/6/96.

Ukrainian President Leonid Kuchma decreed that control over defense-related exports be increased. The decree seeks to implement "strict control" over the international transport of weapons and military technology, as well as the "raw materials and skills" used in their production.

OMRI Daily Digest, 1/3/97.

President Leonid Kuchma refuted allegations that Ukraine sold OTR-21 [NATO designation SS-21 'Scarab'] ballistic missiles to Libya and repaired Libya's Soviet-made submarines.

Delovoy mir, 2/6/97, p. 2; in *Oborona i bezopastnost*, 2/10/97, p. 12.

YUGOSLAVIA (SERBIA/ MONTENEGRO)

Nuclear

Officials at the Vinca Institute of Nuclear Sciences in Belgrade requested that the IAEA remove 40 kg of unused highly enriched uranium fuel, which is not well protected, from its premises. Another 40 kg of spent fuel stored at the site is in dangerously corroded canisters and could explode.

NuclearFuel, 2/10/97, pp. 1, 8-9.

MIDDLE EAST AND AFRICA

CYPRUS

Missile

A delegation from the Russian arms exporter Rosvooruzhenie signed a contract with the Greek Cypriot government to provide 20 S-300 [NATO designation SA 'Giant'] SAM systems at a cost of \$660 million, according to Greek Cypriot sources.

OMRI Daily Digest, 1/6/97.

Turkey threatened a pre-emptive strike if the Greek Cypriot government goes ahead with the purchase of S-300s from Russia. However, U.S. State Department official Carey Cavanaugh announced that the missile sale had been "significantly postponed" based on Greek Cypriot government assurances that it would not deploy the missiles for at least 16 months. In a meeting with Cavanaugh, Greek Cypriot President Glafcos Clerides said that "not a single component of those missile systems will be brought to this island in the next 16 months."

Washington Times, 1/11/97, p. A8; *New York Times*, 1/14/97, p. 6; *Financial Times*, [Online] <http://www.ft.com>, 1/14/96.

Greek Cypriot President Glafcos Clerides denied reports that Cyprus promised to delay the deployment of S-300s. Clerides said that the 16-month delay was required by Russia to complete its part of the estimated \$600 million deal. An official at the Cypriot embassy in Moscow said that assurances

given to the United States are "not a concession.... The contract is still valid."

Jamestown Foundation Monitor, 1/15/97; *Izvestiya*, 1/15/97, p. 3; in *Oborona i bezopasnost*, 1/17/97, p. 13.

An unnamed Russian defense ministry official said that Russia might provide Cyprus with its secret Tuman jamming system to protect the S-300s during their deployment to Cyprus. Tuman uses a network of small marine beacons that detect low-flying aircraft and interfere with their navigational equipment. Thus, aircraft are forced to fly at a higher altitude where they can be more easily detected by radar and shot down.

Itar-Tass, 1/31/97; in *Jamestown Foundation Monitor*, 2/3/97; Russian Public Television First Channel Network, 2/1/97; in FBIS-SOV-97-025, 2/1/97.

While in Davos, Switzerland, Greek Cypriot President Glafcos Clerides said that Cyprus will cancel plans to purchase 20 Russian S-300s if Nicosia and Ankara reach a settlement on the divided island.

AFP, 1/31/97; in FBIS-WEU-97-021, 1/31/97.

An unnamed Russian Defense Ministry spokesman said that Russia may offer Cyprus the Tor-M1 [NATO designation SS-15 'Gauntlet'] SAM system if Turkey tries to block delivery of the S-300 to Cyprus. The Tor-M1 is designed to counter cruise missiles, laser-guided bombs, and remote-controlled air-to-surface missiles. However, Greek Cypriot defense minister Costas Eliades "expressed surprise" and said that his government is not interested in purchasing the Tor-M1.

Defense News, 2/3/97-2/9/97, p. 12; Itar-Tass, 1/27/97; in *Jamestown Foundation Monitor*, 1/28/97; *Segodnya*, [Online] <http://www.eastview.com/segodnia>, 1/28/97.

EGYPT

Missile

The Egyptian government will receive 368 HAWK rocket motors from the U.S. firm Aerojet Propulsion Systems of Sacramento, California. The company received the \$7.5 million order from the U.S. Army Missile Command, Redstone Arsenal, Alabama. The order should be completed by 8/31/98.

Jane's Defence Contracts, 11/96, p. 13.

IRAN

Nuclear

U.S. and Cypriot officials are preparing to intercept a shipment of equipment for an Iranian civilian reactor that is expected to be shipped via Cyprus. The Cypriot ports of Larnaca and Limassol have allegedly become important transshipment points for unconventional weapons bound for Iran and Syria.

Defense News, 11/4/96-11/10/96, p. 15.

Unnamed European intelligence sources said Iran is trying to construct mine shafts in preparation for conducting nuclear tests. Iran has received some Russian assistance with the mining project and is attempting to acquire the technology through industrial espionage.

U.S. News & World Report, 12/2/96, p. 27.

In early 12/96, Iran informed the IAEA that it plans to build a uranium hexafluoride (UF₆) conversion plant at Isfahan with Chinese assistance; operation should begin after 2000 under IAEA safeguards. U.S. officials are concerned that the UF₆ could be used to produce weapons-grade nuclear material.

NuclearFuel, 12/16/96, p. 1.

Iran reportedly agreed to allow IAEA inspectors to conduct environmental monitoring of its declared nuclear facilities under the IAEA's 93+2 enhanced safeguards program.

NuclearFuel, 1/13/97, pp. 3-4.

Missile

Iran has developed its own 40 km-range, 240 mm-caliber multiple rocket system. The FADJR-3 rocket uses a solid propellant and was developed by the Parchin Missile Industries Division of the Iranian Defense Industries Organization. Western experts believe that Hezbollah guerrillas in Lebanon have acquired the FADJR-3. It would allow them to deploy further away from Israeli positions, making detection of launch sites more difficult.

Jane's Defence Weekly, 11/6/96, p. 23.

Tehran Radio reported that an Iranian fighter aircraft launched an advanced air-to-sea missile during the Pirouzi-75 [Victory-75] military exercises in the Persian Gulf. The missile

was reported to have a range of 145 km and electronic countermeasures capabilities. The last time an Iranian aircraft used such a missile was during the 1980-88 war with Iraq when an F-14 fired the last of Iran's U.S.-supplied Harpoon anti-ship missiles. According to the Islamic Republic News Agency (IRNA), an Iranian naval official said that Iran tested an indigenous Tondar ballistic missile during the exercises.

Iran Brief, 12/5/96, pp. 7-8.

During 10-day military exercises in late 11/96, Chinese-built C-802 anti-ship missiles were successfully fired from Iran's Houdong patrol boats, and "precise hits" were scored by updated Chinese HY-2 Silkworm missiles. Although the C-802 had been successfully fired in 1/96, the exercises marked the first time they had been fired from the Chinese-built Houdong patrol boats. The C-802 has a range of 100 km.

Reuter, 12/9/96; in Executive News Service, 12/9/96; *Khaleej Times*, 12/9/96, p. 1.

Mohammad Hossein Mahlouji, Iranian minister for mines and metals, signed a letter of intent pledging Iran's interest in buying the German firm Sket Magdeburg GmbH, an ailing machine-tool manufacturer. Mahlouji signed the letter during a visit to the German state of Saxony. According to Saxony-Anhalt spokesman Hans Juergen Fink, Iran wants to purchase the firm either as a whole or in parts.

Iran Brief, 1/6/97, p. 8.

Israel's *Ha'aretz* newspaper quoted a military expert as saying that Iran was secretly negotiating with Russia to acquire production technology for the 2,000 km-range R-12 [NATO designation SS-4 'Sandel'] surface-to-surface missile. However, Sergey Tretyakov, Russia's ambassador to Iran, denied that Moscow and Tehran had conducted secret talks to negotiate the transfer of SS-4 production technology.

Abrar (Tehran), 1/7/97, p. 12; in FBIS-NES-97-013, 1/7/97.

During talks between U.S. Vice President Al Gore and Russian Prime Minister Viktor Chernomyrdin the week of 2/3/97, the Clinton administration issued a diplomatic warning to Moscow regarding alleged Rus-

sian missile technology assistance to Iran. According to senior U.S. sources, "overwhelming" evidence presented to the White House by senior Israeli officials regarding the SS-4 transfer matched U.S. intelligence gathered in recent weeks. U.S. sources said that along with "some parts" for the SS-4 missile, Russia provided Iran with detailed plans. According to U.S. officials, Chernomyrdin denied that the Russian government authorized this transfer. Administration officials theorized that perhaps "cash-strapped Soviet arms producers or complexes" conveyed the missile technology to Iran.

Los Angeles Times, [Online] <http://www.latimes.com>, 2/12/97.

IRAQ

Nuclear

The Swiss company CETEC attempted to ship about 300 valves for uranium enrichment centrifuges, as well as cascade components, to Iraq via Singapore and Jordan. In 9/96, the equipment, worth over £200,000, was seized in Jordan where it had been stored in a warehouse since 1991.

Middle East, 12/96, p. 21.

At the request of German authorities, Brazilian police arrested German nuclear specialist Karl-Heinz Schaab who allegedly sold Iraq more than 20 carbon-fiber rotors for use in its nuclear program. Schaab owned Rosch Verbundwerkstoff in Kaufbeuren, Germany, and provided uranium enrichment technology to Brazil for its nuclear submarine program.

Agencia Estado (Sao Paulo), 12/20/96; in FBIS-LAT-96-252, 12/20/96.

Missile

Baghdad prevented UNSCOM inspectors from shipping abroad the remains of Iraqi long-range missile engines. These and other missile parts were due to be sent to the United States to determine if they were produced in Iraq or the Soviet Union. UNSCOM has approximately 60 missile engines stored at its headquarters in Baghdad and approximately 20-25 engines remain buried at two locations near the Iraqi capital. After the 1990-91 Gulf War, Iraq scrapped and buried a large number of Scud missiles without UN supervision.

Reuter, 12/2/96; in Executive News Service, 12/2/96; Reuter, 12/6/96; in Executive News Service, 12/9/96.

UNSCOM chief Rolf Ekeus visited Baghdad in a failed attempt to obtain Iraq's permission to remove the missile engines and other components destroyed and buried without U.N. supervision after the 1990-91 Gulf War. According to Ekeus, Iraq was shown documents with unique identification numbers for missiles that had been exported by the Soviet Union. He also produced as evidence Iraqi data showing receipt of the missiles. According to Ekeus, UNSCOM has not found any of the "specifically numbered and identified missiles in Iraq." Reconciling the discrepancy between import documentation and the physical evidence remained impossible after 15 hours of technical meetings between Ekeus and Iraqi Deputy Prime Minister Tariq Aziz.

Washington Times, 12/19/96, p. A13; Reuter, 12/18/96; in Executive News Service, 12/27/96; *Times* [Online] <http://www.sunday-times.co.uk>, 12/12/96.

Ekeus told the UN Security Council that UNSCOM had recently discovered that turbo pumps had been removed from the long-range missiles Iraq claimed to have destroyed and buried after the 1990-91 Gulf War. Iraq does not possess the capability to indigenously manufacture such turbo pumps. Ekeus also said that Iraq retained "a significant number of operational missiles which could constitute a complete missile force." The Security Council said it "deplores" Iraq's refusal to let UNSCOM ship over 100 missile engines to the United States for analysis.

Reuter, 12/30/96; in Executive News Service, 12/2/97; *New York Times*, [Online] <http://www.nytimes.com>, 12/19/96.

Iraq has reportedly reactivated its arms procurement network in the United Kingdom, approaching British machine-tool maker BSA Tools five or six times through intermediaries.

Sunday Times, [Online] <http://www.sunday-times.co.uk>, 1/19/97.

UNSCOM inspectors discovered further evidence that Iraq is continuing to conduct research and development of long-range ballistic missiles. The inspectors found and

copied from an Iraqi computer software that simulates the launch and probable trajectory of such missiles. The software was apparently obtained illegally after the 1990-91 Gulf War. According to U.N. officials, the software could help Iraq develop missiles with ranges of up to 985 miles.

New York Times, [Online] <http://www.nytimes.com>, 12/19/96; *Washington Post*, [Online] <http://www.washingtonpost.com>, 2/5/97.

Seven UNSCOM inspectors arrived in Iraq to supervise the excavation of a ballistic missile site near Baghdad, according to Goran Wallen, director of UNSCOM's Ongoing Monitoring and Verification (OMV) Center. Wallen said the excavation was part of an Iraqi initiative to convince UNSCOM that Baghdad had destroyed all of its operational Soviet-made long-range missiles by the end of 1992. According to UN experts, Iraq may have more than 100 Scud missile engines. Wallen said UNSCOM would insist on shipping abroad for analysis scrapped missile components excavated at another site if the current dig is unsuccessful.

Reuter, 1/7/97; in Executive News Service, 1/8/97.

Ekeus announced that Iraq agreed to send abroad remnants of prohibited missile engines for technical analysis by U.N. inspectors. Ekeus had previously accused Baghdad of misleading UNSCOM inspectors by destroying inferior Iraqi-produced engines but concealing more sophisticated Soviet-made engines. UNSCOM and Iraq agreed to ship the scrapped missile components either to France or the United States. Iraq originally suggested the remnants be shipped to France or Russia but not the United States.

Washington Post, [Online] <http://www.washingtonpost.com>, 2/24/97; Reuter, 3/2/97; in Executive News Service, 3/2/97.

ISRAEL

Missile

The Israeli firm Rafael is developing ramjet engines for missiles. Rafael's Manor Propulsion and Explosive Systems division has tested an annular-intake ramjet design that may be part of a project to develop a supersonic successor to the Israel Aircraft Industries (IAI) Gabriel anti-ship missile (ASM). The Gabriel-successor project is thought to

have been initiated in the early 1990s to meet a navy requirement for an ASM with increased engagement range and greater lethality. Israel's ramjet projects may have been undertaken in conjunction with Somchem, a South African firm.

Flight International, 11/6/96-11/12/96, p. 17.

Two U.S. Congressmen announced that they would call for the suspension of aid to Israel if evidence shows that Israel transferred sensitive military technology, including cruise missile, missile defense, and guidance technologies to China.

Washington Report On Middle East Affairs, 11/96-12/96, p. 9.

Senior officials from the U.S. Ballistic Missile Defense Organization (BMDO) said the United States "will work at a low level" with Israel to develop a combination UAV and high-speed interceptor missile to destroy ballistic missiles in the boost phase. Israel plans to develop a stealthy version of the HA-10 UAV with a 1,000 lb payload to carry a derivative of the Python-4 air-to-air missile.

Aviation Week & Space Technology, 1/20/97, p. 19.

Israel is developing a cruise missile for possible export to China. Based on the Star-1 anti-radiation attack drone, the new missile has a range of 397 km, and a maximum altitude of 10,000 m, incorporates both GPS and inertial navigation guidance, and may use image-seeking terminal guidance. The cruise missile will be larger and more powerful than the Star-1, and Israel Military Industries is planning to fit it with a hard-target penetrating warhead.

Flight International, 2/5/97-2/11/97, p. 13.

KUWAIT

Missile

Kuwait's Ministry of Defense awarded an \$11.4 million contract to the U.S. firm Raytheon to build two Patriot missile sites and a depot. Construction will begin by the end of 1996 and is scheduled for completion by 7/98. Raytheon Electronic Systems will supply Patriot system expertise, while Raytheon's Engineers and Contractors Division will provide engineering and construction management. A Kuwaiti company will provide construction resources and other

support.

Defense News, 11/25/96-12/1/96, p. 13.

The first of eight fast patrol craft built for Kuwait was rolled out at the Constructions Mecaniques de Normandie (CMN) shipyard in Cherbourg, France. According to CMN, the boats will be fitted with British Aerospace (BAe) Sea Skua anti-ship missiles (ASM). In 1996, the Kuwaiti parliament ordered an investigation into the defense ministry's decision to purchase 80 Sea Skuas from BAe rather than Exocet MM-15 ASMs, which were offered at a lower price by the French firm Aerospatiale. According to Salem Sabah, Kuwait's defense minister, the BAe offer included a gift of 20 Sea Skuas and a commitment by the United Kingdom to honor a disputed \$11 million debt.

Jane's Defence Weekly, 2/19/97, p. 14.

LIBYA

Missile

Officials from the U.S. Central Intelligence Agency (CIA) sent a classified report to the U.S. Department of Defense (DOD) which disclosed that, in 7/96, the Serbian firm JPL Systems signed a \$30 million contract to provide technical assistance to Libya's Al Fatah medium-range ballistic missile development program. Libya has been developing the Al Fatah since the early 1990s, and the DOD estimates that the missile may have a potential range of up to 590 miles, far enough to hit targets in southern Europe.

Washington Times, 11/12/96, p. A3.

According to a secret NATO report entitled *MC161/96: The General Intelligence Estimate, Strategic Overview*, Libya will have 1,000-3,000 km-range ballistic missiles armed with nuclear, chemical, or biological warheads by 2006.

El Mundo (Madrid), 11/25/96, pp. 6-7.

The Washington Times published extracts from a classified U.S. CIA report which said two Ukrainian "legal entities" signed \$510 million worth of contracts with Libya for the shipment of short-range ballistic missiles, as well as warship and submarine spare parts to Tripoli.

Krasnaya zvezda, 12/11/96, p. 3.

SOUTH AFRICA

Missile

The Somchem division of Denel is developing a self-forging fragment (SFF) warhead to upgrade the Israel Aircraft Industries Gabriel Mk-1 anti-ship missile. Somchem has completed static tests of the design and is negotiating with at least one foreign Gabriel operator. The South African Navy is partially financing the development program. The new warhead weighs 150 kg and is equipped with 35 SFF submunitions.

Jane's International Defense Review, 1/97, p. 19.

SUDAN

Missile

During the week of 1/27/97, an official from Sudan's government denied that Iran had supplied it with "chemical-tipped" missiles and other weapons for use in its ongoing civil war. A Sudanese diplomat said that although his government had a right to receive various types of assistance "from our brothers" to liberate territory captured by the rebels, no military assistance had been received from Iran.

Defense News, 2/3/97-2/9/97, p. 2.

SYRIA

Nuclear

Syrian officials said that Damascus is continuing its effort to purchase a nuclear reactor from Argentina.

Ambito Financiero (Buenos Aires), 12/16/96, p. 19; in FBIS-LAT-96-244, 12/16/96.

Missile

Syria conducted an undisclosed number of Scud surface-to-surface missile launches in the eastern desert region of the country. The launches were believed to have involved Scud-B missiles. Although U.S. officials said the launches appeared to be basic field tests, they are increasingly concerned that Syria's test program could result in the development of a chemical warhead and increased cooperation with Russia on chemical weapons. Syria is thought to possess an arsenal of more than 200 missiles.

Jane's Defence Weekly, 1/15/97, p. 3.

TURKEY

Missile

Turkish Prime Minister Necmettin Erbakan signed a contract with Israel Aircraft Industries (IAI) for the overhaul of 54 Turkish F-4 Phantom aircraft. Additionally, Israel's Rafael will supply 30 Popeye AGM-142 precision-guided standoff, air-to-surface missiles for the aircraft as well as installation assistance. Turkey plans to co-produce 120 more Popeye missiles with Israel.

Arms Trade News, 11/96, p. 3; *Globes* (Internet), 12/8/96; FBIS-NES-96-237, 12/8/96.

The U.S. firm Lockheed Martin Vought Systems received its first international order for the Army Tactical Missile System (ATACMS) when Turkey ordered 72 of them for a total cost of \$47.9 million. Each ATACMS missile can carry 950 anti-personnel and anti-matériel submunitions to a range of up to 100 miles. Lockheed Martin Vought Systems spokesman Craig Vanbebber said the sale to Turkey paves the way for additional ATACMS exports. Although no additional orders have been received, other countries have expressed interest.

Defense News, 11/11/96-11/17/96, p. 27.

Vadim Kuznetsov, Russia's ambassador to Turkey, said Moscow is prepared to sell Ankara missile systems, assault helicopters, tanks, and light weapons. Kuznetsov said Russia has proposed selling about a dozen weapon systems and has offered joint ventures and licensed co-production. According to Russian defense and industry sources, officials from Rosvoorouzhnie, Russia's state-owned arms export agency, have entered negotiations with Turkey for the joint production of S-300 air-defense missiles [NATO designation SA-10 'Grumble'], Mi-28 and Ka-52 assault helicopters, T-80 tanks, and Mi-26 heavy transport aircraft.

Defense News, 3/3/97-3/9/97, pp. 3, 26.

SOUTH AMERICA

ARGENTINA

Nuclear

Operations resumed at the Arroyitas heavy water plant, which will produce an initial batch of 40 MT for Argentina's nuclear reactors.

Telam (Buenos Aires), 11/4/96; in FBIS-LAT-96-217, 11/4/96.

BRAZIL

Nuclear

Brazil is considering whether to resume work on the 1,365 MW Angra-3 pressurized water reactor for which it has purchased \$1 billion worth of equipment.

Nuclear Engineering International, 11/96, p. 8.

Brazil's acting president, Marco Maciel, authorized the Army Ministry to form an association with a federal university in order to continue Project Atlantic. This project initially involved the proposed installation of a 10-20 MW graphite reactor at the Special Projects Institute in Guariba, but the reactor will now be transferred to a university selected for the association.

Agencia Estado (Sao Paulo), 11/27/96; in FBIS-LAT-96-230, 11/27/96.

Brazil's Aramar Navy Experimental Center in Ipero will supply Argentina with enriched uranium for its research reactors and future nuclear power plants. With the addition of a new uranium processing plant, Aramar's 20,000 SWU capacity is expected to double.

Agencia Estado (Sao Paulo), 12/18/96; in FBIS-LAT-96-245, 12/18/96.