NUCLEAR-RELATED TRADE AND COOPERATION DEVELOPMENTS FOR SELECTED STATES, FEBRUARY-JUNE 1996

CONTENTS

OVERVIEW

During the February to July 1996 time frame, **Argentina**, **Brazil**, and **South Africa** continued their integration into the international nonproliferation community, reaping political and technical benefits. Also, progress was made on reducing the quantity of stockpiled weapons-grade fissile materials when **Russia** reached separate agreements with **Canada** and **France**. Steps toward implementation of the **Korean Peninsula Energy Development Organization** (**KEDO**) agreements provided evidence of growing multilateral cooperation in this region as well.

These advances were offset by repeated **Iraqi** confrontations with UNSCOM inspectors, the continuing race to develop nuclear capabilities in South Asia (**India** and **Pakistan**), more reports of nuclear smuggling in the former Soviet Union, and **U.S.-Chinese** confrontation over the transfer of nuclear technology to non-NPT member **Pakistan**. Such events demonstrate the continuing threat posed by those who strive to develop a nuclear weapons capability.

Using its newly found nonproliferation credentials, **Argentina** signed nuclear cooperation agreements with **Brazil**, the **European Union**, **France**, **Thailand**, and the **United States**, and entered into agreements to supply nuclear materials and equipment to **South Korea** and **Egypt**. Also, **Brazil** signed a nuclear cooperation agreement with the **United States**, while continuing discussions on the importation of nuclear technology and materials from **Canada**, **Russia**, and **Germany**. Meanwhile, **South Africa** signed an agreement with **France** to cooperate on developing laser uranium enrichment technology.

The effort to reduce stockpiles of weapons-grade nuclear materials in **Russia** gained momentum during the five-month period. **Russia** and **Canada** signed a Memorandum of Understanding on the burning of **Russian** weapons grade plutonium in **Canadian** CANDU reactors; plutonium shipments are expected to commence as early as 1999. In a related development, the **Russian** Ministry of Atomic Energy (Minatom) finalized a deal to supply **France** with highly enriched uranium (HEU) in 55 kg batches over a nine-year period. In a separate annex to the agreement, an additional 125 kg of HEU will be supplied over a nine-year period to a **French** research reactor. Furthermore, researchers in the **United States** developed the Advanced Recovery and Integrated Extraction System, a five-stage plan that uses technology to facilitate nuclear stockpile reductions. This technology will be shared with **Russia**.

In East Asia, **KEDO** and **North Korean** representatives signed the first of 10 implementation protocols, and the canning of **North Korean** spent fuel rods began. Other developments included a formal **Chinese** announcement that it "will not provide assistance to unsafeguarded nuclear facilities." However, the announcement came after the **United States** confronted Beijing with evidence that **China** had shipped ring magnets to an unsafeguarded uranium enrichment facility in **Pakistan**. **China** indicated that the ring magnets were not on the Nuclear Suppliers Group (NSG) "trigger list" of controlled items. Beijing's attitude toward the deal signaled that this may not be the end of **Chinese** assistance to **Pakistan's** nuclear program, which was extensive from February to June 1996. Aside from its deals with **China**, **Pakistan** was caught trying to acquire nuclear-related technology illegally from **France** and **Sweden**.

During the same period, **India** expanded its plutonium reprocessing capabilities and continued work on a prototype fast breeder reactor. However, the **Indian** nuclear program suffered a setback when a reactor designed for future submarine propulsion use failed important land tests.

In the Persian Gulf region, **Iraq** blocked UNSCOM inspectors five times in March and several more times in June, demonstrating **Iraqi** noncompliance with the United Nations resolutions governing the Gulf War cease-fire. Following these incidents, UNSCOM and **Iraqi** officials negotiated new inspections procedures. News reports revealed that before the 1990-91 Gulf War, **Iraq** acquired more sophisticated knowledge and equipment about gas centrifuge technology from **German** nuclear specialists than was previously believed. Meanwhile, **Russia** continued work on the **Iranian** nuclear power plant at Bushehr and will also provide **Iranian** technicians with nuclear-related training. **Iran** is allegedly developing a uranium hexafluoride plant as well as a gas centrifuge program.

As part of an effort to secure the signing of a Comprehensive Test Ban Treaty, the **United States** provided **France**, **China**, **Russia**, and the **United Kingdom** with technology to simulate nuclear explosions. Some American officials hinted that the **United States** may provide **Pakistan**, **India**, and **Israel** with some of this technology, although Congres-

sional action may block such transfers.

A number of smuggling incidents during the period underscored the continuing threat posed by inadequately secured nuclear materials, underdeveloped export control mechanisms, and the potential for nuclear theft or diversion in the former Soviet Union. One of the most worrisome events was the arrest of a former nuclear scientist in **Russia**. He is accused of having used his institute's equipment and facilities to produce a powder containing zirconium and hafnium, usable in a nuclear weapon, which he subsequently exported to **Germany** and possibly the **United Kingdom** and unnamed countries.

Of the smuggling cases reported during this period, the largest seizure of uranium (100 kg) occurred in **Kazakstan**. Smaller seizures included 13 kg of uranium that a group in **Lithuania** may have acquired from **Ukraine**, 2.7 kg of **Russian**-origin uranium (seized in the **Czech Republic**) that may have been destined for **Iraq** or **Iran** via a **Nigerian** firm, and 12 g of a 1.2 kg cache of uranium that was smuggled out of **Georgia** by a **Turkish** smuggling ring. Other countries reported as transit routes or destinations for these and other nuclear material seizures included **Switzerland**, **Libya**, **Germany**, **Austria**, **Hungary**, **Romania**, **Serbia**, **Pakistan**, and **Iran**.

In response to increased international concern over the proliferation dangers associated with nuclear materials smuggling, participants at the G7+1 summit in Moscow issued a declaration to establish a "Program for Prevention and Combating Illicit Trafficking in Nuclear Materials." This program is intended to improve cooperation in intelligence sharing, deterring potential traffickers, and preventing nuclear materials theft.

Kimber Cramer, Andrew Koch, and R. Adam Moody

NOTE:

A date marked with an "" indicates that an event was reported on that date; a date without an "*" is the date when an event actually occurred.*

The numbers listed in parentheses following the bibliographic references refer to the identification number of the document in the CNS Nuclear Database from which the news summaries are abstracted. Because of the rapidly changing nature of the subject matter, ***The Nonproliferation Review*** *is unable to guarantee that the information reported herein is complete or accurate, and disclaims liability to any party for any loss or damage caused by errors or omissions.*

ALBANIA

INTERNAL DEVELOPMENTS

6/29/96

Albanian police in Tirana arrested three unnamed Albanians and seized two containers holding 5 g each of an unidentified radioactive material. According to the daily newspaper *Albania*, the material could be used in a nuclear weapon. The three suspects allegedly worked with an unidentified foreigner who acted as an intermediary between them and an international smuggling ring.

ATA (Tirana), 6/30/96; in FBIS-EEU-96-128, 6/30/96 (15367).

ARGENTINA

INTERNAL DEVELOPMENTS

2/23/96*

According to a report by RAND's National Defense Research Institute, it is anticipated that Argentina will possess enough fissile material to build seven nuclear weapons per year by the mid-1990s.

Brian Chow, Richard Speier, and Gregory Jones, *The Proposed Fissile-Material Production Cutoff: Next Steps* (Santa Monica, Calif.: RAND, 1995), p. 13.

4/96*

Argentina possesses uranium production, nuclear fuel manufacturing, and nuclear power plant operations capabilities. The Malargue-Cordoba region contains natural uranium deposits, and the majority of Argentine mining and milling operations are located there. The uranium is then shipped to a purification plant near Cordoba. At Pilcaniyeu, a plant converts the uranium dioxide (UO2) into uranium hexafluoride (UF6). Pilcaniyeu also houses a gaseous-diffusion enrichment facility. At Ezeiza, a fuel fabrication plant manufactures the uranium for Argentina's heavy water reactors (HWRs). The Nuclear Center in Ezeiza has a plutonium reprocessing capability, that was closed in 1990. Fuel for Argentina's research reactors is manufactured at the Contituyentes Atomic Center. Argentina also operates the Embalse and Atucha-1 and -2 HWRs. All Argentina's facilities are under full-scope IAEA and Argentine-Brazilian Accounting and Control Commission (ABACC) safeguards.

Lisa Owens and Caroline Smith, *Journal Of Nuclear Materials Management*, 4/96, pp. 15-21 (15006).

ARGENTINA WITH BRAZIL

2/26/96

Argentine Defense Minister Oscar Camilion is scheduled to meet with Brazilian Navy Minister Mauro Cesar Rodrigues, Army Minister Zenildo de Lucena, Foreign Minister Luiz Felipe Lampreia, and Strategic Affairs Secretary Ronaldo Sardenberg to discuss a nuclear cooperation agreement between Argentina and Brazil. Argentina is also expected to propose a cooperative project involving construction of the Caren light water research reactor, which would be under IAEA supervision. The proposal may be part of the cooperation agreement to be signed by the two countries during Brazilian President Cardoso's 3/96 visit to Argentina. The agreement will also establish a 120-day deadline for the development of plans for new projects by the nuclear energy commissions of the two countries.

Tania Malheiros, *Jornal do Brasil* (Rio de Janeiro), 2/29/96, p. 3; in FBIS-LAT-96-044, 2/29/96 (14881). Telam (Buenos Aires), 4/5/96; in FBIS-LAT-96-068, 4/5/96 (14633).

ARGENTINA WITH CANADA AND SOUTH KOREA

5/31/96*

Argentina has secured a contract to supply South Korea with 30 MT of heavy water, according to Canada's Ontario Hydro Corporation which made an unsuccessful bid for the contract. Argentina's heavy water plant became operational in 1995; when running at 85 percent capacity, it can produce 220 MT a year.

UNECAN News, 5/31/96, p. 6 (15450).

ARGENTINA WITH EGYPT

2/27/96*

According to the Egyptian magazine *Akhir Saah*, a nuclear reactor is being constructed at Inshas. A source in the Egyptian Atomic Energy Agency reported that, the Argentine firm Applied Research (Invap) was recently awarded a contract to build the Egyptian reactor, which will cost approximately 300 million Egyptian pounds and is scheduled to begin operations in early 1997.

Mena (Cairo), 2/27/96; in FBIS-NES-96-039, 2/27/96 (14617). *Clarin* (Buenos Aires), 6/6/96, p. 15; in FBIS-LAT-96-124, 6/6/96 (15271).

ARGENTINA WITH EUROPEAN UNION

6/16/96

Argentine President Carlos Menem met with members of the European Union (E.U.) in Brussels and completed discussions on a new nuclear cooperation agreement between Argentina and the E.U.

Nieves Guerrero, Telam (Buenos Aires), 6/15/96; in FBIS-LAT-96-118, 6/15/96 (15434).

ARGENTINA WITH FRANCE

2/28/96

During a press conference at the Argentine embassy in Paris, President Carlos Menem announced that Argentina and France signed a nuclear cooperation agreement. The agreement was signed by the Argentine Nuclear Energy Commission (CNEA) and the National Nuclear Regulatory Agency (ENREN), and by the French Commissariat a l'Energie Atomique (CEA).

Noticias Argentinas (Buenos Aires), 2/28/96; in FBIS-TAC-96-004, 2/28/96 (14621).

ARGENTINA WITH IRAN

6/6/96*

The government of Argentina has agreed to pay Iran $5.5 million as a penalty for withdrawing from two nuclear contracts in 1992. The contracts to supply Iran with a uranium purification pilot-plant were to be fulfilled by the Argentine firm Applied Research (Invap), but were canceled by the Argentine Foreign Ministry following a U.S. request. During 5/96 negotiations in Vienna between

the Atomic Energy Organization of Iran (AEOI) and Invap, the government of Argentina agreed on the penalty rather than going to trial in an Iranian court. Argentina had supplied Iran's Bushehr reactor with enriched uranium and had trained Iranian nuclear specialists.

Clarin (Buenos Aires), 6/6/96, p. 15; in FBIS-LAT-96-124, 6/6/96 (15271). M. Rahman, *India Today*, 2/29/96, p. 116 (14832).

ARGENTINA WITH THAILAND

6/7/96

Thailand's Science, Technology, and Environment Minister Yingphan Manasikan and Argentina's Foreign Minister Guido Di Tella signed a nuclear cooperation agreement to promote research-data sharing and the exchange of nuclear experts. According to Anan Yutthamanop, deputy secretary-general of Thailand's Office of Atomic Energy for Peace (OAEP), the agreement does not include a plan for the construction of a 2 MW research reactor in Thailand. Anan said that the cabinet is expected to have a special committee conduct a feasibility study, and it is possible that specialists from both countries will construct Thailand's second research reactor at Ongkharak in Nakhon Nayok.

Bangkok Post (Bangkok), 6/8/96, p. 2; in FBIS-EAS-96-113, 6/8/96 (15390).

ARGENTINA WITH UNITED KINGDOM

5/17/96*

The Argentine government is concerned about allegations that the British frigate *Sheffield*, sunk during the 1982 Falklands (Malvinas) War, was carrying nuclear weapons. The Argentine Foreign Ministry Press Office reported that "since 1982 we have followed with attention and concern rumors and debates on the possible presence of nuclear weapons aboard *Sheffield*." According to the press office, the IAEA published a report in 1991 that "discusses the possibility that the HMS *Sheffield* carried nuclear weapons."

Telam (Buenos Aires), 5/17/96; in FBIS-TEN-96-006, 5/17/96 (15188).

ARGENTINA WITH UNITED STATES

2/29/96

Argentine Foreign Minister Guido Di Tella and U.S. Secretary of State Warren Christopher signed a nuclear cooperation agreement valid "for an initial 30-year period." The agreement replaces a 1969 arrangement that was suspended by the U.S. in the late 1970s and was due to expire in 7/99. Improvements in the new agreement include "provisions for full-scope safeguards; perpetuity of safeguards; a ban on 'peaceful' nuclear explosives; a right to require the return of exported nuclear items in certain circumstances; a guarantee of adequate physical protection; and a consent right to enrichment of nuclear material subject to the agreement." To advance the cooperative effort, the Argentine Nuclear Energy Commission (CNEA) and National Nuclear Regulatory Agency (ENREN) will sign additional, complementary agreements with the U.S. Department of Energy (DOE) and Nuclear Regulatory Commission (NRC). The agreement was submitted to the U.S. Congress on 3/18/96 by President Bill Clinton.

Telam (Buenos Aires), 2/29/96; in FBIS-LAT-96-042, 2/29/96 (14620). Kathleen Hart, *NuclearFuel*, 3/25/96, p. 15 (14623).

ARMENIA

ARMENIA WITH BELARUS, KAZAKSTAN, RUSSIA, TAJIKISTAN, AND UKRAINE

Representatives of Armenia, Belarus, Kazakstan, Russia, Tajikistan, and Ukraine met in Minsk and approved a plan on cooperation in a number of areas, including nuclear power development, spent fuel, and radioactive waste management.

NucNet News, 5/30/96 (15423).

ARMENIA WITH FRANCE

1/31/96*

Armenia and the French firm Framatome signed an agreement to build a nuclear-waste treatment facility in Armenia. In accordance with an earlier treaty, France will contribute 40 million francs to build the facility, which will treat nuclear waste from Armenia's only nuclear power station, Metsamor. According to Ashot Martirosyan, chief of the Armenian Nuclear Safety and Supervision Committee (Armgostomnadzor), a new storage facility developed in the U.S. to Armgostomnadzor specifications will help solve the problem of nuclear wastes in Armenia during the next 50 to 60 years. Construction of the storage facility will be completed in 1997.

Interfax (Moscow), 1/31/96; in BBC Monitoring Summary of World Broadcasts, 2/2/96 (15429). Hamlet Matevosyan, *Segodnya*, 2/22/96, p. 9 (14417).

ARMENIA WITH IRAN AND RUSSIA

2/10/96*

According to an Armenian Khabar-Servis News Agency report, in their efforts to obtain nuclear expertise from the former Soviet Union, Atomic Energy Organization of Iran (AEOI) officials have conducted "unofficial consultations" with specialists from the Metsamor nuclear power plant in Armenia. The Iranian embassy in Armenia denied cooperating with Armenia in general, but did not cite nuclear cooperation specifically. During the now regular consultations, Iran allegedly sought information from Armenian experts on "the functioning of nuclear reactors and the technology for the utilization of nuclear energy."

T. Salakhly, *Zerkalo* (Baku), 2/10/96, p. 18; in FBIS-TAC-96-004, 2/10/96 (14913).

AZERBAIJAN

AZERBAIJAN WITH IRAN, KAZAKSTAN, AND TAJIKISTAN

5/31/96

Iran could have obtained "the necessary components" to manufacture nuclear weapons from Azerbaijan, Tajikistan, and Kazakstan, making the country "practically ready to produce three nuclear warheads."

Aleksei Malashenko, *Prism*, 5/31/96 (15127).

BELARUS

BELARUS WITH AFRICA, CZECH REPUBLIC, GERMANY, AND RUSSIA

4/10/96*

A U.S. Senate investigator's report reveals new details on the 12/14/94 Prague uranium smuggling case. According to the report, the uranium was brought from the Russian town of Obninsk to Prague, Czech Republic, via Belarus and Poland in a rail car reserved for train employees. A train conductor delivered the material to smugglers in Prague, who later found a German buyer that paid $1,600 to $1,800 per gram. Meeting the buyer's request to supply 5 kg of highly enriched uranium per month, the Russian smugglers promised to deliver 40 kg of the uranium "within a short time frame," according to the report. Jan Rathausky, the Czech investigator on the case, believes that the Russian-origin uranium was destined for an unnamed African country. According to Czech investigators, Libya was not involved in the deal. The report includes information about the threats made to Rathausky in 1995 in a letter from an unidentified author. The letter offered money for releasing the Russian suspect, Aleksandr Shcherbinin, from jail. The author of the letter threatened to detonate a nuclear device at a Prague hotel if Shcherbinin was not released.

Maggie Ledford Lawson and Jan Stojaspal, *Prague Post*, 4/10/96-4/16/96, pp. 1, 4; in FBIS-EEU-96-122, 6/24/96 (15538). Maggie Ledford Lawson and Jan Stojaspal, *Prague Post*, 2/20/96, p. 1; in FBIS-EEU-96-053, 2/20/96 (14587).

BELARUS WITH:

Armenia, Kazakstan, Russia, Tajikistan, and Ukraine, 113

BELARUS WITH RUSSIA AND UKRAINE

4/17/96*

Posing as the representative of a Middle Eastern company, a *Komsomolskaya Pravda* reporter in Odessa met with four men known only as Tolya, Volodya, Lyosha, and Andrei, all of whom were connected with the Ukrainian black market. Tolya produced a certificate for a lead vacuum capsule filled with 99.9 percent pure radium-226, offering a total of 6 g. Lyosha offered 40 g of strontium-90 and produced a sample container. Tolya assured the reporter that there was no problem in shipping goods from Odessa. While the materials offered by the four Ukrainians may have come from Russia or Belarus, they may also have originated at the Yuzhmash defense plant in Dnepropetrovsk, Ukraine, the residence of two of the four black marketers.

Yevgeniy Strigunov, *Komsomolskaya Pravda*, 4/17/96, pp. 1, 2 (15543).

BRAZIL

INTERNAL DEVELOPMENTS

2/6/96

Navy Minister Mauro Cesar Rodrigues Pereira announced that construction of a Brazilian nuclear submarine is no longer a priority. After spending $670 million, the project has been suspended due to a shortage of funds. Building a prototype would have cost an additional $500 million, with at least $75 million needed in 1996. The Brazilian federal government had provided only $25 million in 1995, a figure that would have prevented the program from keeping to its timetable. Now the navy is requesting $50 million to invest in two new projects. First, facilities at the Aramar Navy Experimental Center will be used to construct power-generating nuclear reactors. Second, funds will be used to build conventional submarines. According to Pereira, the nuclear submarine project could "be resumed in the future." He emphasized that the current priority is to build Brazil's first entirely indigenous conventional submarine. In a separate interview, Pereira said that "the nuclear submarine is our highest priority," and that the switch to building a less expensive, conventional submarine was just a postponement of the nuclear program. A prototype reactor will be ready by 2000; then construction of the submarine itself will begin. During a visit by Brazilian President Fernando Henrique Cardoso to the Aramar center, Pereira criticized "the administration's failure to invest in a nuclear submarine project that was started over 15 years ago." Aramar's Technological Superintendent Sergio Garcia added that, if the appropriate funds were received, the prototype reactor would be available by 2003, and that the submarine could be completed by 2008.

Jose Maria Tomazela, *O Estado de Sao Paulo*, 2/7/96, p. A15; in FBIS-LAT-96-028, 2/7/96 (14786). *Defense News*, 4/8/96-4/14/96, p. 30 (14786). Florencia Costa, *O Globo* (Rio de Janeiro), 4/5/96, p. 4; in FBIS-LAT-96-069, 4/5/96 (14786).

2/23/96*

According to a report by RAND's National Defense Research Institute, it is anticipated that Brazil will possess enough fissile material to build one to seven nuclear weapons per year by the mid-1990s.

Brain Chow, Richard Speier, and Gregory Jones, *The Proposed Fissile-Material Production Cutoff: Next Steps* (Santa Monica, Calif.: RAND, 1995), p. 13.

3/3/96*

Following a decision by Brazil's Strategic Affairs Secretariat (SAE), Nuclear Industries of Brazil (INB) is dismantling and decontaminating its Santo Amaro (Usam) nuclear facility in Sao Paulo. The facility had been used to extract uranium and thorium from monazite sands. INB expects to spend approximately 1 million reals and use nearly 50 specialists in order to complete the dismantlement process by late 1996. INB is waiting for approval from the National Nuclear Energy Commission (CNEN) to relocate approximately 500 MT of uranium and thorium, known as "Cake II," still located at the Santo Amaro plant. The Cake II will be temporarily stored at the Interlagos facility (Usim) in Sao Paulo, before the uranium portion is transported to the Pocos de Caldas complex for transformation into yellowcake (U_3O_8). The Pocos de Caldas facility produces nuclear fuel for the Angra-1 plant, and already houses 1.5 MT of Cake II. In the past, the minerals transformed into Cake II at the Usam plant were extracted at the Buena mill in Rio de Janeiro.

Tania Malheiros, *Jornal do Brasil* (Rio de Janeiro), 3/3/96, p. 16; in FBIS-LAT-96-049, 3/3/96 (14833).

3/19/96*

The first phase of Brazil's isotopic enrichment plant at Resende is near completion, and will consist of a cascade of approximately 700 ultracentrifuges. According to Brazilian Navy Technological Center Director Admiral Ivan de Aquino Vianna, the enriched uranium from Resende will be used in the research reactors at the Nuclear Technology Development Center in Belo Horizonte, the Nuclear Engineering Institute in Rio de Janeiro, and Sao Paulo's Institute of Nuclear and Energy Research (IPEN). Vianna said that Brazil wants to have 4,000 more ultracentrifuges installed at the Resende enrichment facility by 1999. According to the Brazilian government, the Aramar Experimental Center would enrich uranium for use in its nuclear submarine program.

Jornal do Brasil (Rio de Janeiro), 3/19/96; in BBC Monitoring Service, 3/26/96 (14885).

6/96*

The Pocos de Caldas facility, run by INB, produced 108 MT of U308 in 1994, and 103 MT in 1995. In 1996, INB plans to maintain the output of 103 MT, ceasing Pocos de Caldas' mining operations in 1997 because uranium reserves in the area are nearly depleted. In 1998, operations will begin at the new Lagoa Real project to coincide with the commencement of operations at the Angra-2 nuclear power plant. The Lagoa Real mine has a nominal capacity of approximately 260 MT of yellowcake per year. Brazilian authorities are expected to authorize uranium mining in Caetite and Rio Real counties in 1996.

Tania Malheiros, *Jornal do Brasil* (Rio de Janeiro), 4/7/96, p. 6; in FBIS-LAT-96-070, 4/7/96 (14618). BBC Monitoring Summary Of World Broadcasts, 5/21/96; in *Uranium Institute News Briefing*, 5/15/96-5/21/96 (15272). *Nukem*, 6/96, p. 67 (15265).

6/3/96*

INB called for bids for the supply of approximately 15,000 kg of uranium, in uranium hexafluoride (UF6) form.

Michael Knapik and Ray Silver, *NuclearFuel*, 6/3/96, pp. 14-15 (15248).

BRAZIL WITH:

Argentina, 112

BRAZIL WITH CANADA AND RUSSIA

3/96

Representatives of the Canadian company Cameco met with Brazilian nuclear officials to discuss the possibility of selling yellowcake (U3O8) to Brazil. The Brazilian Strategic Affairs Secretariat (SAE) and the National Nuclear Energy Commission (CNEN) are reviewing the Canadian proposal following the signing of a nuclear cooperation agreement by Canadian Minister of Foreign Affairs Lloyd Axworthy and Brazilian Foreign Minister Luiz Felipe Lampreia on 5/22/96. A senior SAE official indicated that the purchase of Canadian yellowcake would be contingent on financial considerations and noted the possibility of buying the yellowcake from Russia instead. Russia has a surplus of yellowcake, a nuclear cooperation agreement with Brazil, and prices "more attractive than those of Canada."

Carlos Alberto, Voz do Brasil Network (Brasilia), 5/22/96; in FBIS-LAT-96-101, 5/22/96 (15269). *Enerpresse*, 5/28/96 (15269). EFE (Madrid), 5/22/96; in FBIS-LAT-96-101, 5/22/96 (15269). Tania Malheiros, *Jornal do Brasil* (Rio de Janeiro), 4/7/96, p. 6; in FBIS-LAT-96-070, 4/7/96 (14618).

BRAZIL WITH CHINA

6/96

A Chinese delegation is expected in Brazil to discuss using Nuclebras Heavy Equipment (Nuclep) facilities to produce nuclear reactor components for plants under construction in China. During the week of 3/25/96, Brazilian Strategic Affairs Secretariat (SAE) head Ronaldo Sardenberg stated that the Brazilian nuclear industry is capable of producing "complete nuclear plants." No accord will be signed by Brazil and China for the deal, because it involves only production of equipment that is not linked to the exchange of new technologies or to the use of fuel elements.

Tania Malheiros, *Jornal do Brasil* (Rio de Janeiro), 3/31/96, p. 16; in FBIS-TAC-95-005, 3/31/96 (15497).

BRAZIL WITH GERMANY

6/96*

Brazil decided to continue construction of the 1,300 MWe Angra-2 pressurized water reactor (PWR) with financial assistance from German banks as well as the Brazilian firms Furnas, Electrobras, and Finep. The project is to be completed by 7/99, and loading of the core is expected to be completed in 11/98.

Nuclear Engineering International, 6/96, p. 3 (15120). Richard Masters, *Nuclear Engineering International*, 6/96, pp. 31-35 (15255).

6/3/96

Brazilian Nuclear Corporation, Inc. (Nuclebras) Engineering President Ronaldo Fabricio announced that construction of the 1,220 MW Angra-3 nuclear power plant would resume by 1998. Fabricio said that Angra-3 will commence operations in 2005. Pedro Figueiredo, director of thermonuclear production for Furnas, added that the Brazilian project has already cost $1 billion and that nearly 40 percent of the plant's equipment has been purchased, some from Siemens of Germany.

Tania Malheiros, *Jornal do Brasil* (Rio de Janeiro), 6/4/96, p. 21; in FBIS-LAT-96-128, 6/4/96 (15435).

BRAZIL WITH GERMANY, IRAN, AND IRAQ

2/8/96*

The German government is attempting to confirm that a former German centrifuge specialist in the Urenco enrichment project, Karl-Heinz Schaab, fled to Iran after being accused of providing Iraq with the advanced TC-11 Urenco centrifuge. In late 1993, after his conviction for selling 32 carbon-fiber centrifuge rotors to Iraq, Schaab was believed to have moved to Brazil to work with other German specialists on an unsafeguarded centrifuge program at Ipero. As of 2/96, Schaab was believed to be in Iran. Some officials fear that Iran may protect Schaab to employ him in its uranium enrichment project. According to one Western official, the reports on Schaab's presence in Iran "are very bad, if they are correct. The Iranians are seeking to produce a nuclear bomb, but they lack accurate designs and high-tech skills."

Mark Hibbs, *Nucleonics Week*, 2/8/96, pp. 12-13 (15017). Alan George, *Al-Sharq Al-Awsat* (London), 2/11/96, pp. 1-4; in FBIS-NES-96-030, 2/11/96 (15017).

BRAZIL WITH UNITED STATES

3/2/96

U.S. Secretary of State Warren Christopher signed a nuclear cooperation agreement with Brazil. The agreement, signed for Brazil by Foreign Minister Luiz Felipe Lampreia, emphasizes the peaceful use of nuclear energy in the fields of medicine, industry, and agriculture, and prohibits any military applications. It also confirms Brazil's intention to adhere to IAEA safeguards.

New York Times, 3/3/96, p. 6 (14632). Boris Casoy, SBT Television Network (Sao Paulo), 3/1/96; in FBIS-LAT-96-043, 3/1/96 (14632).

CHINA

INTERNAL DEVELOPMENTS

2/8/96*

Shanghai will construct a synchrotron light source capable of operating at 2.2 to 2.5 GV. The synchrotron will aid research in a range of disciplines, including nuclear physics. The project will cost at least $100 million, half of which will be provided by the Shanghai municipal government, according to the Chinese Academy of Sciences. China currently operates two synchrotrons, a first-generation model, which is used as an auxiliary to the Beijing Positron electron collider, and an 800 MeV second-generation accelerator located at the University of Science and Technology of China in Hefei, Anhui province.

Xinhua (Beijing); in FBIS-CHI-96-028, 2/8/96 (14660).

2/8/96*

Qinghua University Institute of Nuclear Energy Technology and Design has developed a new method of extracting transuranic elements from highly radioactive waste. An experiment conducted between 1/2/96 and 1/7/96 achieved an extraction rate exceeding 99.6 percent for alpha nuclides and 99 percent for cesium and strontium. Other transuranic elements separated by this process include curium and americium. Using this new process, highly radioactive waste is transformed into intermediate- and low-level waste that can subsequently be solidified in cement for disposal. Nuclides extracted by the process can be reused. Development of this new process included a heat-separation experiment for highly radioactive waste conducted at the European Transuranic Institute during the period covering China's eighth five-year plan. China National Nuclear Corporation began evaluating this process in 1994.

Keji Ribao (Beijing), p. 5; in FBIS-CST-96-004, 2/8/96 (14662).

3/20/96

When asked at a press conference if China would use nuclear weapons should the U.S. become involved in a military conflict between China and Taiwan, a Chinese Foreign Ministry spokesman Shen Guofang responded that "China would never be the first to use nuclear weapons."

Wen Wei Po (Hong Kong), p. A2; in FBIS-CHI-96-055, 3/20/96 (6126).

3/20/96

Representatives of the Chinese power industry and the China Nuclear Industry Corporation, and the deputy governor of Jiangsu province, Chen Biting, approved a site for the Jiangsu Nuclear Plant. It will be situated at Bashantou, Lianyungang City in Jiangsu province. Four reactors could be built at Bashantou, each producing 1,000 MW.

Zhongguo Xinwen She (Beijing); in FBIS-CHI-96-055, 3/20/96 (14635).

3/25/96

A five-day international nuclear exhibition, hosted by the China Nuclear Society, China Nuclear Industry Corporation, and the Beijing Municipal Foreign Trade and Economic Cooperation Commission opened in China. More than 80 companies participated, representing countries including the U.S., the U.K., France, Russia, Canada and Taiwan; they displayed nuclear technology and equipment. The Chinese Qinshan and Daya Bay nuclear plants also had displays at the exhibition. Thirteen seminars covered topics such as the technology, management, and applications of nuclear energy, as well as the production of nuclear fuel. More seminars are planned, with the goal of fostering Chinese technical exchanges and international commercial cooperation.

Xinhua (Beijing); in Executive News Service, 3/26/96 (14793).

3/28/96

China announced that a test flight of "single- and twin-seat unmanned, supersonic drones" was successful. The drones collected samples from nuclear test sites, the locations of which were not identified. According to a Western military expert, the drones may be equipped with sensors to survey temperature, radioactivity, and other elements present in the atmosphere. China now has unmanned drones which can fly at various altitudes and can be used in "nuclear testing and large-scale exercises." The drones work with all types of missiles in live-fire maneuvers.

Reuter; in Executive News Service, 3/28/96 (14880).

4/8/96*

As part of the "863" program, scientists from the Chinese Nuclear Energy Technology Design Research Institute at Qinghua University have been researching nuclear technologies for a 10 MW high-temperature, gas-cooled research reactor scheduled for completion by 2000. Construction of the reactor has already begun. This type of reactor could be used for generating electricity, thermoelectricity, heat extraction from heavy oil, and coal gasification and liquefaction. The Chinese scientists are working on various areas of research including "helium technology, helium circuits, fuel components, and the characteristics of spherical bed mobility." Two technologies in particular are being developed at Qinghua University: "microcomputer protection systems" to ensure the safety of nuclear reactors, and "pulse air-powered unloading equipment" used in handling nuclear fuel. A prototype of the microcomputer protection system has received approval from the Chinese State Nuclear Safety Bureau. Wang Dazhong of the Chinese Academy of Sciences developed the idea.

Xinhua (Beijing); in FBIS-CHI-96-077, 4/8/96 (14806).

5/3/96*

Chinese scientists at the Institute of High-Energy Electronics in Chengdu have conducted a successful experiment with a klystron, an electron tube that amplifies or generates intense microwave signals. The

Chinese scientists used the klystron as a high power microwave source for lower-hybrid-current-drive (LHCD) nuclear fusion experiments.

Li Mingguan, *Journal of the University of Electronic Science and Technology of China* (Chengdu), 2\96, pp. 52-58; in FBIS-CST-96-006, 5/3/96 (15547).

5/96

The Chinese Nuclear Industry Corporation approved a feasibility study for an experimental nuclear reactor. Sun Zhuxun, president of the Chinese Academy of Nuclear Energy, said that the fast-neutron reactor is designed to generate 65 MWt and 20 MWe. The reactor is due to be completed by 2000, and China plans to build the reactors commercially in the future.

Reuter; in Executive News Service, 7/1/96 (15549).

5/26/96*

In *China Daily Business Weekly* on 5/6/96, Li Hu, the director-general of the Science and Technology Department of the Chinese Ministry of Foreign Trade and Economic Cooperation, said that China plans to initiate an export control law to regulate transactions of sensitive technologies.

Jane McCartney, Reuter, 5/26/96; in Executive News Service, 5/28/96 (15521).

China with Afghanistan, Iran, Kazakstan, Pakistan, Russia, and Turkmenistan

1/96

Russian diplomats stationed in Mazar-e-Sharif, northern Afghanistan, have allegedly sold enriched uranium to Iran. According to sources in Pakistan, the uranium "has its origins in the 249 kg of enriched uranium" stolen by security guards at a nuclear power plant in Kazakstan and shipped to Mazar-e-Sharif in lead cylinders. For smugglers, Mazar-e-Sharif is a "transit point" on the way to Peshawar, Pakistan, the main destination for the nuclear dealers. In Peshawar, "enriched uranium, catalysts, super-powerful magnets, and alloys for making the shells of thermonuclear warheads" are sold by nuclear salesmen, mostly Afghans. According to one Western source, "Iranian colonels and majors [are] walking around [Peshawar] with suitcases full of $100 bills" looking to buy nuclear materials. The material sold in Peshawar is often radioactive, according to a Western art specialist, who was looking for antiquities but was offered 1,200 kg of enriched uranium instead. The uranium was stored in dozens of 5 kg lead cylinders and buried beneath the floor of a house in Peshawar. According to the smuggler, the uranium "was slipped out of a high-security plant, located close to Moscow, by one of the plant managers." The nuclear material was shipped to northern Afghanistan through Turkmenistan and then to Peshawar. "Enriched uranium," stolen during 11/95 or 12/95 from Ust-Kamenogorsk province in Kazakstan, may also be for sale. The uranium continues to arrive in Peshawar, via China, Russia, and other Central Asian states. Besides enriched uranium, other nuclear materials, such as strategic steel alloy (used in building nuclear weapon casings and nuclear submarine hulls) are offered for sale in Peshawar. One Russian engineer, who was selling the alloy in Peshawar, revealed that it had been smuggled from Turkmenistan to Afghanistan, and then through the Parachinar mountain pass to Pakistan. Pakistani Interior Minister General Nasrullah Barbar acknowledged that his government was confronted with nuclear smuggling, and that "a lot of these items are coming out [of the former Soviet Union]." Some officials suspect that salesmen from the former Soviet Union deceive Afghans by selling them useless, yet highly radioactive, "nuclear rubbish."

Tim McGirk, *Independent* (London), 3/28/96, p. 11; in FBIS-NES-96-062, 3/28/96 (14829). Behroz Khan, *News* (Islamabad), 4/9/96, p. 1; in FBIS-NES-96-070, 4/9/96 (14829). Tim McGirk, *Independent On Sunday* (London), 3/24/96, pp. 4-8; in FBIS-NES-96-062, 3/24/96 (14829). *Nation* (Islamabad), 4/5/96, p. 14; in FBIS-NES-96-069, 4/5/96 (14829).

China with:

Brazil, 115

China with France

3/96

China Nuclear Fuel Industry has awarded a $10 million contract to France's Framatome for the supply of components for two 600 MWe nuclear reactors in Qinshan. Framatome will outfit the plants, due to begin operation in 2001 and 2002, with structural components for the fuel assemblies of the reactor cores; two of its subsidiaries, FBFC and Zircotube, will provide components for the sub-assemblies (including control rods) and zirconium cladding tubes, respectively. The Yibin fuel plant, already equipped with an AFA fuel line, will produce fuel for the Qinshan plants according to Framatome's AFA-2G design.

Nuclear Engineering International, 3/96, p. 4 (14639).

China with France, India, Israel, Pakistan, Russia, United Kingdom, and United States

6/4/96

A U.S.-French secret agreement to share computer information derived from simulated nuclear weapon explosions may be a precursor to similar accords with Russia, Israel, Pakistan, India, and China. The agreement strengthens the relationship between U.S. and French nuclear weapons scientists working to ensure the safety of each country's nuclear stockpile. The agreement with France is highly classified, and the information had previously only been shared with the U.K. According to some U.S. officials, the U.S. provided Russia and China with less specific nuclear weapons data, and is considering sharing the same information with Israel, Pakistan, and India. In 12/95 and 5/96, top Russian and U.S. nuclear weapons officials met in London and Vienna, respectively. The U.S. House of Representatives has proposed an amendment to the FY 1997 defense authorization bill to develop nuclear cooperation with France and Britain, but to prohibit such cooperation with China and Russia. According to House National Security Committee Chairman Floyd Spence, "any plan by the administration to share our nation's nuclear secrets with Russia, China, or other proliferative countries such as Pakistan and India [is] extremely dangerous." The amendment has not been approved by the Senate. State Department spokesman Nicholas Burns, who publicly confirmed the report on the U.S.-French nuclear data agreement on 6/17/96, said he was not aware of whether the U.S. negotiated similar accords

with Russia, Britain, or China.

R. Jeffrey Smith, *Washington Post*, 6/17/96, p. A9 (15389). Martin Walker, *Guardian*, 6/18/96 (15389). Reuter, 6/17/96; in Executive News Service, 6/18/96 (15389).

China with France, Pakistan, and United Kingdom

2/14/96*

British authorities stopped a shipment of French valves with nuclear applications that were bound for Pakistan. However, France has since "allowed them [the valves] to be shipped directly." Reports of European nuclear equipment and materials being shipped to Pakistan, in conjunction with reports that Pakistan is receiving Chinese-origin "magnetic separators," used in extracting weapons-grade uranium, have raised fears about the Pakistani nuclear weapons program.

Alfred de Tavares and Sanjay Suri, *India Abroad*, 2/23/96, p. 27 (15018). *Asian Age*, 2/14/96; in *Strategic Digest*, 4/96, pp. 537-538 (15018).

China with Germany

6/12/96*

Germany supplied China with a nuclear fusion facility, known as ASDEX, to research power generation from controlled nuclear fusion at the Physics Research Institute in Chengdu, Sichuan province. The ASDEX facility was dismantled and shipped from the Max Planck Institute for Plasma Physics in Garching, Germany. The Germans have already moved to a new research facility, the ASDEX Upgrade.

Reuter (Beijing); in Executive News Service, 6/12/96 (15546).

China with India, Iran, and Russia

3/16/96*

Dr. Yevgeniy Velikov, director of Russia's Kurchatov Nuclear Center, said that India has joined the Asian Foundation for Thermonuclear Research (AFTR). The AFTR is being set up by the Chinese National Nuclear Corporation, the Atomic Energy Organization of Iran, several nuclear centers in Russia, and the Indian Institute of Plasma Research. The AFTR will reportedly construct a thermonuclear reactor by 1998. No location was specified.

Hindu, 3/16/96, p. 12. *Iran Brief*, 4/1/96, pp. 4-5. (15011.)

China with Iran

4/18/96

A Chinese delegation will be sent to the Isfahan nuclear complex in Iran to work on the final design phase of a uranium hexafluoride (UF6) plant. Iran intends to declare this plant to the IAEA for monitoring. Some intelligence sources believe a pilot "hex" plant was constructed several years ago at Rudan, near Shiraz, with Chinese assistance.

Iran Brief, 5/6/96, p. 1 (15606).

China with Iran, North Korea, and United States

4/11/96

At a Pentagon press conference, U.S. Defense Secretary William J. Perry released a report entitled *Proliferation: Threat and Response*. The report likened the threat of the spread of weapons of mass destruction (WMD) to that once posed by the Soviet Union's nuclear arsenal. Director of the Defense Intelligence Agency Lt. Gen. Patrick Hughes, who presented the report along with Perry, highlighted North Korea's WMD programs as a vital concern. "One facet of the threat," Hughes said, "is their capability to use missiles to deliver weapons of mass destruction of all kinds to some distant enemy." Assistant Defense Secretary for International Security Policy Ashton Carter, speaking at a press briefing, said that the report viewed China as pushing "the edge of what is acceptable nonproliferation behavior." Also highlighted in the report were Iran's efforts to acquire WMD and associated delivery vehicles, as well as China's and Russia's roles in supplying it with nuclear technology.

Bill Gertz, *Washington Times*, 4/12/96, p. A3 (14828). Tim Weiner, *New York Times*, 4/12/96, p. A4 (14828).

China with Japan

5/26/96

Japan's Ministry of International Trade and Industry will go ahead with a plan to assist China in constructing a trial 10 MW high temperature reactor; the plan includes supplying China with "graphites."

Nuke Info Tokyo, 5/96-6/96, p. 9 (15453).

China with Kazakstan and Kyrgyzstan

5/23/96

Zhang Yuechun, head of China's Xinjiang Environment Monitoring Station, said that 106.8 MT of scrap metal, which originated in Kazakstan and Kyrgyzstan, had radiation levels 1,000 times that of Chinese standards. The monitoring station detected radioactivity on the surface but not inside the scrap metal. Most of the 120,000 MT of scrap metal came from a Kazakstani nuclear test facility near Tacheng.

Reuter; in Executive News Service, 5/23/96 (15494).

China with Pakistan

1/4/96*

The U.S. alleged that China is assisting Pakistan in building a uranium centrifuge plant at Wah. Pakistani officials reportedly confirmed that Pakistan was constructing another enrichment plant in Golra Sharif.

Shahid-Ur-Rehman Khan, *Nucleonics Week*, 2/29/96, p. 14 (15065).

3/4/96*

China is helping Pakistan build a 300 MW nuclear power plant at its Chashma facility. China has shipped a set of auxiliary equipment to Chashma, and will provide it with nuclear fuel for the first three years of operation, scheduled to commence in 1998.

Strategic Digest, 2/96, pp. 250-251 (14595). *Asian Recorder*, 3/4/96-3/10/96, pp. 25457-25458 (15563).

4/3/96*

U.S. officials say that China is assisting with a plutonium plant associated with Pakistan's New Laboratories, near the Chashma reactor. This plant could produce plutonium from spent fuel from the Chashma reactor or the Khushab research reactor.

Tony Walker and Peter Montagnon, *Financial Times*, 4/1/96, p. 5 (14795). Bill Gertz, *Washington Times*, 4/3/96, p. A4 (14795.)

5/23/96*

According to Chinese reports, China National Nuclear Corporation shipped 40 tons

of heavy water to Pakistan for the partially built Khushab reactor in Punjab. The shipment followed an 8/95 visit by Pakistan Atomic Energy Commission head Ashfaq Ahmad. China has assisted in construction of the Khushab site, which is scheduled for completion by the end of 1996. China will provide nuclear specialists for the Khushab reactor. The reactor has not been placed under international safeguards because the Pakistani government has stated that it is only a research reactor.

All India Radio Network (Dehli); in FBIS-NES-96-078, 4/19/96 (15441). BBC Monitoring Service, 5/23/96 (15524).

China with Pakistan and United States

5/11/96

A Chinese Foreign Ministry spokesman announced formally that "China will not provide assistance to unsafeguarded nuclear facilities." Events leading to this announcement began in 2/96, when press reports leaked information from a U.S. Central Intelligence Agency report revealing that the China Nuclear Energy Industry Corporation, a state-owned nuclear equipment manufacturer, had shipped 5,000 custom-made ring magnets to a Pakistani uranium enrichment facility near its Chashma facility. (Ring magnets are used in centrifuges that produce enriched uranium.) The site to which the ring magnets were shipped is not under international safeguards, making the transfer against the MTCR and the NPT, both of which China has agreed to abide by either formally or informally. The U.S. also has its own laws under which China could be sanctioned, including the 1994 Nuclear Nonproliferation Act. After the Chinese and Pakistani governments denied that the transfers had occurred, China privately assured the U.S., in a meeting between U.S. Secretary of State Warren Christopher and Chinese Foreign Minister Qian Qichen on 4/19/96, that China would no longer supply ring magnets to foreign unsafeguarded nuclear facilities. Because China's private assurances are not considered reliable by many in the U.S., a Chinese Foreign Ministry spokesman made the formal announcement on 5/11/96. Although China's meaning of the term "assistance" in the formal announcement leaves room for uncertainty as to China's intentions, it was after this announcement that the U.S. decided not to impose sanctions.

Evan S. Medeiros, *Arms Control Today*, 5/96-6/96, p. 19. Carol Giacomo, Reuter; in Executive News Service, 5/14/96. (15561.)

China with Russia

6/13/96

The Russian Ministry for the Nuclear Industry informed Itar-Tass that Russia does not have computers which can simultaneously stage a series of nuclear explosions. The statement came in response to Japanese press allegations that Russia transferred to China "a special computer technology enabling the simultaneous staging of several nuclear explosions and creating missiles with several warheads." A Russian Ministry spokesperson said that "nuclear scientists see no connection between such tests and missile production," and that "high-yield rapid action servers" are not produced in Russia.

Itar-Tass (Moscow); in FBIS-SOV-96-115, 6/13/96 (15565).

China with Taiwan

3/7/96

There is concern for the security of Taiwan's three nuclear power plants following China's recent missile tests, specifically given the short distance between the plants and the "splash zone" of the missile tests. The Chinsahn-1 and the Shihmen-2 power plants, near the northern port of Keelung, are approximately 25 km from the sea. The splash zone for China's northeastern missile test site is 25 km offshore. China's southern missile test splash zone is 50 km from the coast of Kaohsiung, near the Hengchun plant. Chou Yuanching, deputy director of the department of nuclear regulation, a division of Taiwan's Atomic Energy Council, said that the government had made plans for evacuation in the event of a nuclear accident. If, however, a missile were to strike a nuclear plant, the plans would be ineffective, according to Kuo Hsing-kung, a board member of the Green group, because the entire island would have to be evacuated.

Eastern Express (Hong Kong) p. 1; in FBIS-CHI-96-047, 3/8/96 (14807).

China with United States

5/23/96

Wan Yuanxi, director of the Institute of Plasma Physics at the Chinese Academy of Sciences said that the Fusion Research Center at the University of Texas will assist China in constructing the HT-7U Superconductive Tokamak Controlled Thermonuclear Fusion Experimental Facility, if the program is approved by Chinese authorities. The facility, which would be located in Hefei, provincial capital of Anhui province, is expected to be completed by the year 2000 and would be the world's largest facility experimenting in the controlled use of nuclear fusion.

Xinhua (Beijing); in FBIS-CHI-96-103, 5/23/96 (15548).

6/28/96

Chinese customs officials in the city of Tianjin confiscated 78.336 tons of radioactive scrap metal imported from the city of Houston, Texas by China Materials Recycling Corporation. The contaminated iron was shipped in containers that varied in radioactivity, but one container exceeded the Chinese limit by a factor of 60.

UPI, 7/1/96; in Executive News Service, 7/2/96 (15494).

COMMONWEALTH OF INDEPENDENT STATES (CIS)

CIS with Canada and United States

4/22/96*

The U.S. Rochester Gas and Electric Corporation signed a contract with Canadian company Cameco to import 700,000 lb of U3O8 from the CIS over the next five years.

Michael Knapik and Pearl Marshall, *NuclearFuel*, 4/22/96, pp. 17-18 (15551).

CIS with India

6/30/96*

A pressurized water reactor (PWR) being developed for India's nuclear submarine

program failed tests at the Kalpakkam nuclear facility in 11/95 and 12/95. The failures were caused by "several integration and fabrication problems" that have yet to be solved. Indian designers have also had problems constructing the reactor's containment vessel. Called the advanced technology vessel (ATV), the project has cost the Indian Navy $285.7 million, with an estimated $714.3 million needed to complete the project. The Defense Research and Development Organization (DRDO) and the navy are designing the submarine, and the Department of Atomic Energy (DAE) is responsible for the reactor. The reactor is being built by the Bhabha Atomic Research Center (BARC), and the Rattehalli Rare Earth Plant will provide enriched uranium for fuel. The DRDO is seeking assistance for the nuclear submarine project from engineers and defense experts of the former Soviet Union; several Russian nuclear engineers are known to have been in India since 1991. According to Richard Sharpe, editor of *Jane's Fighting Ships*, the Russian submarine-design bureau Rubin is cooperating with the DRDO in developing the sub's 190 MW PWR, and that the Indian Navy already tested a nuclear-propulsion system ashore.

Vivek Raghuvanshi, *Defense News*, 6/24/96-6/30/96, p. 40 (15473). *Times Of India*, 12/29/96; in *Strategic Digest*, 3/96, pp. 440-441 (15176). Denis Baranets, *Moskovskiye Novosti*, 4/21/96-4/28/96, p. 3 (15176). Mahesh Hebbar, *Asian Age* (Delhi), 5/25/96, p. 1; in FBIS-NES- 96-105, 5/25/96 (15176). Paul Majendie, Reuters, 5/22/96; in Executive News Service, 5/22/96 (15176).

CIS WITH IRAN

5/31/96*

Iran currently employs 50 nuclear experts from the former Soviet Union in five operating nuclear power plants.

Aleksei Malashenko, *Prism*, 5/31/96 (15127).

CIS WITH IRAN, IRAQ, NORTH KOREA, AND SYRIA

3/96*

CIA Director John Deutch testified before a U.S. Senate hearing that there is no clear evidence that Iraq, North Korea, or Syria have attempted to obtain fissile material from sources inside the Commonwealth of Independent States (CIS), or that any terrorist organization has actually acquired nuclear material from such sources. Deutch rejected the idea that organized crime rings are involved in nuclear smuggling, but added that the CIA does not "know all that's going on" with regard to trafficking of nuclear materials. Deutch's testimony also noted the poor security and accounting measures at Russian civilian research institutes containing weapons-grade material, and the related CIA belief that Russia is unable to account for the location of all its nuclear material. He said that security at military facilities is considered "significantly better," although according to a Russian source, the degree of inadequacy of warhead accounting procedures could allow the diversion of a warhead to go unnoticed for up to six months. In an analysis of the situation from a Senate Subcommittee on Investigations report released during the hearings, Kazakstan, Uzbekistan, Tajikistan, Kyrgyzstan, Turkmenistan, Georgia, Armenia, and Azerbaijan are apparently used as transit routes for nuclear material from Russia, and Iran, Iraq, and North Korea have attempted to recruit nuclear specialists from these countries to develop their own domestic nuclear programs. According to Glenn E. Schweitzer, former head of the International Science and Technology Center in Moscow, there has been "no major emigration" among the nearly 60,000 Russian scientists and engineers with weapons-designing experience, but "short-term visits abroad" and foreign contacts are "subject for concern."

Evan S. Medeiros, *Arms Control Today*, 3/96, p. 24 (15628).

CUBA

CUBA WITH MEXICO

5/24/96

Cuban Minister of Science, Technology, and Environment Rosa Elena Simeon and Mexican Energy Secretary Jesus Reyes Heroles signed a nuclear cooperation agreement.

Prensa Latina (Havana), 5/25/96; in FBIS-LAT-96-104, 5/27/96 (15270).

CUBA WITH RUSSIA

2/18/96

Russian Atomic Energy Minister Viktor Mikhailov arrived in Cuba to discuss construction of the Juragua nuclear power plant. According to Mikhailov, discussions will involve "the realistic task" of completing the first of two units at Juragua, to begin operations before the year 2000. A Russian-Cuban working group will be established to coordinate the international support necessary to complete construction. An estimated $750 million is needed to complete the project, which has already cost more than $1 billion.

Konstantin Zhukovskiy, Itar-Tass (Moscow), 2/18/96; in FBIS-LAT-96-034, 2/18/96 (14886). Michael Langan, AFP (Paris), 3/12/96; in FBIS-LAT-96-052, 3/12/96 (14886).

EGYPT

INTERNAL DEVELOPMENTS

2/24/96*

Construction of the 22 MW Inshas-2 reactor has been completed, and the Egyptian Atomic Energy Authority has begun initial testing with the intention of beginning operations in 6/96.

Adil Sabri, *Al-Wafd* (Cairo), 2/24/96, p. 1; in FBIS-NES-96-041, 2/24/96 (14629).

EGYPT WITH:
Argentina, 112

ESTONIA

ESTONIA WITH IRELAND, RUSSIA, AND UNITED KINGDOM

5/96*

A Russian Foreign Ministry official who had been in contact with British intelligence was arrested in Moscow. According to the British newspaper *Mail On Sunday*, the Russian

had attempted to give the British security service information concerning illegal transactions of arms, explosive materials, and the possible transfer of nuclear materials to the Irish Republican Army via Estonian firms.

Aleksandr Pakhomov, *Ogonyek*, 5/96, p. 11 (15206).

Estonia with United States

6/96*

The U.S. Customs Board provided Estonian Customs with a $250,000 van specially equipped to detect radioactive materials, nuclear weapons, and all types of explosives in an effort to curb cross-border smuggling. The van, which will be located in the town of Voru on the border with Russia, is capable of x-raying 1,500 pieces of luggage per hour.

Ecoinform, 6/96-7/96 (15478).

FINLAND

Internal Developments

5/18/96

A van containing radioactive iodine capsules, three instruments for radioactive material preparation, and several "small radiation sources" was stolen from an unguarded parking lot in Helsinki, Finland. The empty van was found in the city of Vantaa near Helsinki. Finnish Center for Radiation and Nuclear Safety spokesman Matti Asikainen said the material, which was stored in lead containers, could not be used in a nuclear weapon and was not dangerous for the public unless removed from the packaging. Finnish police reported that they had no suspects, but did not believe that East European organized crime gangs were involved in the theft.

John Acher, Reuter, 5/20/96; in Executive News Service, 5/20/96 (15245). Marat Zubko, *Izvestiya*, 5/24/96, p. 3 (15245).

GEORGIA

Georgia with Libya, Russia, Switzerland, and Turkey

4/17/96*

Police in Zurich, Switzerland, arrested members of a Turkish criminal group and confiscated 12 g of a 1.2 kg cache of uranium that was smuggled from Georgia to Turkey. The Turkish smugglers, headed by 53-year-old Gaidar Ackhan, had agreed to sell the uranium to Libya for $1.5 million. Two members of the group, Osman Oruk and Mekhmet Otsturk, testified that they traveled to Batumi, Georgia, in 1994, to meet with "Taraki," the seller who, the group claims, is the chief bodyguard for Georgian President Eduard Shevardnadze. In addition, another member of the group, Dirsun Yalkinkaya, said during cross examination that on 10/3/95 and 10/4/95, he also met with "Taraki" and discussed the possible sale of 3 kg of HEU for $200,000. According to Turkish police documents, Yalkinkaya went with "Taraki" to the Georgian town Kazuvri, where Yalkinkaya was shown a videotape about the nuclear storage facility where the uranium originated. Turkish police believe that the 3 kg of HEU from Georgia is currently concealed in the mountains in Turkey. According to the German magazine *Focus*, the Georgian uranium initially may have been smuggled from Russia.

Boris Lysenko, *Izvestiya*, 4/17/96, p. 3 (15207).

Georgia with Lithuania, Pakistan, and Sweden

2/10/96

As part of an undercover operation, Lithuanian police arrested six Lithuanians, a Georgian, and an Asian suspect with about 100 kg of uranium. The material was seized in Visiginas, a small town near the Ignalina nuclear power station. Lithuanian authorities are confident that the seized uranium was illegally brought into the country from another republic of the former Soviet Union. According to sources in the Lithuanian National Security Department and the Prosecutor General's Office, police and security officers pretended to be nuclear smugglers and made a $50,000 "deal" with the smugglers. Another source reported that the smugglers were planning to sell the uranium for $40,000. The deal was allegedly financed through an unnamed Asian trading firm based in Stockholm, Sweden. An unidentified arms specialist in Stockholm reported, "This purchase, if it was indeed by Pakistan, could have complemented a recent purchase by them of certain material from China. It also ties up with the purchase of laser equipment that is meant for measuring the process of enriching the radioactive substances." Representatives of Ignalina nuclear power station denied that the material originated there. According to Ignalina Director Viktor Shevaldin, the plant does not use this type of material. One report stated that the material might be part of the fuel assembly that disappeared from the Ignalina station in 1993. However, Shevaldin said that the material seized was not part of the missing fuel assembly.

Reuter (Vilnius), 2/12/96; in Executive News Service, 2/12/96 (14933). BNS (Tallinn), 2/12/96; in FBIS-SOV-96-030, 2/12/96 (14933). *Vechernyaya Moskva*, 2/20/96, p. 8; in WPS, 2/28/96, p. 12 (14537). Alfred de Tavares and Sanjay Suri, *India Abroad*, 2/23/96, p. 27 (15018).

GERMANY

Germany with Slovakia

6/7/96*

A 49-year-old Slovak engineer was arrested for smuggling 2.7 kg of uranium into Germany after a container holding uranium of unknown origin was found in a bank safe in Ulm. A tip-off by Austrian police to German officials assisted in the accused smuggler's arrest.

Segodnya, 6/7/96, p. 7 (15384).

INDIA

INTERNAL DEVELOPMENTS

2/96

During a conference sponsored by the Carnegie Endowment for International Peace, former Pakistani Prime Minister Nawaz Sharif claimed that India's continued production of weapons-grade plutonium led to India holding a 20-to-1 advantage over Pakistan in fissile material stocks. He said that in 1989, the fissile material stock ratio was 6-to-1 in India's favor.

Aziz Haniffa, *India Abroad*, 2/23/96, p. 22 (14847).

2/23/96*

According to a report by RAND's National Defense Research Institute, using current fissile material stocks, India could build 85 nuclear weapons. By the mid-1990s, it is anticipated that India will possess enough fissile material to build 100 bombs per year. The report said that India has probably reprocessed about 405 kg of plutonium from its Cirus and Dhruva research reactors, but only about 100 kg of reactor-grade plutonium has been recovered. The report estimates India's current stockpile of weapons-grade material to be 350 kg, but warns that India may begin to reprocess spent fuel from the unsafeguarded Madras-1 and -2 reactors at the Kalpakkam reprocessing facility now under construction.

Brian Chow, Richard Speier, and Gregory Jones, *The Proposed Fissile-Material Production Cutoff: Next Steps* (Santa Monica, Calif.: RAND, 1995), pp. 9, 13, 44.

2/29/96

Indian Finance Minister Manmohan Singh presented lawmakers with a FY 1997 budget that is about $43 million less than the Nuclear Power Corporation of India's (NPC) FY 1996 budget. The Indian government will fund up to $93 million for NPC in FY 1997, a major part of which is allocated for the Kaiga-1 and -2 and the Rajasthan-3 and -4 nuclear power plants. The Department of Atomic Energy (DAE) received a slight increase from $407 million to $418 million for FY 1997. The Bhabha Atomic Research Center (BARC), which conducts research on reactors, accelerators, nuclear materials and fuels, fuel reprocessing, waste management, lasers, robotics, automation, superconductivity, instrumentation, and radioisotope production, is being allocated $78 million. The Indira Gandhi Center for Atomic Research (IGCAR) was allocated $16.7 million, including $5.8 million for the Fast Breeder Test Reactor (FBTR) and $2.4 million for the reactor's fuel reprocessing plant. The Center for Advanced Technology in Indore, which researches lasers, accelerators, high vacuum technology, and cryogenics, was budgeted $8 million, while heavy water plants will receive $88.7 million. The NFC in Hyderabad, producer of zircalloy components, calandria tubes, stainless steel tubing, and ball-bearings, will receive $8.6 million; the Electronics Corporation was budgeted $4.4 million. The Uranium Corporation of India, which administers the Jaduguda uranium mines and mill, will receive $7.3 million, and Indian Rare Earths, manager of mineral separation plants at Chavara and Manavalakuruchi in southern India and the thorium factory at Trombay, will receive $8.7 million.

Neel Patri, *Nucleonics Week*, 3/7/96, pp. 17-18 (15067). Neel Patri, *Nucleonics Week*, 3/14/96, pp. 15-16 (15067).

Early 1996

The first land tests of the Indian nuclear submarine reactor were conducted at the Kalpakkam nuclear research center. Underwater tests on the reactor will begin in late 1996. The Indian nuclear submarine program is the most expensive undertaking conducted by the Defence Research and Development Organization (DRDO). DRDO officials reported that the submarine's nuclear plant was designed at the Bhabha Atomic Research Center, while construction of the plant is taking place at the Kalpakkam facility. DRDO officials added that the submarine will be completed in no less than five years and would need Rs2,500 crore more in financing. The nuclear submarine reactor will be placed in the capsule, which was produced in 1995 at Hajira, and is made of titanium steel. Construction of the hull, with a displacement of 6,000 MT, is expected to begin in 1997.

Info-Tass, 12/29/95; in *Byulleten Tsentra Obshchestvennoi Informatsii Po Atomnoi Energii*, No. 4-5, 1996, p. 77 (15396). *Times Of India*, 12/29/95; in *Strategic Digest*, 3/96, pp. 440-441 (15176). Mahesh Hebbar, *Asian Age* (Delhi), 5/25/96, p. 1; in FBIS-NES- 96-105, 5/25/96 (15176).

3/27/96

Indian Atomic Energy Commission (AEC) Chairman R. Chidambaram inaugurated a new reprocessing plant at IGCAR in Kalpakkam. The reprocessing facility has begun performing the first stage of "cold commissioning"; "hot" operations will begin with spent fuel from the Madras nuclear power plant in late 1996. The plant will have the capacity to reprocess 125 MT of heavy metal per year and will separate plutonium for the planned FBRT at Kalpakkam. India is also considering using the facility to produce mixed-oxide (MOX) fuel for the Tarapur boiling water reactors (BWRs). The Kalpakkam facility is the third reprocessing plant built in India. The first two were built at Trombay, which has a capacity to reprocess 50 MT of heavy metal per year, and Tarapur, which has the capacity to reprocess 100 MT per year.

Nuclear Engineering International, 5/96, p. 8 (15095). *Nuclear News*, 5/96, p. 43 (15095).

5/15/96

Indian President Shankar Dayal Sharma appointed Bharatiya Janata Party (BJP) leader Atal Bihari Vajpayee as Prime Minister. Vajpayee said the Hindu-nationalist BJP would carry through its pledges to declare India a nuclear weapon state and to deploy nuclear-armed missiles unless the nuclear powers agree to completely eliminate their own nuclear arsenals. The BJP had released a manifesto on 4/7/96 pledging to weaponize India's nuclear option. The BJP added that it would create a national security council to review India's current nuclear policy.

John F. Burns, *New York Times*, 5/16/96, pp. A1, A6 (15267). *Business Standard* (Delhi), 4/8/96, p. 3; in FBIS-NES-96-070, 4/20/96 (15078).

5/24/96

India's Chief of Naval Staff Admiral Vijay Singh Shekhawat denied reports that India will build a nuclear submarine in the near future. According to Shekhawat: "We (India) would like a nuclear submarine very

much, but money is a big constraint."

Pamela D'Mello, *Asian Age*, 5/25/96, p. 4; in FBIS-NES-96-105, 5/25/96 (15176).

6/96*

IGCAR expects the 500 MWe prototype FBTR to be "sanctioned" in 1997, despite delays in commissioning.

Richard Masters, *Nuclear Engineering International*, 6/96, pp. 31-35 (15255).

6/96*

Three new fuel-production facilities have been completed at the Nuclear Fuel Complex (NFC), doubling the facility's production to 600 MT per year.

Richard Masters, *Nuclear Engineering International*, 6/96, pp. 31-35 (15255).

6/96*

India is capable of producing 300 MT of uranium per year. India's uranium output could increase to "meet first core and reload needs," as new nuclear power plants, with a total capacity of 900 MWe, begin commercial operations in 1998 and 1999.

Nukem, 6/96, p. 67 (15265).

6/5/96

India's United Front government released a policy paper pledging to keep India's nuclear option open until worldwide nuclear disarmament is achieved.

Rahul Bedi, *Daily Telegraph*, 6/6/96, p. 9 (15358).

6/15/96*

According to former Pakistan Atomic Energy Commission Chairman Munir Ahmed Khan, each year India adds 50 kg of weapons grade plutonium as well as an unknown quantity of highly-enriched uranium (HEU) to its stocks. This increase allows India to augment its existing capability of more than 100 nuclear weapons with an additional 10 to 15 bombs per year.

Munir Ahmed Khan, *Dawn* (Karachi), 6/15/96, p. 11; in FBIS-NES-96-119, 6/15//96 (15260).

INDIA WITH:

INDIA WITH ISRAEL

3/26/96*

Indian Ambassador to Egypt Kanual Sibal denied in an interview that there is any nuclear cooperation between India and Israel. "We totally deny that there are relations with Israel in the field of nuclear weapons and nuclear technology," Sibal said.

Muhammad Jamal Arafah, *Al-Sha'b* (Cairo), 3/26/96, p. 7; in FBIS-NES-96-064, 3/26/96 (14919).

INDIA WITH RUSSIA

4/23/96*

Under pressure from the Clinton administration, Russia intends to renegotiate the terms of the 1988 sale of two nuclear power reactors to India. The new deal could include the shipment to Russia of all "fissile material produced from the nuclear power reactors." The 1,000 MW reactors, said to cost more than $1 billion, would be constructed at Koodankulam and would have to be placed under full-scope IAEA safeguards in order to head off U.S. opposition to the deal. Russian First Deputy Atomic Energy Minister Lev Ryabev emphasized that Russia is not going to link Russian-Indian nuclear cooperation with India's attitude towards signing the Comprehensive Test Ban Treaty (CTBT).

Jyoti Malhotra, *Business Standard* (Delhi), 4/23/96, p. 5; in FBIS-NES-96-080, 4/23/96 (14918). Interfax, 6/24/96 (15501).

INDIA WITH SOUTH KOREA

2/3/96*

Bhabha Atomic Research Center (BARC) Director A. N. Prasad said that India will export heavy water to South Korea.

All India Radio Network (Delhi), 2/3/96; in FBIS-NES-96-024, 2/3/96 (14216).

INDIA WITH THAILAND

6/26/96

Thai Ministry of Foreign Affairs Permanent Secretary Thep Thewakun announced that Thailand and India will sign a nuclear cooperation agreement before Thai Prime Minister Banhan Sinlapa-acha's visit to India in 9/96. The two countries announced the agreement after a visit to Thailand by an Indian delegation headed by Indian Secretary (East) K. Raghunath.

Thailand Times (Bangkok), 6/27/96, p. A2; in FBIS-EAS-96-128, 6/27/96 (15392).

INDIA WITH VIETNAM

2/23/96-2/26/96

The seventh Vietnam-India Intergovernmental Commission on Economic, Scientific, and Technological Cooperation will convene in New Delhi. Scientific and technological cooperation agreements are expected to be signed. During the past few years, India has assisted Vietnam in training nuclear energy personnel.

Voice Of Vietnam (Hanoi), 2/8/96; in FBIS-EAS-96-027, 2/8/96 (14783).

INDONESIA

INDONESIA WITH AUSTRALIA, JAPAN, AND SOUTH KOREA

3/15/96

Australia's Liberal-National coalition government announced that Australia's 13-year policy of limiting uranium exports would end. According to Resource Minister Warwick Parer, Australia would like to sell uranium to Indonesia, Japan, and South Korea.

Reuter, 3/15/96; in Executive News Service, 3/15/96 (14853).

INDONESIA WITH CANADA

Spring 1996*

Under a technical cooperation agreement reached by Canada's Atomic Energy Control Board (AECB) and the Indonesian National Atomic Energy Agency (Batan), six Indonesian specialists will receive training in Canada for a period of nine months. The Canadian International Development Agency's Industrial Cooperation Program, Atomic Energy of Canada, Ltd. (AECL), and other private Canadian firms are sponsoring the program.

Reporter, Spring 1996 (15380).

INDONESIA WITH CANADA, FRANCE, GERMANY, AND JAPAN

3/96*

According to Indonesian National Atomic Energy Agency (Batan) Director General Djali Ahimsa, construction of Indonesia's first nuclear power plant will probably begin in 1998. Ahimsa said that the plant will likely be built on Java's Muria Peninsula, and will be comprised of either two 900 MW units, or three 600 MW units. Westinghouse of the U.S., Mitsubishi Heavy Industries of Japan, Siemens of Germany, Framatome of France, and Atomic Energy of Canada Ltd. (AECL) are all possible suppliers for the project, which is estimated to take six years and approximately $7 billion to build. Ahimsa noted that high costs would prevent the recycling of nuclear waste, and that the waste would be stored "within the fuel elements." At a 3/96 conference in Tokyo, Ahimsa spoke on behalf of Indonesian Research and Technology Minister B. J. Habibie, and said that efforts were now directed toward determining financing methods for the project. Ahimsa noted that the Indonesian government was interested in a "Build, Operate, and Own" plan because it limits outside debt and discourages privatization. Habibie announced that the Canadian government had made a proposal that met the terms he was seeking, which included two or three CANDU-type reactors and $2 billion of Canadian investment (half of the estimated project cost).

Power In Asia, 2/5/96 (14882). Naoaki Usui, *Nucleonics Week*, 3/21/96, p. 2 (14882). *Enerpresse*, 2/5/96 (14882). *Nuclear Engineering International*, 3/96, p. 3 (14882).

INDONESIA WITH CANADA, FRANCE, JAPAN, AND UNITED STATES

6/28/96*

After a five-year feasibility study on the use of nuclear power in Indonesia, specialists from the Japanese company Newjec concluded that employment of a 600 or 900 MWe nuclear reactor by 2004 would "fulfill least-cost criteria and be competitive with [a] similar-sized coal plant with pollution controls." The list of recommended nuclear technology for the Indonesian project includes CANDU pressurized heavy water reactors (PHWRs), pressurized water reactors (PWRs) of U.S., French, or Japanese origin, and the GE-Hitachi-Toshiba boiling water reactor (BWR). The report, which the Atomic Energy Agency (Batan) has not yet released, recommended that the reactor be located at Ujung Lemahabang, about 450 km east of Jakarta.

Uranium Information Centre (http://www.uic.com.au), 6/28/96 (15376). *Nuclear Europe Worldscan*, 3/96-4/96, p. 28 (14882).

IRAN

INTERNAL DEVELOPMENTS

1/28/96-2/3/96*

Iraqi nuclear scientist Hussein al Shahristani maintains that "new international conditions" and a struggling economy render an Iranian nuclear weapons program unfeasible. According to Shahristani, the current Iranian nuclear program lacks "scientific expertise, equipment, and nuclear installations."

Ghalib Darwish, *Al-Majallah* (London), 1/28/96-2/3/96, pp. 22, 24; in FBIS-TAC-96-002, 2/12/96 (14594).

2/6/96*

According to Atomic Energy Organization of Iran (AEOI) head Reza Amrollahi, Iran has successfully developed laser technology and produced zero-power and miniature reactors.

Voice Of Islamic Republic Of Iran First Program Network (Tehran), 2/6/96; in FBIS-NES-96-025, 2/6/96 (14604).

2/7/96

The Iranian daily newspaper *Salam* reported that there are 80 nuclear projects under way in Iran "to provide the country's electricity needs by using atomic energy." Some of the projects are believed to be used in the construction of the Bushehr nuclear power station and an "Esteqlal (independence) atomic power plant." However, an AEOI spokesman claimed that the report was incorrect, and that a "Esteqlal atomic power plant" does not exist.

Reuter, 2/7/96; in Executive News Service, 2/7/96 (14606).

2/22/96*

The IAEA is likely to renew its investigations into whether Iran is developing a gas centrifuge project to enrich uranium. An IAEA team of investigators is scheduled to travel to Iran "to investigate suspicions that the Iranians are setting up a secret plant to enrich uranium through centrifugation which could be used for the development of nuclear weapons." According to Western officials, the CIA and U.S. Department of Energy (DOE) managed to obtain data on a secret Iranian uranium enrichment program aimed at developing and "bench-testing" gas centrifuges. However, the CIA does not any have any evidence of Iran enriching uranium hexafluoride (UF6) using centrifuges or planning the construction of a small laboratory centrifuge. According to one Western official, the CIA's report "should not be interpreted as evidence that Iran is violating the NPT or hadn't reported" its activities to the IAEA. Iran is obliged by its safeguards agreements to report any activity such as the actual enrichment of uranium to the IAEA, since there are no *de minimis* safeguard standards established. However, there is a possibility that the Iranian program has not been developed to the point that Iran would be required (under the safeguards agreement) to notify the IAEA.

Mark Hibbs, *Nucleonics Week*, 2/22/96, pp. 4-5 (14844). Aluf Ben, *Ha'aretz* (Tel Aviv), 3/6/96, p. A1; in FBIS-NES-96-045, 3/6/96 (14844).

2/29/96

U.S. Undersecretary of State Lynn Davis declared that the U.S. is convinced Iran is attempting to steal nuclear technology and materials in order to develop nuclear weapons. Iran is "many years away" from possessing a nuclear weapons capability, but stealing nuclear technology or material "can reduce the time dramatically in terms of developing a weapon," Davis said.

Irwin Arieff, Reuter, 2/29/96; in Executive News Service, 2/29/96 (14608).

2/29/96*

The AEOI is exploring uranium mining locations and sites for a second nuclear facility.

M. Rahman, *India Today*, 2/29/96, p. 116 (14832).

6/23/96*

Iran's Chief Security Advisor Dr. Majid Tehrani Abbaspur is reported to be actively participating in Iran's nuclear weapons program and has been granted "a special budget of millions of dollars to buy the necessary technology."

Con Coughlin, *Sunday Telegraph* (London), 6/23/96, p. 26; in FBIS-NES-96-123, 6/23/96 (15261).

IRAN WITH:

Afghanistan, China, Kazakstan, Pakistan, Russia, and Turkmenistan, 117
Armenia and Russia, 113
Argentina, 112
Azerbaijan, Kazakstan, and Tajikistan, 113
Brazil, Germany, and Iraq, 115
China, 118
China, India, and Russia, 118
China, North Korea, and United States, 118
CIS, 120
CIS, Iraq, North Korea, and Syria, 120

IRAN WITH CZECH REPUBLIC, IRAQ, NIGERIA, AND RUSSIA

2/96

Czech police seized 2.7 kg of enriched uranium being smuggled by former Soviet scientists from Russia to Iraq via the Czech Republic. An unidentified Nigerian firm allegedly proposed to buy the uranium, and named "an African state" as the final recipient. However, an unnamed source said that a team of Iraqi agents were also involved in the deal. According to the report, Iran later tried to outbid Iraq for the Russian uranium.

Guido Olimpio, *Corriere Della Sera* (Milan), 5/4/96, p. 7; in FBIS-TAC-96-007, 5/4/96 (15091).

IRAN WITH GERMANY AND RUSSIA

3/28/96*

Russian nuclear experts, working on completing the Bushehr nuclear power station in Iran, announced that in order to finish the project as scheduled, the Russian organization Zarubezhatomenergostroy needs technical support documents from Germany's Siemens, which started Bushehr's construction in 1970s. According to the head of Zarubezhatomenergostroy's Teheran office Anatolii Zhilinskiy, the Atomic Energy Organization of Iran (AEOI) assured the Russians that they would acquire the necessary technical documentation from Siemens. If Iran fails to obtain the documentation, Russia will have to replace the German machinery with its own equipment. German officials reported that Siemens and its "subcontracted component suppliers" for the Bushehr nuclear power station hold the majority of technical documentation, although some of Siemen's design specifications remain in Iran. On 3/26/96, a senior German official indicated that an Iranian request for the documents would be "carefully weighed," and that the German government will not provide data on systems not already in Iran's possession.

Mark Hibbs, *Nucleonics Week*, 3/28/96, pp. 1, 10 (14832). *Salam* (Tehran), 3/17/96, p. 4; in FBIS-TAC-95-005, 3/17/96 (14906).

5/6/96*

The Russian Ministry of Atomic Energy (Minatom) is discussing the purchase of technology and equipment from the unfinished Hanau research reactor with the German government. According to unnamed sources, Minatom may seek to acquire technical data in order to use the German equipment stored at Iran's unfinished Bushehr nuclear reactor. Minatom contracted by Iran to finish Bushehr, cannot use the German reactor vessel and control equipment without the proper documentation. With the technical data from Germany's Hanau reactor, however, Minatom may be able to integrate the German equipment into the refurbished plant.

Iran Brief, 5/6/96, p. 11 (15600).

IRAN WITH ISRAEL, TURKEY, UNITED KINGDOM, AND UNITED STATES

4/1/96*

According to Israeli Government Press Office head Uri Dromi, it has become a "working assumption" that a "Western-led coalition" will conduct a pre-emptive attack against Iran to hinder its nuclear weapons program. Dromi's statement followed reports that Israel and the U.S. negotiated a possible airstrike against Iran's nuclear weapons plants at the Sharm al-Shaykh summit. Iran's secret Neka nuclear plant, located 100 miles northeast of Tehran on the Caspian Sea, was reported to be among the possible targets. During U.K. Defence Secretary Michael Portillo's 4/96 visit to Israel, joint Israeli-British military action against the Iranian nuclear plant may have been discussed. According to Egyptian sources, the underpinnings of the 1995 Israeli-Turkish military cooperation agreement may be plans for an airstrike against Iran's nuclear facilities, allowing Israel access to Turkish airbases from which "any Iranian target" is reachable. In response, Iran's land-force commander, Brigadier General Ahmad Dadbin, warned that "The Americans should think twice before attacking us. I believe no country in the world would dare to attack us."

Christopher Walker, *Times* (London), 4/19/96, p. 13; in FBIS-TOT-96-015-L, 4/19/96 (15382). James Bruce, *Jane's Defence Weekly*, 6/12/96, p. 27 (15382). Eric Salerno, *Il Messaggero* (Rome), 6/28/96, p. 9; in FBIS-NES-96-126, 6/28/96 (15382).

IRAN WITH ITALY AND JAPAN

3/4/96

According to banking sources, a $561 million syndicated loan was signed in London by Iran's Bank Saderat. The loan, an export credit guarantee to Iran, was syndicated by Italy's Mediocredito Centrale and the Banca Commerciale Italiana and will be 90 percent covered by SACE, Italy's export credit agency. The agreement is part of a $660 million deal between Danieli Officine Meccaniche and the National Iranian Steel Company (NISCO) to build four "specialty-steel plants" in Isfahan. Japan's Nippon Steel is also a party to the $660 million contract. According to Italian Ambassador to Washington Ferdinando Salleo, SACE halted all new export credit grantees to Iran in 2/93. Salleo noted that the agreement to finance the Danieli-NISCO project was reached in 7/92.

Iran Brief, 5/6/96, p. 5 (15609).

IRAN WITH RUSSIA

2/3/96*

There are currently about 30 Russian nuclear specialists working at Iran's Bushehr nuclear power plant. In 5/96, Russian specialists will conduct a survey of the buildings at the plant, said Aleksandr Bryukhov, an executive supervising the construction of Russian nuclear power plants abroad. The Bushehr plant is expected to start operating in 2001.

Aleksandr Kushnir, Voice Of Russia World Service (Moscow), 2/3/96; in FBIS-SOV-96-024, 2/3/96 (14605).

2/7/96

Minatom official Yevgeniy Mikerin stated that a Novosibirsk-based chemical plant will supply nuclear fuel to Iran's Bushehr nuclear power plant. The Russian plant produces fuel cassettes for VVER-1000 reactors and will start to produce fuel for the Bushehr reactor in 2000.

Veronika Romanenkova, Itar-Tass (Moscow), 2/7/96; in FBIS-SOV-96-27, 2/7/96 (14607).

3/17/96*

In an interview, Zarubezhatomenergostroy head Anatoliy Zhilinskiy stated that Russia has submitted a construction proposal to Iranian officials for building a new nuclear power plant in Iran. However, Iran is not likely to consider the proposal until the Bushehr nuclear power station is completed.

Salam (Tehran), 3/17/96, p. 4; in FBIS-TAC-95-005, 3/17/96 (14906).

3/21/96

Russian Nuclear Physics Research Institute Director of Foreign Affairs Andrei Gagarinskiy announced the Institute's plans to sign an agreement to train Iranian nuclear experts. Russian and Iranian officials discussed the possibility of training several dozen Iranian students in Moscow. A second report said the training of the Iranian nuclear specialists is expected to take place at the Novovoronezh nuclear power plant's training center 42 km from Voronezh, Russia.

Veronika Romanenkova, Itar-Tass (Moscow), 3/21/96; in FBIS-SOV-96-057, 3/21/96 (14843). Interfax (Moscow), 2/6/96; in FBIS-NES-96-026, 2/6/96 (14843).

3/25/96

Minatom officials claimed that Russia has not signed any nuclear agreements with Iran other than the contract to complete Bushehr's first unit. Russia has considered building the second unit at the Bushehr plant, although Russia and Iran have not yet held negotiations on this issue. Russian Ambassador to Iran Sergei Tretyakov had declared that Russia is likely to construct another nuclear plant after the completion of Bushehr. In his interview with the Iranian newspaper *Abrar*, Tretyakov said the Russian-Iranian agreement on "bilateral cooperation in the peaceful use of atomic energy is not confined to the Bushehr project alone." Sergei Treyakov added that Russia would help Iran build nuclear research reactors.

Oleg Kuzmin, Itar-Tass World Service (Moscow), 3/18/96; in FBIS-SOV- 96-053, 3/18/96 (14832). Interfax (Moscow), 3/19/96; in FBIS-SOV-96-055, 3/19/96 (14832). *Iran Brief*, 4/1/96, pp. 4-5 (15011).

4/20/96*

According to Russian sources, approximately 700 Iranian nuclear specialists may be trained in Russia. Along with the Russian company Zarubezhatomenergostroy, Russian scientific organizations such as the Kurchatov Institute and the Moscow Engineering Physics Institute are considering training Iranian nuclear experts. Other reports say the Kurchatov Institute is negotiating an agreement to provide a maximum of 500 Iranian specialists with training in the maintenance and operation of the Bushehr nuclear power plant.

Interfax (Moscow), 4/20/96 (15121). Peter Henderson, Reuter, 4/20/96; in Executive News Service, 4/23/96 (14912). Evan S. Medeiros, *Arms Control Today*, 5/96-6/96, p. 25 (15471).

6/4/96*

In 1996, Russia plans to invest $60 million in the construction of the Bushehr nuclear power plant. According to Gennadiy Nefedov, the deputy head of Minatom's Foreign Relations Department, the Russian company Zarubezhatomenergostroy is expected to sign a number of agreements with Iranian companies to supply facilities for completing Bushehr. Approximately 200 Russian nuclear specialists are presently employed at the Bushehr project.

Interfax (Moscow), 6/4/96; in FBIS-SOV-96-109, 6/4/96 (15381).

6/9/96*

Since 1995, Iran has reportedly obtained nuclear weapons-related equipment from Russian "middle men."

James Adams, *Sunday Times*, 6/9/96, p. 16 (15374).

6/27/96*

During an interview with the Iranian newspaper *Abrar*, Minatom head Viktor Mikhailov stated that all the equipment needed to complete Iran's Bushehr nuclear power plant had been sent. According to Mikhailov, Russia is able to build small facilities like "thermo-atomic" research reactors in countries such as Iran.

Iran News (Tehran), 6/27/96, pp. 1, 13; in FBIS-SOV-96-128, 6/27/96 (15378).

Iran with South Africa

2/21/96

South African Mineral and Energy Affairs Minister Pik Botha announced that South Africa had not provided Iran with any uranium in the previous five years. Botha indicated that "some years ago" South Africa had considered a commercial agreement to provide uranium to Iran under IAEA safeguards, but the contract was never implemented.

SAPA News Agency (Johannesburg), 2/21/96; in FBIS-TAC-96-007, 2/21/96 (15089).

Iran with United States

3/4/96*

Two former Alavi Foundation of New York presidents, Mohammad Mahallati and Manoucher Shafie, were under suspicion by the Federal Bureau of Investigations (FBI) in 1993 for nuclear smuggling, the *New York Daily News* reported. According to former electrical contractor and FBI undercover agent Dennis Pappas, the FBI believed that Mahallati and Shafie represented the Iranian government and that "their main thrust here is to bring in very bad material, nuclear material," to the U.S. for use in a terrorist act.

Iran Brief, 3/4/96, pp. 7-8 (14841).

IRAQ

Internal Developments

1/28/96-2/3/96*

In an interview, Iraqi nuclear scientist Hussein al Shahristani stated that Saddam Hussein changed the peaceful nature of Iraq's nuclear program when he took power in 7/79 and instructed all scientific facilities to develop nuclear weapons. Shahristani described how Iraq came close to enriching uranium to 93 percent with assistance from

Western companies. During the 1980s, Iraq established 15 "major nuclear installations" capable of enriching uranium through centrifuge, electromagnetic separation (EMIS), and laser techniques. Western companies also helped the Iraqi military develop complex detonation devices crucial to the successful explosion of a nuclear weapon. Al Shahristani believes the scientists who worked on the Iraqi nuclear weapons program are, for the most part, still in Iraq.

Ghalib Darwish, *Al-Majallah* (London), 1/28/96-2/3/96, pp. 22, 24; in FBIS-TAC-96-002, 2/12/96 (14594).

2/20/96

Saddam Hussein's sons-in-law Lt. Gen. Hussein Kamel and Saddam Kamel were "pardoned" as they crossed the border returning to Iraq. The two brothers had defected to Jordan in 8/95, raising the West's expectations about "an intelligence bonanza." Their return to Iraq, however, has made Western intelligence officials question the validity of information the brothers provided on the Iraqi nuclear weapons program. According to Kuwait's ambassador to the U.N. Mohammed A. Abulhasan, "Kamel's desire to return to Iraq proves what we knew all along, that the defection was a sham." In Abulhasan's opinion, the Iraqis sought to "inflate the importance" of data submitted to the U.N. by Kamel's desertion to Jordan. U.S. officials, though, attribute the Kamel brothers' return to their "frustration" about being exiled by Iraq. According to one U.S. official, "[Kamel] was a genuine defector," who supplied a significant amount of data on Iraq's nuclear, chemical, and biological weapons and missiles. UNSCOM head Rolf Ekeus reported on 2/20/96 that the information supplied by Kamel was confirmed by U.N. investigators, although it was incomplete. The Iraqi government reported on 2/23/96 that Kamel and his brother were murdered at their Baghdad residence by their relatives.

Amy Dockser Marcus, *Wall Street Journal*, 2/23/96, p. A6 (14908). Douglas Jehl, *New York Times*, 2/24/96, pp. A1, A5 (14908). Ben Barber and Bill Gertz, *Washington Times*, 2/21/96, pp. A1, A22 (14908).

2/26/96*

An editorial claims that if Iraq manages to obtain weapons-grade nuclear material, it could again get close to obtaining an atomic bomb. Iraq still possesses the essential resources to restart its nuclear weapons program: experienced nuclear scientists and technicians, a fairly advanced military-industrial capability, and a feasible nuclear weapon blueprint. Many Iraqi nuclear weapons design working groups have been retained, which allows Iraq to continue working on its weapons program in the absence of U.N. inspectors. Additionally, Iraq preserved large numbers of advanced machine tools at its civilian and industrial plants. Some Iraqi officials have already admitted to U.N. inspectors that they are capable of building the equipment necessary to construct a nuclear weapon. A renewed nuclear weapons project could be designed to be virtually invisible to foreigners, considering Iraq's "detailed understanding of the shortcomings of the U.N. monitoring regime and foreign-intelligence services," gained since 1991. The small number of technically proficient personnel and the wide availability of development sites make detection almost impossible. In order to maintain the secrecy of the program, bomb construction and testing could take place at "temporary or makeshift facilities (such as open-pit mines or construction sites) and small and inconspicuous permanent facilities (such as private homes or mosques)."

Michael Eisenstadt, *Washington Post*, 2/26/96, p. A19 (14774).

3/8/96-3/18/96

Iraq obstructed U.N. weapons inspection teams five times in "a pattern of violation on access to sites suspected of containing arms materials." UNSCOM head Rolf Ekeus stated, "We are very concerned that these incidents could form part of a pattern. They also demonstrate something odd and disturbing: that five years after the cease-fire Iraq still considers it of value to keep alive the option of weapons of mass destruction." On 3/8/96, 43 U.N. inspectors were blocked by Iraqi officials from entering Baghdad's Irrigation Ministry for 18 hours, during which time the U.N. inspectors observed smoke from an incinerator. On 3/11/96, Iraq delayed an UNSCOM team from inspecting a Presidential Guard training center in Sarabady for 12 hours. On 3/14/96, two incidents took place at sites affiliated with the Republican Guard, resulting in delays of nearly three hours. In the first case, the delay took place at a Republican Guard auto repair facility, where Iraqi officials also opposed UNSCOM surveillance helicopters taking pictures of the site. In the second case, Iraq blocked the entrance to the headquarters of the Special Guard, although helicopters were allowed to examine this location. On 3/15/96, UNSCOM inspectors were blocked from inspecting a Republican Guard command center for four hours.

Evelyn Leopold, Reuter, 3/18/96; in Executive News Service, 3/18/96 (14907). Ian Black, *Guardian*, 3/13/96 (14907). Anne Penketh, AFP (Paris), 3/9/96; in FBIS-NES-96-048, 3/9/96 (14907). Reuter, 3/13/96; in Executive News Service, 3/14/96 (14907). Catherine Toups, *Washington Times*, 3/12/96, p. A13 (14907).

3/27/96

The U.N. Security Council agreed to a monitoring system to prevent Iraq from obtaining weapons of mass destruction (WMD) after sanctions are lifted. The monitoring system is designed to detect dual-use items imported by Iraq, and will send that information to UNSCOM and the IAEA Director General. According to UNSCOM, "The mechanism adopted relies on notifications both by Iraq and the supplier states of planned supplies of dual-use items to Iraq and on inspection of those items in Iraq and monitoring at the end-user site." In order to prevent Iraq from re-acquiring WMD, the U.N. will organize "U2 surveillance flights, closed circuit television cameras and teams of specialist inspectors," UNSCOM head Rolf Ekeus said.

Washington Post, 3/28/96, p. A28 (15069). OTC, 3/27/96; in Executive News Service, 3/27/96 (15069). Michael Dynes, *Times* (London), 3/14/96 (15069).

6/11/96

Iraq blocked a 50-member U.N. inspection team led by Russian ballistic missile specialist Nikita Smidovich from entering an industrial site in Baghdad. Commenting on the eight-hour standoff, Iraqi Deputy Prime Minister Tariq Aziz said that out of the eight sites in the Abu Ghuraib region that UNSCOM chief Rolf Ekeus requested inspections of, "we denied access to two sites that belong to the Republican Guards" for reasons of "national security." Aziz proposed to the U.N. Security Council a plan to replace Smidovich's team, comprised of 22 U.S. and

eight U.K. officials, with a team of the council's permanent members. According to Aziz, "We have a legitimate right to be worried about the entry of the inspectors, who belong to countries that have hostile schemes against Iraq...and who could carry out intelligence activities." Aziz accused Ekeus of "carrying out intelligence activities on behalf of countries hostile to Iraq." According to Ekeus, the blocked sites allegedly contain "prohibited materials, materials concerning missiles and nuclear substances, in addition to documents that will provide us with details about arms purchases and Iraq's claims about sites and materials they had said they destroyed in 1996." This list includes documents on nuclear substances that were said to be destroyed in 1991. Some U.N. officials are convinced the standoffs were organized to cover up the removal of secret documents.

UPI, 6/12/96; in Executive News Service, 6/12/96 (15437). John M. Goshko, *Washington Post*, 6/13/96, p. A20 (15437). Khalil Mater, *Al-Sharq Al-Awsat*, 6/19/96, p. 2; in FBIS-NES-96-120, 6/19/96 (15437).

6/16/96

After a five-day standoff with Iraqi officials, UNSCOM Chairman Rolf Ekeus withdrew a 53-member U.N. arms inspection team from Baghdad. Ekeus believes that during the standoff, "vital" documents were removed from the five facilities that UNSCOM inspectors were barred from entering. Iraq argued that UNSCOM had "deliberately" picked facilities vital to Iraq's national security, justifying Iraq's refusal to allow the U.N. inspection. Iraq called for new "inspection procedures" in order to safeguard Iraq's national security. The U.N. Security Council, while denying the Iraqi request, declared that Iraq's barring of the inspections was a "flagrant violation" of the Persian Gulf War cease-fire agreement and demanded that Iraq provide the U.N. with "immediate, unconditional and unrestricted access." On 6/14/96, as part of a call for new procedures, Iraqi Deputy Prime Minister Tariq Aziz suggested that three UNSCOM members led by Ekeus, and three Iraqi officials led by Aziz, should conduct inspections of any disputed Iraqi facility. However, Aziz's statement that Iraq would permit "surprise inspections" confused Western officials.

Leon Barkho, Reuter, 6/18/96; in *Washington Times*, 6/18/96, p. A9 (15397). Reuter, 6/17/96; in Executive News Service, 6/18/96 (15397). Louis Meixler, *Washington Times*, 6/15/96, p. A6 (15397). Evelyn Leopold, Reuter, 6/17/96; in Executive News Service, 6/17/96 (15397).

6/19/96-6/22/96

Iraq and UNSCOM Chairman Rolf Ekeus signed an agreement that assures UNSCOM weapons inspectors "immediate, unconditional and unrestricted access to all sites which the Commission or the IAEA may wish to inspect." Ekeus said, "We will be obliged to do (unannounced inspections), because on substance nothing has happened during this mission. Iraq is still, according to our analysis, concealing some important components and weapons and also concealing important documents related to expanding their program." Iraq is known to have concealed documents in "exotic or remote facilities or sensitive facilities," and by using mobile storage units. By the end of 6/96, Iraq is expected to make a "full, final, and complete" accounting of its nuclear weapons program.

Judy Aita, United States Information Agency Server, 6/24/96 (15464).

6/24/96

IAEA Deputy Director Maurizio Zifferero stated that although some aspects of Iraq's nuclear capability have been "nullified," others need further "clarifications." Zifferero stated, "We never said that the nuclear file has been closed. We stated that we were satisfied with the fact that Iraq, at present, has no practical capability to restart [sic] nuclear weapons program. Iraq has been stripped of all industrial infrastructure which is needed to produce... enriched uranium."

Hassan Hafidh, Reuter, 6/24/96 (15377).

IRAQ WITH:

IRAQ WITH GERMANY

2/2/96

An IAEA official said that Iraqi engineers acquired nuclear know-how prior to the 1900-91 Gulf War through training programs in Germany and other Western countries. From 1989-90, 22 Iraqis—among them centrifuge-design experts—spent 43 weeks in a Siemens training program for welding technicians at Urenco's uranium enrichment plant in Gronau. The Iraqi engineers may have been privy to design information regarding the piping systems for the centrifuge cascades. Under scrutiny is a 1989-90 contract between Baghdad's Industrial Products Co. (IPC) and Interatom GmbH, a former Siemens AG subsidiary specializing in aluminum piping systems. Siemens was to sell Iraq a "clean room" called "central workshop B-01" and to train Iraqi personnel. In 1991, the IAEA discovered that B-01 would be a critical component of Iraq's centrifuge testing program at Al Furat. Siemens denounced IAEA reports—later confirmed—that B-01 would have nuclear applications. The contract indicates that the Siemens training program was tailored to provide Iraqi technicians with the ability to weld aluminum piping, a skill necessary for the construction of uranium hexaflouride (UF6)-resistant cascade piping. The Iraqi affirmation that it learned cascade design information from Siemens "cannot be verified," the IAEA said.

Mark Hibbs, *NuclearFuel*, 2/12/96, pp. 12-13 (14837). Steve Pagani, Reuter, 2/2/96; in Executive News Service, 2/2/96 (14837).

IRAQ WITH GERMANY, NETHERLANDS, AND UNITED KINGDOM

2/96

Western officials said that Bruno Stemmler, a former MAN Technologie employee, sold Iraq gas centrifuge design blueprints diverted from Urenco's German operation in 1988-89. In 1/96, top Urenco technician Karl-Heinz Schaab—also a former employee and consultant to MAN—was accused of selling blueprints to Iraq in 1989 or 1990. IAEA spokesman Hans Meyer said that both German scientists transferred centrifuge technology, "but Stemmler worked on older models." IAEA officials believe Stemmler provided Iraq with four to six Urenco G-1 and G-2 centrifuge blueprints. Although an internal investigation by the U.K., the Netherlands, and Germany revealed no security breaches at Urenco, a U.S. Department of Energy (DOE) official noted a "consistent pattern of data

leaving that [Urenco] program" and criticized Urenco employees for a "cavalier attitude" toward security. Urenco denied that designs were diverted, even though drawings Iraq forfeited to the IAEA in 1995 were labeled as classified property of MAN or Uranit GmbH, a Urenco partner before 1992. Urenco officials are conducting their own investigation. Urenco's chief executive Klaus Messer emphasized that the company's security measures were already strict, and he doubted that extra procedures would have prevented the violation. Iraq's possession of Urenco's blueprints is not enough to allow the immediate construction of its own uranium enrichment centrifuge, but these designs will enable Iraq to speed up construction efforts at a lower cost. Work on parts such as the lower bearing could be facilitated by possession of the designs.

Mark Hibbs, *NuclearFuel*, 2/12/96, pp. 1, 13 (14838). Caroline Drees, Reuter, 2/12/96; in Executive News Service, 2/13/96 (14838). *Nuclear Engineering International*, 3/96, p. 4 (14830).

Iraq with Russia

2/96*

Negotiations continue between Russia and the IAEA over the disposal of Iraqi fissile material. Russia has a contract to remove fissile material from Iraqi reactors. According to UNSCOM head Rolf Ekeus, Russian requests for payments "beyond the normal commercial practice" are jeopardizing negotiations.

Nuclear Engineering International, 2/96, p. 7 (14593).

Iraq with United Kingdom

2/12/96

The IAEA reported that the machine tool company Matrix Churchill was one of more than 12 Western companies which helped Iraq's nuclear program before the Gulf War. Matrix Churchill, owned by Iraq's TMG Engineering, supplied components for Iraq's gas centrifuge uranium enrichment program from 11/88-4/90 and "knowingly deceived" the U.K. government about exports of equipment designed for the Iraqi military. Iraq claimed that the components were for a compressor. According to former Matrix Churchill Managing Director Paul Henderson, a shipment sent to Iraq shortly after the 4/90 "Supergun" scandal left the U.K. without Henderson's permission. A Customs and Excise case against Matrix Churchill revealed that the U.K. government "implicitly encouraged" dual-use exports to Iraq, believing that Matrix Churchill was a valuable source of information on Iraq's weapons programs.

John Plender and Tim Laxton, *Financial Times*, 2/13/96, pp. 1, 16 (14836). Caroline Drees, Reuter, 2/13/96; in Executive News Service, 2/13/96 (14836).

2/15/96

After hearing 268 witnesses and examining thousands of documents, Sir Richard Scott's *Report of the Inquiry into the Export of Defence Equipment and Dual-Use Goods to Iraq and Related Prosecutions* was released. According to the 2,000-page report, British Secretary of State for Trade and Industry Peter Lilley stated that the British intelligence services knew about Iraqi efforts to obtain nuclear weapons. Lilley believed that if the machine tool firm Matrix Churchill was denied export licenses, the company would have had to close down, making it impossible for British intelligence to access "Habobi's" procurement network. According to Lilley, British officials were seeking crucial data "far more incriminating than magnet rings," which would allow the U.K. to convince other countries of the need to prevent Iraqi attempts to obtain nuclear materials. Lilley claimed that U.K. officials were sharing with their "partners" information on "an Iraqi attempt to procure magnets which could only have been intended for centrifuge rotors." Other information in the Scott report suggests that results of U.N. inspections in Iraq will confirm that Matrix Churchill assisted in the building of K1000, Iraq's centrifuge plant. U.K. defense, intelligence, and export-licensing officials failed to notify former Prime Minister Margaret Thatcher, as well as customs officials, about Matrix Churchill's operations. British Trade Secretary Ian Lang denied that ministers had conspired in the 1980s to sell arms to Iraq or had hidden evidence that could have resulted in the "wrongful" imprisonment of three businessmen.

Trust And Verify, 2/96-3/96, pp. 1-3 (14909). Fred Barbash, *Washington Post*, 2/16/96, p. A26 (15262). Stephanie Strom, *New York Times*, 2/16/96, pp. A1, A4 (15262). Alan Wheatley, Reuter, 2/26/96; in Executive News Service, 2/27/96 (15262).

ISRAEL

Internal Developments

2/7/96*

Wisconsin Project Executive Director Gary Milhollin said in an interview that Israel possessed approximately 200 nuclear weapons. According to Milhollin, Israel has had a nuclear capability since the 1960s and remains the only Middle Eastern country in possession of nuclear weapons.

Richard C. Gross, *Washington Times*, 2/7/96, p. A14 (14625).

2/23/96*

According to a report by RAND's National Defense Research Institute, using current fissile material stocks, Israel could build 70 nuclear weapons. By the mid-1990s, it is anticipated that Israel will possess enough fissile material to build three bombs per year.

Brian Chow, Richard Speier, and Gregory Jones, *The Proposed Fissile-Material Production Cutoff: Next Steps* (Santa Monica, Calif.: RAND, 1995), pp. 9, 13.

6/24/96

The Israel Atomic Energy Commission (IAEC) denied allegations that Israel is making preparations to construct a third nuclear reactor, 25 km from the town of Awajah in Sinai and near the Egyptian border. In refuting the statements of Egyptian Atomic Energy Agency specialist Muhammad Mustafa, the IAEC stating that "The report is not true. Israel is not currently constructing a nuclear power plant." The IAEC did say, however, that its licensing department "has been studying the findings of surveys that have been carried out in the Shivta area since the 1980s."

Maha Mansur, *Rose Al-Yusuf* (Cairo), 6/24/96, p. 18; in FBIS-NES-96-126, 6/24/96 (15372). *Ha'aretz* (Tel Aviv), 6/25/96, p. A12; in FBIS-NES-96-126, 6/25/96 (15372).

ISRAEL WITH:

China, France, India, Pakistan, Russia, United Kingdom, and United States, 117
India, 123
Iran, Turkey, United Kingdom, and United States, 125

ISRAEL WITH UNITED STATES

2/7/96*

The Pentagon criticized a Defense Investigative Service (DIS) memo issued to defense contractors warning them about Israeli efforts to spy on the U.S. defense community. Citing alleged Israeli espionage cases in the U.S., the DIS memo warned that Israel's top priority was to enlist agents to "collect information on nuclear, chemical and biological weapons." According to the DIS, Israeli efforts would rely on "strong ethnic ties," along with "financial aggrandizement and identification and exploitation of individual frailties," and try to place Israeli nationals in key positions within the U.S. defense sector. U.S. Assistant Secretary of Defense for Command, Control, Communications, and Intelligence Emmett Paige indicated that the memo was being withdrawn due to its focus on ethnicity.

Barbara Starr, *Jane's Defence Weekly*, 2/7/96, p. 4 (14624).

JAPAN

INTERNAL DEVELOPMENTS

2/5/96*

Japanese Federation of Electric Power Companies (FEPCO) Chairman Hiroshi Araki announced that design changes at the Rokkasho-mura reprocessing plant in Aomori Prefecture will raise construction costs and delay completion of the plant until 2003. Japan Nuclear Fuel (JNFL) President Kiyoshi Nozawa estimated total costs of the plant at $18.75 billion, following changes made to protect against earthquakes and radiation leaks, improved safeguard measures, and equipment modifications based on France's reprocessing experience. JNFL will now construct only one of the two originally planned reprocessing lines, giving the Rokkasho-mura facility an annual capacity of up to 800 MT.

Power In Asia, 2/5/96 (15021). *NucNet News* , 2/5/96 (15021). *Plutonium*, Spring 1996, pp. 15-17 (15021).

5/30/96*

By 2010, Japanese plutonium reserves from its civilian nuclear reactors are expected to increase to 100 MT.

Vladimir Belous, *Nezavisimaya Gazeta*, 5/30/96, p. 6 (15243).

5/30/96*

Japan is reportedly conducting research on uranium enrichment by Molecular Laser Isotope Separation (MLIS).

Vladimir Belous, *Nezavisimaya Gazeta*, 5/30/96, p. 6 (15243).

6/7/96*

The Japanese Ministry of International Trade and Industry (MITI) has decided to review its nuclear development program and to suspend construction of an advanced fast breeder reactor (FBR). MITI is also likely to review its long-term nuclear program as well as its plutonium supply program. An advisory council to MITI, the nuclear energy panel of the Advisory Committee for Energy (ACE), will review the FBR program as well as the "Pluthermal Program," a program to fuel a thermal neutron reactor with plutonium.

Nihon Keizai Shimbun (Tokyo), 6/7/96, p. 1; in FBIS-EAS-96-115, 6/13/96 (15460).

JAPAN WITH:

Australia, Indonesia, and South Korea, 123

JAPAN WITH BELGIUM

5/6/96*

According to Japanese utility and industry sources, two leading Japanese utilities, Toshiba and Tokyo Electric Power Co. (Tepco), "quietly" signed agreements with Belgium for the supply of approximately 60 mixed-oxide (MOX) fuel assemblies containing 400 kg of plutonium, despite the Japanese government's reluctance to permit MOX irradiation in light water reactors (LWRs). According to the agreements, Belgonucleaire would fabricate 400 kg of separated plutonium into 60 MOX fuel rods for Tepco's boiling water reactors (BWRs). The contracts, valued at several hundred million dollars, were uncovered when Greenpeace suspected that Belgium might decide to store Japanese nuclear waste. As of 1996, 1.7 MT of Japanese plutonium designated for fabrication of MOX fuel rods in Belgium are stored at Cogema's reprocessing plant in La Hague.

Ann MacLachlan, *NuclearFuel*, 5/6/96, pp. 13-14 (15263). Naoaki Usui, *NuclearFuel*, 3/11/96, p. 18 (15263). *Nuclear Engineering International*, 4/96, p. 8 (15263). Richard Masters, *Nuclear Engineering International*, 6/96, pp. 31-35 (15255).

JAPAN WITH BELGIUM, EUROPEAN UNION, AND FRANCE

5/6/96*

According to sources in Brussels, Japan and the E.U. will not complete a nuclear cooperation agreement for at least one year. The Japanese government wishes to sign such an agreement prior to approving MOX fuel fabrication contracts between Japanese utilities and the Franco-Belgian company Commox. According to Japanese officials, the Diet would not approve any agreement earlier than spring 1997. A European official stated that Japan and Belgium do not need to have a bilateral nuclear agreement to fulfill their MOX deal. According to the source, any nuclear transactions within Europe are regulated exclusively by EURATOM, leaving "nothing for the Japanese to approve." Japan refuses to approve the retransfer of separated Japanese plutonium from France to Belgium for MOX fuel rod production without a nuclear cooperation agreement, insisting on stricter regulations than those implemented by EURATOM.

Ann MacLachlan, *NuclearFuel*, 5/6/96, pp. 13-14 (15263). Ann MacLachlan, *NuclearFuel*, 4/8/96, pp. 9-10 (15263).

JAPAN WITH:

Canada, France, Germany, and Indonesia, 124
Canada, France, Indonesia, and United States, 124
China, 118

JAPAN WITH GERMANY, RUSSIA, AND UNITED STATES

Early 1996

An interim design report on the progress of the International Thermonuclear Experimental Reactor (ITER) has been completed and delivered by the Joint Central Team (JCT). The JCT is conducting a six-year engineering design study with a goal of constructing a Tokamak reactor that allows the controlled ignition and stationary burning of fusion plasma. According to the interim report, the main elements of the ITER construction and required technologies have been defined and specified. The JCT is conducting research and development activities at three sites: In Garching, Germany, all plasma-typical components and systems are being developed; in Naka, Japan, all peripheral systems activities are being studied; and in San Diego, U.S., studies on the integration of construction, nuclear integration, and safety are being conducted. Construction of the ITER will take approximately 9 to 10 years and will cost $5.85 billion, with an additional $770 to 800 million in unspecified costs. Also, $900 million is expected to be spent on the project's management and administration. Experimentation is scheduled to begin in 2008.

Karl Juergen Dietz, *Atomwirtschaft*, 5/96, pp. 317-323 (15510).

JAPAN WITH:
Iran and Italy, 125

JAPAN WITH NORTH KOREA

4/8/96

Japanese authorities arrested an ethnic Korean Yi Chong-chun for allegedly shipping sodium fluoride and hydrofluoric acid, which can be used to produce Sarin nerve gas and enrich uranium, from Japan to North Korea. Yi Chong-chun is a member of Chongnyon, the General Association of Korean Residents in Japan, and is employed by the affiliated Tong-a Technology and Industrial Company. Reportedly, Yi Chong-chun smuggled 100 kg of the chemicals to North Korea "twice in January and February" aboard a North Korean vessel out of the port of Kobe.

KBS-1 Television Network; in FBIS-EAS-96-069, 4/8/96 (14671).

JAPAN WITH RUSSIA

4/17/96*

Russia and Japan are negotiating to use Russian plutonium in Japanese fast-breeder reactors (FBRs).

Asahi Shimbun, 4/17/96 (15119).

JAPAN WITH:
Russia and G7, 139

JAPAN WITH UNITED STATES

3/22/96

Three licenses were issued by the U.S. Nuclear Regulatory Commission (NRC) to Mitsubishi International to export 5,893 kg of low-enriched uranium (LEU) to Japan's Ikata-3 and -5 reactors; 19,262 kg of LEU to Japan's Takahama-1; and 14,111 kg of LEU to Japan's Takahama-3 nuclear power plant. The NRC also issued Edlow International of the U.S. a license to export 3,459 kg of LEU to Ikata-3 and -5.

Nuclear Regulatory Commission, 4/96 (15603).

4/29/96

The NRC issued a license to Siemens Power Corp. to export LEU to Japan.

Nuclear Regulatory Commission, 5/96 (15602).

5/96

Mitsui USA was granted licenses by the NRC to sell 16,417 kg of LEU to Japan for the Tokai-2 reactor, and 20,164 kg of LEU to Japan for the Fukushima-2 reactor.

Nuclear Regulatory Commission, 6/96 (15604).

5/6/96*

A conflict between the U.S. State Department and the Department of Energy (DOE) over reprocessing and plutonium stockpiling is delaying action on Japan's 1995 request to add several European plutonium fuel cycle facilities to the Annex I register specified in the 1988 U.S.-Japan nuclear cooperation agreement. A source in the Clinton Administration said DOE will not "rubberstamp" the request, but will "take a real serious look" at plutonium stockpiling in Japan before approving additional European facilities for reprocessing U.S.-origin nuclear materials and mixed-oxide (MOX) fuel fabrication. Citing Japanese Citizens' Nuclear Information Center figures, a 3/1/96 letter to Energy Secretary Hazel O'Leary from the Nuclear Control Institute, Greenpeace, and the Natural Resources Defense Council warned that Japan's stockpile of 11 MT of plutonium would increase to 25 MT by the year 2000, jeopardizing U.S. security interests. The State Department contends that Japan's request covers facilities which meet U.S. safeguard standards and appear on the U.S.-EURATOM annex.

Kathleen Hart, *NuclearFuel*, 5/6/96, pp. 12-13 (14897).

KAZAKSTAN

INTERNAL DEVELOPMENTS

3/22/96

The Kazakstan State Investigative Committee and the National Security Service arrested two employees of the Ulba Metallurgical Joint-Stock Company in Ust-Kamenogorsk, Kazakstan, for illegal possession of 100 kg of U-235, one of the largest seizures of nuclear fuel in Kazakstan. The uranium apparently had been stolen from the facility in 11/95. In a related incident, a car leaving Ust-Kamenogorsk was found to be carrying 4 kg of uranium, 1 kg of thorium, and 10 ingots of indium, a rare-earth element, all believed to have originated at the Ulba Metallurgical Joint-Stock Company.

Sergei Borisov, *Obshchaya Gazeta* (Moscow), 5/5/96-5/11/96, p. 2; in FBIS-SOV-96-090, 5/8/96 (15491). Sergei Borisov, *Karavan-Blits* (Almaty), 3/26/96, p. 1; in FBIS-TAC-95-005 3/26/96 (15491).

KAZAKSTAN WITH:
Afghanistan, China, Iran, Pakistan, Russia, and Turkmenistan, 117
Armenia, Belarus, Russia, Tajikistan, and Ukraine, 113
Azerbaijan, Iran, and Tajikistan, 113
China and Kyrgyzstan, 118

KAZAKSTAN WITH THE EUROPEAN UNION, KYRGYZSTAN, RUSSIA, AND UZBEKISTAN

6/96*

The EURATOM Supply Agency (ESA) 1995 Annual Report notes that the CIS has "maintained its position as the European Union's (E.U.) largest source of (natural uranium) supply." In 1995, the E.U. imported 5,250 MT of natural uranium from the CIS, which constituted 33 percent of all natural uranium imports to the area. Russia provided 27 percent of the total to the E.U., while Kazakstan, Uzbekistan, and Kyrgyzstan supplied the remainder. Total 1995 CIS uranium exports to the E.U. were 13,000 MT.

Ann MacLachlan, *NuclearFuel*, 6/3/96, pp. 16-17 (15278).

KAZAKSTAN WITH LITHUANIA

6/8/96*

Kazakstani customs officers arrested a Lithuanian citizen attempting to smuggle 200 kg of radioactive tantalum, worth approximately $100 million, out of Kazakstan. It is suspected that the material was stolen from the Ust-Kamenogorsk Metallurgical Joint-Stock Company, which produces nuclear fuel and rare earth metals for nuclear power plants.

Komsomolskaya Pravda, 6/8/96, p. 1 (15157).

KYRGYZSTAN

LATVIA

LATVIA WITH RUSSIA

5/18/96*

One hundred thirty grams of a radioactive substance, probably uranium, was found in the Latvian city of Ludza. A local police investigation determined that the radioactive substance was illegally acquired in St. Petersburg, Russia, and then brought to Daugavpils, Latvia, where it was purchased by two residents of Ludza.

Karen Markaryan, *Komsomolskaya Pravda*, 5/18/96, p. 3 (15047).

LIBYA

LIBYA WITH AUSTRIA

5/17/96

The court case against 57-year-old Peter Z., who was apprehended trying to sell a nuclear warhead to investigators from the Ministry for Internal Affairs, started in Austria. After the fall of the USSR, Peter Z. announced that he possessed a complete nuclear warhead, which was for sale for 60 billion Austrian shillings. Although the warhead apparently does not exist, a small amount of non-weapons-grade "Plutonium 289" [sic] does. Peter Z. alleged that Libya's Muammar Qaddafi was interested in buying the warhead.

Die Presse, 5/18/96 (15279). Peter Pisa, *Kurier*, 5/18/96 (15279).

LIBYA WITH AUSTRIA, CZECH REPUBLIC, MONACO, AND RUSSIA

2/20/96

Czech police investigators have revealed that the buyer of smuggled weapons-grade uranium confiscated in Prague in 1994 was located in Africa. Although the police did not disclose the purchaser, they did say that Libya was not a participant in the deal. Head investigator Jan Rathausky will interrogate suspects in Russia, Monaco, and Austria before wrapping up the case. Police suspect that nuclear scientist Jaroslav Vagner, of Ceske Budejovice, and two men from the former Soviet Union, were involved in the deal. Police discovered 2.7 kg of highly-enriched uranium (HEU) in the men's car. The HEU is thought to have originated in the former Soviet Union.

Maggie Ledford Lawson and Jan Stojaspal, *Prague Post*, 2/20/96, p. 1; in FBIS-EEU-96-053, 2/20/96 (14587).

LIBYA WITH BULGARIA, GERMANY, AND UKRAINE

4/19/96*

Ukraine, and the city of Odessa in particular, are increasingly becoming a main route for nuclear smuggling, due to the country's economic difficulties and lack of government control. The biggest dangers come from Ukrainian strategic nuclear missile bases, which still possess radioactive materials, and from corrupt authorities at Odessa's seaport facilities. Recent reports by Western arms dealers suggest that an increasing number of Ukrainian nationals, including government officials, may be offering weapons-grade plutonium and uranium for sale. In Kherson, local authorities confiscated a large amount of cesium-137 stolen from a chemical plant in Vinnitsa, Ukraine, which was to be shipped to Libya on board a Bulgarian vessel. A reporter for *Die Woche*, pretending to be a representative of an Israeli company, was offered 40 g of strontium-90 at $35,000/g and 6 g of radium-226 at $8,000/g in 4/96.

Die Woche (Hamburg), 4/19/96, p. 31; in FBIS-TOT-95-015-L, 4/19/96 (15539).

LIBYA WITH UKRAINE

6/10/96*

A 1995 U.S. intelligence report said that Ukrainian President Leonid Kuchma supervised the formation of a committee to oversee "comprehensive strategic cooperation" with Libya. The committee was allegedly

comprised of 13 officials at "the highest levels of the Ukrainian leadership," including the nuclear technology minister. According to the report, the committee authorized Libyan representatives to meet with an unnamed Ukrainian electronics company. The company, located in Kharkiv, has allegedly "been linked to discreet international dealings." Unidentified Libyans have also met with members of Kuchma's staff, several Ukrainian "trade and foreign economic officials," and the leaders of a number of scientific research institutions. Ukrainian Foreign Ministry spokesman Yuriy Serheyev denied the allegations, but did confirm that Ukrainian-Libyan negotiations on "future contracts and participation in tenders" were under way. Serheyev added that the negotiations do not include the transfer of nuclear technology.

Bill Gertz, *Washington Times*, 6/10/96, pp. A1, A10 (15465). Halya Pavlyva, *Intelnews* (Kiev), 6/12/96; in FBIS-SOV-96-114, 6/12/96 (15465).

LITHUANIA

INTERNAL DEVELOPMENTS

Early 1996

Lithuanian Security Department officers demonstrated weaknesses in the physical security of the Ignalina nuclear power plant by smuggling "explosive substances" into the Ignalina plant without interference from its staff. Director of the Lithuanian Security Department Jurgis Jurgelis stated that private company offices also exist on the Ignalina plant property. The offices employ relatives of the plant's staff, making it difficult to determine what property belongs to the Ignalina Plant and what is privately owned.

Radio Vilnius (Vilnius), 5/14/96; in FBIS-SOV-96-099, 5/21/96 (15107).

3/96*

Lithuanian authorities discovered a fuel rod containing 2.7 kg of uranium fuel in Visiginas, 15 km from the Ignalina nuclear power plant. The fuel rod is believed to be part of an entire fuel assembly that is missing from the Ignalina plant. At least 0.3 kg of uranium fuel pellets had been removed from either end of the fuel rod. Sigidas Kurselis, director of safeguards and physical protection for the Lithuanian Nuclear Power Safety Inspectorate, said that while it is not known exactly when the assembly was stolen, it is unlikely that it was stolen before delivery to the plant. According to Lithuanian officials, one person has been arrested and more arrests are expected. Kurselis said that many more than "two or three people" were involved with this incident. According to Kurselis, it has not yet been determined how much of the 3 kg of uranium that the rod originally held is missing. The 280 kg fuel assembly, which contains more than 100 kg of uranium, was discovered to be missing in early 1993.

Ariane Sains, *Nucleonics Week*, 3/21/96, pp. 15-16 (15210). Ariane Sains, *Nucleonics Week*, 3/14/96, pp. 14-15 (14932).

LITHUANIA WITH:
Georgia, Pakistan, and Sweden, 121
Kazakstan, 132

LITHUANIA WITH UKRAINE

5/20/96

The Lithuanian Interior Ministry announced that police in Klaipeda arrested six people attempting to sell 13 kg of uranium (U-238) for $300,00. Police discovered the uranium in two containers, only one of which appeared equipped to transport radioactive material, according to the Baltic News Service. It is suspected that the radioactive material was stolen from a Ukrainian military base. Police officials, however, do not exclude the possibility that this uranium was brought to Klaipeda from the Ignalina nuclear power station. The arrests followed a joint operation by Lithuanian police, the State Security Service, and the Procurator General's office. The suspects are well-known residents of Klaipeda: 38-year-old Sigitas Petkyavichus is deputy director of the "Filia" joint-stock company and former member of the city council; 55-year-old Nikolay Ionidis is director of the "Grinidis" joint-stock company; Anatoliy Goncharov is president of the "Garmonia" joint-stock company and formerly people's judge of Klaipeda; and Goncharov's wife is a lawyer. All the smugglers were charged with obtaining, storing, and selling radioactive materials.

Reuter (Vilnius), 5/20/96; in Executive News Service, 5/21/96 (15108). Itar-Tass (Moscow), 5/21/96; in FBIS-SOV-96-100, 5/21/96 (15477).

NORTH KOREA

INTERNAL DEVELOPMENTS

Early 1996

In a report dealing with North Korea's nuclear weapons program, including its development, command and control, organization and use, Joseph Bermudez reveals that research into weapon design probably began in the late 1970s with exploration of the requirements for a basic nuclear device, a free-fall air-delivered bomb, and a ballistic missile warhead. North Korea likely completed its first fissile core by 1990. Citing unidentified sources, Bermudez says that, by 1991, North Korea constructed a nuclear device intended to be fitted on a railway car or carried by a military transport aircraft. He estimated that, also by 1991, North Korea had reprocessed 10-13 kg of plutonium, enough to manufacture one or two nuclear weapons, under ideal conditions. By 1994, having conducted a second refueling of its 5 MW reactor at Yongbyon, North Korea could have extracted an additional 18 to 22 kg of plutonium, enough to fabricate two to four more nuclear weapons. To date, North Korea has not reprocessed this fuel. In addition, Bermudez identified the constituent bodies of North Korea's nuclear organization as including: the Korean Workers' Party Second Economic Committee, the Ministry of Atomic Energy Industry, the Academy of Sciences, the Mining Industry Committee, the Ministry of Public Security, the Ministry of State Security, and the Ministry of the People's Armed Forces.

Joseph S. Bermudez, Jr., "North Korea's Nuclear Arsenal," *Jane's Intelligence Review*, Special Report No. 9, 1996, pp. 1-23 (14669).

2/3/96

A RAND Institute report analyzing the impact of a U.S.-proposed fissile material pro-

duction cutoff said that North Korea has the ability to produce 250 kg of plutonium per year. It noted, as a main proliferation concern, North Korea's occasional failure to abide by the terms of its international agreements. The report details the inventories, and production capabilities, and proliferation risks for all Third World countries of concern.

Brian G. Chow, Richard H. Speier, and Gregory S. Jones, *The Proposed Fissile-Material Production Cutoff: Next Steps* (Santa Monica, Calif.: RAND National Defense Research Institute, 1995) (16001).

2/8/96

The South Korean Agency for National Security Planning issued a report which indicates that North Korea may reprocess over 50 tons of spent fuel and continue developing nuclear weapons with the 7 to 22 kg of plutonium that it has stored.

Yonhap (Seoul); in FBIS-EAS-96-028, 2/9/96 (14211).

NORTH KOREA WITH:
China, Iran, and United States, 118
CIS, Iran, Iraq, and Syria, 120

NORTH KOREA WITH IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) AND UNITED STATES

3/18/96

Hans Blix, IAEA director general, reported to the board of governors that North Korea is not cooperating with IAEA efforts to ascertain the quantity of plutonium held at the Yongbyon nuclear facility. IAEA inspectors have made a number of attempts to photograph the facility since 9/95, in accordance with agreements made with Pyongyang, but North Korea has restricted them. Without access to the spent fuel rods at the Yongbyon facility, the IAEA will not be able to determine whether North Korea diverted the reactor fuel in 1991. Blix said that Pyongyang agreed to a fifth round of discussions on the issue, but that, "Without the implementation in the very near future of adequate preservation measures, there is a risk we may lose the possibility to verify the correctness and completeness of [North Korea's] initial declaration." While North Korea has allowed IAEA inspectors to be stationed permanently at the Yongbyon facility, Pyongyang has made short-notice inspections and inspector rotations difficult.

Steve Pagani, Reuter; in Executive News Service, 3/18/96 (14677).

4/27/96

The U.S. firm NAC International began canning 8,000 spent nuclear fuel rods from North Korea's Yongbyon nuclear reactor. The fuel rods, which are in a storage pond, must be removed, dried, and then put into stainless steel cans. The cans will then be shipped out of North Korea to a permanent storage site yet to be identified. The U.S. Department of Energy, which is funding and overseeing the process, spent $10 million in FY 1995, and has requested an additional $4.1 million for FY 1996 to complete the project. U.S. Special Envoy Spencer Richardson will oversee the removal.

Kathleen Hart, *Nuclear Fuel*, 5/6/96, pp. 5-6 (14810). Choe Won-ki, *Chunggang Ilbo* (Seoul), p. 1; in FBIS-EAS-96-054, 3/16/96 (14674).

5/27/96

David Kyd, spokesman for the IAEA, announced that North Korean officials have refused to allow inspectors to measure plutonium levels in the rods being canned from the Yongbyon facility (see above). Kyd said that the four IAEA inspectors involved with the storage process were allowed only to verify that the fuel rods had been "burnt." The IAEA estimates that storage of the 8,000 rods will be completed by 6/97, and said that it would continue to seek authorization to measure the plutonium.

KBS-1 Radio (Seoul); in FBIS-EAS-96-087, 5/2/96 (14823).

NORTH KOREA WITH:
Japan, 131

NORTH KOREA WITH KEDO (KOREAN ENERGY DEVELOPMENT ORGANIZATION)

2/7/96

A South Korean official announced that South Korea contributed $6 million to KEDO for "preliminary activities in the LWR project." The official stressed that the $6 million will not be used to pay for the heavy oil shipment to North Korea.

Chungang Ilbo (Seoul), p. 1; in FBIS-EAS-96-027, 2/8/96 (14652).

3/13/96

North Korea established an East Sea Atomic Reactor Project Planning Office. It will be comprised of representatives of the Foreign Ministry, the Atomic Energy Department and the External Economic Cooperation Committee. The office will develop negotiating strategies for KEDO and will serve as interagency policy coordinator.

Kim Pyong-chan, *Hanguk Ilbo* (Seoul), 3/14/96, p. 2; in FBIS-EAS-96-051, 3/14/96 (14673).

3/19/96

KEDO selected the Korean Electric Power Corporation (KEPCO) to be general contractor for the supply of the two light-water reactors (LWRs) to North Korea. This means that KEDO can begin the inspection process of the proposed site at Sinpo.

Koreaupdate, 4/1/96, p. 2 (14824).

3/26/96

A six-member delegation, led by Steven Bosworth, executive director of KEDO, arrived in North Korea for a four-day visit to Sinpo. Among the delegation were Choi Young-jin and Itaru Umezu, KEDO deputy directors.

Pyongyang Korean Central Broadcasting Network; in FBIS-EAS-96-059, 3/26/96 (14814).

5/6/96

Thirteen technical representatives from KEDO completed the fifth on-site inspection of the proposed light-water reactor (LWR) site (at Sinpo). The team arrived on 4/27/96 and surveyed the site to determine the preliminary infrastructure projects that will be necessary to support construction of two LWRs. Likely projects include construction of a road from the LWR site to the port of Yanghwa, an 8 km distance. In addition, a fiber optic telecommunications cable has been installed between Sinpo and Hamhung, and a road may be constructed between North and South Korea, through Panmunjom.

Ku Pon-yong, *Seoul Sinmun*, p. 1; in FBIS-EAS-96-048, 3/9/96 (14675). Yonhap (Seoul); in FBIS-EAS-96-089, 5/7/96 (14819). Yonhap (Seoul); in FBIS-EAS-96-114, 6/12/96 (15518).

5/22/96

Representatives of KEDO and North Korea signed the first of 10 supplementary diplomatic protocols necessary to bring into force the KEDO-North Korea supply agreement. This protocol covers the privileges and immunities that North Korea will grant to KEDO staff and representatives, addressing matters such as arrests, visas, and protection of property, assets, and income.

Koreaupdate, 6/10/96, p. 2 (15515).

North Korea with Russia

3/28/96*

North Korea maintains a permanent cadre of approximately 10 nuclear scientists at the Joint Atomic Energy Research Institute in Dubna, Russia. Since the 1970s, an estimated 230 North Korean scientists have received instruction at the institute, at an annual cost exceeding $100,000. These scientists played an important role in establishing the Yongbyon nuclear facility. The North Koreans are pursuing studies relating to nuclear reactor operations, superconductors, and particle accelerators.

Ko Tae-Yong, KSG-1 Television Network (Seoul); in FBIS-TAC-95-005 (14817).

North Korea with South Korea

3/19/96

The Chinese tanker *Liu He* will begin to deliver 42,000 tons of South Korean heavy oil to North Korea. The shipment, worth approximately $5.46 million, originated at the Honam Oil Refinery Company and will be sent to Sonbong, North Korea, from the South Korean port of Yuchon.

Reuter; in Executive News Service, 3/16/96 (14679).

North Korea with United States

4/27/96

The U.S. firm NAC International began the process of canning 8,000 spent nuclear fuel rods from North Korea's Yongbyon nuclear reactor. The fuel rods, which are in a storage pond, must be taken out, dried, and then put into stainless steel cans. Those cans will then be shipped out of North Korea to a permanent storage site yet to be identified. The U.S. Department of Energy, who is funding and overseeing the process, spent $10 million in FY 1995, and has requested an additional $4.1 million for FY 1996 to complete the project.

Kathleen Hart, *Nuclear Fuel*, 5/6/96, pp. 5-6 (14810).

NORWAY

Internal Developments

6/26/96*

During a routine inventory check, IAEA inspectors discovered that 2.178 MT of natural uranium were missing from a Norwegian facility. It has become clear to Norwegian media and government officials that control over uranium in Norway is currently inadequate.

Marat Zubko, *Izvestiya*, 6/26/96, p. 3 (15370).

PAKISTAN

Internal Developments

10/20/95*

Pakistan's Atomic Energy Commission (PAEC) Chairman Ishfq Ahmed said that embargoes and restrictions placed on Western exporters of nuclear materials to Pakistan were forcing the "indigenization" of Pakistan's nuclear program. Pakistan's nuclear power plant at Karachi runs on uranium from a mining and processing facility in the Dera Ghazi Khan region, but deposits there are reportedly almost depleted. Pakistan will begin mining the Qabul Khel uranium deposits in the Lakki Marwat district.

Khaleej Times, 10/20/95; in *Strategic Digest*, 2/96, pp. 250-251 (14595).

2/20/96*

Any large-scale manufacturing of nuclear weapons in Pakistan is expected to occur at the top-secret ordnance complex at Wah. Pakistan also runs a nuclear research and development center in Golra.

Marcus Warren, *Washington Times*, 2/20/96, pp. A1, A16 (14835).

2/23/96*

According to a report by RAND's National Defense Research Institute, Pakistan could build 12 nuclear weapons using current fissile material stocks. By the mid-1990s, it is anticipated that Pakistan will possess enough fissile material to build two bombs per year.

Brian Chow, Richard Speier, and Gregory Jones, *The Proposed Fissile-Material Production Cutoff: Next Steps* (Santa Monica, Calif.: RAND, 1995), pp. 9, 13.

3/96

Unnamed Pakistani nuclear officials denied allegations made by the magazine *Power in Asia* that a 50 MW power reactor has been built near Khushab.

NucNet News, 3/28/96 (15015).

4/2/96

Unnamed sources in Pakistan said allegations that U.S. intelligence agents found blueprints for a Pakistani atomic bomb in the luggage of Dr. A. Q. Khan in the early 1980s are false.

Nation (Islamabad), 4/3/96, pp. 1, 5; in FBIS-NES-96-066, 4/3/96 (14846).

5/28/96*

Independent estimates from the U.S. media, intelligence community, State Department, CIA, and Defense Department indicate that Pakistan possesses 12-20 nuclear weapons. The Pakistani National Command Authority (NCA), which includes the president, the army chief of staff, the Joint Chiefs of Staff (JCS) chairman, and the JCS director general, control the Pakistani nuclear program and arsenal.

General Ashok Mehta, *Pioneer* (Delhi), 5/28/96, p. 10; in FBIS-NES-96-105, 5/28/96 (15066).

6/96*

While several Indian military and senior government officials believe that Pakistan possesses a sufficient nuclear capability to act as a deterrent, Indian nuclear scientists question such an assessment. In 1995, former Indian Atomic Energy Commission Chairman Dr. P. K. Iyengar said, "If you ask me, 'Is there any scientific evidence, that Pakistan has a nuclear-weapon capability?', I would say no." Indian scientists believe that Pakistan could build "a few devices" using foreign material, but could not maintain an "indigenous program."

W. P. S. Sidhu, *Jane's Intelligence Review*, 6/96, pp. 278-280 (15436).

PAKISTAN WITH:

Afghanistan, China, Iran, Kazakstan, Russia, and Turkmenistan, 117
China, 118
China, France, India, Israel, Russia, United Kingdom, and United States, 117
China, France, and United Kingdom, 118
China and United States, 119
Georgia, Lithuania, and Sweden, 121

PAKISTAN WITH GERMANY

2/8/96*

Pakistan has a history of attempting to acquire top bearing parts for gas centrifuges from abroad. According to Western intelligence reports, in 1991 and then in 1995, Pakistan approached German firms to obtain magnetic equipment for its centrifuges. Because the Kahuta uranium enrichment plant's design is based primarily on technology stolen from the European consortium Urenco during the mid- 1970s, all magnetic bearing parts imported by Pakistan to date have met the specifications of Urenco's G-1 and G-2 centrifuges. Specifically, these magnetic bearing parts have been constructed of an aluminum, nickel, and cobalt alloy called Alnico. Pakistan's G-1 and G-2 type centrifuges use two Alnico magnets, an upper one suspended from a housing and a lower magnet attached to the top cap of the rotor assembly.

Mark Hibbs, *Nucleonics Week*, 2/8/96, pp. 1, 12 (14658).

PAKISTAN WITH HUNGARY

2/23/96*

Laser equipment that could be used in a nuclear weapons program was found in a Hungarian shipment to Pakistan in 1995.

Alfred de Tavares and Sanjay Suri, *India Abroad*, 2/23/96, p. 27 (15018).

PAKISTAN WITH ITALY

4/96

Equipment which could be used for manufacturing chemical and nuclear weapons was impounded by officials at the port of Naples, Italy, before it could be shipped to Lahore, Pakistan. The equipment was found in five containers, inside of which customs officers discovered a reactor with a cooling sheath, distilling equipment, pumps, and centrifuges. According to the exporting company, Smith Kline, the equipment was for manufacturing an antibiotic called Cefadrin.

RAI Uno Television Network (Rome), 423/96; in FBIS-TAC-96-007, 4/23/96 (15122).

PAKISTAN WITH MOROCCO

5/96

During an interview with the Moroccan daily *La Opinion*, Pakistani Foreign Minister Sardar Ahmad Ali said that Pakistan is prepared to share its nuclear technology with peaceful countries such as Morocco.

Aroosa Alam, *Muslim* (Islamabad), 5/31/96, pp. 1, 4; in FBIS-TAC-96-007, 5/31/96 (15173).

PAKISTAN WITH SWEDEN AND UNITED KINGDOM

2/96

British officials seized Swedish dual-use laser equipment destined for Pakistan at London's Heathrow Airport. A similar deal was halted in 1995 that involved the sale of laser equipment by the Swedish laser manufacturer Fixturlaser to Global Consultants, an alleged Pakistani front company. The 11/95 deal was stopped by British customs after they seized the laser-measuring instruments from a British Airways flight destined for Karachi, Pakistani. A Pakistani High Commission employee, Mohammed Saleem, was accused by the British government of obtaining laser equipment for Pakistan's nuclear weapons program, and the government announced its intention to deport him. Pakistani High Commission in London officials, however, have rejected the accusations of involvement by either the Commission or Saleem. U.S. officials claim Saleem is the European buyer for the A. Q. Khan Research Laboratory in Kahuta. Indian Major General Dipanker Bannerjee claimed that the laser devices were for a uranium enrichment facility.

Alfred de Tavares and Sanjay Suri, *India Abroad*, 2/23/96, p. 27 (15018). *Asian Age*, 2/14/96; in Strategic Digest, 4/96, pp. 537-538 (15018). Major General Dipanker Bannerjee, India Radio Network (Delhi), 2/5/96; in FBIS-TAC-96-003, 2/5/96 (15172). Ahmad Ishtiaq, *Nation* (Islamabad), 2/13/96, pp. 1, 15; in FBIS-TAC-96-003, 2/13/96 (14391). Marcus Warren, *Washington Times*, 2/20/96, pp. A1, A16 (14835). Marcus Warren, *Washington Times*, 4/13/96, p. A8 (14835).

PAKISTAN WITH VIETNAM

4/8/96-4/14/96*

In Vietnam, the departure of top scientists and engineers has paralyzed efforts to develop a planned $3 billion nuclear power industry. According to Dalat Nuclear Research Institute director Tran Ha Anh, more than 20 nuclear specialists have left the Dalat Institute, home to Vietnam's only nuclear reactor. Anh said that Vietnamese scientists have gone to work in Pakistan, at the IAEA, and in other jobs where salaries are higher. Vietnam has several hundred personnel involved in the nuclear field, around 130 of whom are at Dalat.

Le Minh Quan, *Vietnam Investment Review* (Hanoi), 4/8/96-4/14/96, p. 8; in FBIS-EAS-96-080, 4/24/96 (14634).

ROMANIA

INTERNAL DEVELOPMENTS

3/8/96*

Anti-Organized Crime Service officers of the Timis County Police Inspectorate, Romania, discovered a car carrying 82 kg of radioactive material (later identified as uranium). The car was also carrying secret documents that driver Andrei Ilie, a foreman at the Oravita Mining Corporation, had stolen from the Banatul Mining Company of Oravita. The documents were the property of the Magurele Research and Design Center for Radioactive Metals, located near Bucharest, and were to be taken to an hidden place to be photocopied in exchange for 10 million lei.

Adevarul (Bucharest), 3/8/96, p. 1; in FBIS-TAC-95-005, 3/8/96 (14892).

RUSSIA

INTERNAL DEVELOPMENTS

2/6/96*

Five blocks of gamma-sources containing cesium-137 were stolen from the joint stock company Stroidetal in the Kardim district of Russia's Smolensk region. Local law enforcement agents are attempting to locate the missing blocks, as there is a possibility that they may fall into the hands of terrorists. The quantity of stolen material is currently being calculated.

Kommersant-Daily, 2/8/96, p. 4; in WPS, 2/14/96, p. 4 (15096).

4/16/96

Chechen rebel leader Aslambek Abdukhadyev threatened to explode containers holding radioactive material in Moscow. The warning came after a claim that the Russians had bombed villages, killing civilians and children. Abdukhadyev said, "There are already several radioactive containers in Moscow. We can put in more. We will explode them all."

AFP (Paris), 4/16/96; in FBIS-TEN-96-005, 4/16/96 (15106).

6/18/96*

Two containers holding 60 liters of nuclear materials were discovered at a sandpit near Khabarovsk, Russia, 300 m from the Khabarovsk-Vladivostok highway. The containers were taken to the special enterprise Radon. Local investigators are attempting to locate the owner of the containers.

Rossiiskaya Gazeta, 6/18/96, p. 3 (15201). *Krasnaya Zvezda*, 6/18/96, p. 1; in WPS, 6/19/96, p. 1 (15309).

RUSSIA WITH BELGIUM, FRANCE, GERMANY, AND NETHERLANDS

3/96*

In order to assure "longer-term" highly enriched uranium (HEU) fuel supplies, EURATOM intends to sign a contract with Russia, a plan "hailed" as a means to use Russian HEU for peaceful purposes. According to EURATOM, Europe is capable of supplying 5-10 years worth of HEU to the three existing research reactors fueled by HEU; the Belgian BR-3 at Mol, the Petten reactor in the Netherlands, and the French neutron beam reactor at the Laue-Langevin Institute in Grenoble, in addition to Germany's FRM-2 research reactor. The FRM-2 reactor in Garching, construction of which is scheduled to begin in 8/96, will use 93 percent enriched uranium.

Simon Rippon, *Nuclear News*, 3/96, p. 45 (15019). *Nuclear News*, 5/96, p. 55 (15019).

RUSSIA WITH BULGARIA, FRANCE, GERMANY, AND UNITED STATES

5/31/96*

Bulgarian Committee of Energy Chairman Konstantin Russinov reported that Bulgaria is currently negotiating with French, German, Russian, and U.S. firms about the completion of the Belene-1 nuclear power plant. Belene-1, a VVER-1000 pressurized water reactor (PWR) of Russian design, is estimated to cost $1.4 billion, which Bulgaria hopes to finance through an international consortium of European and world financial institutions.

BTA News Agency (Sofia), 5/31/96; in BBC Monitoring Summary of World Broadcasts, 6/3/96 (15462). Srebri Valchev, *NucNet News*, 6/7/96 (15462).

RUSSIA WITH BULGARIA, GERMANY, TAIWAN, AND UKRAINE

4/4/96

The Russian Supreme Court ruled to outlaw a paragraph of the 1/25/95 Russian Presidential Decree "On State Support of Structural Rebuilding and Conversion of the Nuclear Industry in Zheleznogorsk, Krasnoyarsk Region" that permits foreign imports of spent nuclear fuel for reprocessing at the nuclear plant in Zheleznogorsk (Krasnoyarsk-26) from nuclear power stations that had been designed and constructed under other-than-Russian projects. According to the director of the nuclear plant, the RT-2 reprocessing facility at Zheleznogorsk will not be completed before 2000. The court ruled that spent nuclear fuel may be imported into Russia only if there are specific international agreements regulating the import of spent fuel that have passed an environmental analysis. According to Russian Greenpeace members, the RT-2 reprocessing facility was specially designed to reprocess imported nuclear waste at a level of at least 1000 MT annually; only at this level of reprocessing would the RT-2 facility be profitable. According to a statement issued by First Deputy Minister of Atomic Energy Nikolai Yegorov, construction of the RT-2 facility will continue and additional financing will be received from foreign investors in accordance with international agreements. According to Russian Greenpeace representative Ivan Blokov, the court's decision prohibits the uncontrolled import of nuclear waste into Russia. Zheleznogorsk nuclear reprocessing facilities are currently reprocessing nuclear fuel from Ukraine and Bulgaria, and negotiations on nuclear waste imports are being conducted with Germany and Taiwan. According to Blokov, since the RT-2 facility is incomplete, the Russian government and Zheleznogorsk plant managers were planning to simply bury nuclear waste from Western Europe until the RT-2 facility is completed.

K. B., *Ogonyek*, 4/96, p. 49 (15509). Vadim Kantor, *Segodnya*, 4/6/96, p. 12 (15509).

Russia with Bulgaria, Moldova, and Romania

5/23/96*

In late 1996, Russian nuclear fuel designated for the Kozloduy power station in Bulgaria is scheduled to be transported by train through Moldova and Romania.

Valeriy Demidetsky, Itar-Tass (Moscow), 5/23/96; in FBIS-SOV-96-103, 5/23/96 (14895).

Russia with Canada

4/17/96*

Viktor Mikhailov, head of the Russian Ministry of Atomic Energy, said that talks between Russia and Canada to use Russian weapons grade plutonium in CANDU reactors have reached a "final stage." Mikhailov also said that Russia intends to reprocess 12 MT of highly-enriched uranium (HEU) in 1996, and 25 MT in 1997.

Asahi Shimbun (summarized translation), 4/17/96 (15119).

4/19/96-4/20/96

During the nuclear safety summit in Moscow from 4/19/96 to 4/20/96, Canada and Russia signed a Memorandum of Understanding regarding procedures for continued feasibility studies on burning excess Russian weapons grade plutonium in Canadian CANDU reactors.

Uranium Institute News Briefing, 4/17/96-4/23/96 (15111).

Russia with Canada, Germany, and Switzerland

3/11/96*

Siemens AG will supply Germany's Obrigheim and Switzerland's Goesgen pressurized water reactors (PWRs) with fuel fabricated at Russia's Elektrostal facility, using Canadian-origin uranium as fuel feedstock. In 1995, the German reactor loaded 16 test rods fabricated at Elektrostal; another four complete fuel assemblies made with fuel from Elektrostal will be added in mid-1996.

Mark Hibbs, *NuclearFuel*, 3/11/96, p. 12 (14778).

Russia with Canada and United States

6/96*

A high-ranking official from the Canadian government said that Canadian nuclear reactors may begin using Russian and U.S. plutonium in 1999-2000. Russian Minister of Atomic Energy Viktor Mikhailov and Canadian Ambassador to Moscow Jeremy Kinsman have already signed a memorandum of understanding on nuclear cooperation.

Nuclear Engineering International, 6/96, p. 8 (15140).

Russia with:

China, 119
China, France, India, Israel, Pakistan, United Kingdom, and United States, 117
China, India, and Iran, 118
Cuba, 120

Russia with Czech Republic, France, Germany, and Slovakia

4/16/96

Slovenske Elektarne (SE) and 10 firms from Eastern, Central, and Western Europe signed an agreement in Bratislava to complete two VVER-440 reactors at Mochovce, Slovakia. Among the suppliers to the project are the Russian firms Atomenergoexport and Zarubezhatomenergostroy, the Czech companies Energoprojekt Prague, the Slovak firms Skoda Prague, Hydrostav Bratislava, EZ-Elektrosystemy Bratislava, and Vuje Trnava, as well as the European Consortium Mochovce (Eucom), a Framatome (France)/ Siemens (Germany) joint venture. Electricite de France (EdF) will also participate in Mochovce's construction.

Ann MacLachlan, Hannah Wolfson, and Ariane Sains, *Nucleonics Week*, 4/18/96, pp. 1-2 (15090).

Russia with:

Czech Republic, Iran, Iraq, and Nigeria, 125
Estonia, Ireland, and United Kingdom, 120
European Union, Kazakstan, Kyrgyzstan, and Uzbekistan, 132

Russia with European Union and Ukraine

5/24/96

Ukrainian Minister of Environment Yuriy Kostenko announced that Ukraine is experiencing serious problems burying its spent nuclear fuel. However, Kostenko predicted that Ukraine will possess its own nuclear waste depository in 30 to 50 years. The depository's construction will be partially funded by the European Union's TACIS program. Ukraine is currently sending its nuclear waste to Russian facilities in Chelyabinsk and Krasnoyarsk for reprocessing in accordance with a decree by Russian President Boris Yeltsin sanctioning the use of Ukrainian spent fuel at nuclear facilities in Russia. Kostenko criticized Russia for taking unfair economic advantage in its processing of spent Ukrainian fuel, which Russia processes at $600/kg.

Intelnews (Kiev), 5/26/96; in FBIS-TEN-96-006, 5/26/96 (15482).

Russia with France

6/7/96

At the French Ministry of Industry in Paris, Russian Ministry of Atomic Energy (Minatom) head Viktor Mikhailov and French Commissariat a l'Energie Atomique (CEA) Administrator-General Yannick d'Escatha finalized an agreement on the supply of Russian HEU (93 percent enriched) to two French research reactors. According to the contract, which is the first annex to a framework agreement between CEA and Minatom, Russia will supply 55 kg batches of HEU each year for a nine-year period to the Max von Laue-Paul Langevin Institute (ILL) in Grenoble. In a second annex, Russia will supply a total of 125 kg of HEU over a nine-year period to the CEA's Orphee research reactor in Saclay. In exchange for supplying HEU to the ILL, Russia will become a partner at ILL; in exchange for the HEU supplied to Orphee, Russia will receive French accelerator components.

Ann MacLachlan, *Nucleonics Week*, 6/13/96, pp. 3-4 (15383). Oleg Bergazov, *Segodnya*, 6/11/96, p. 2 (15319). Judy Redfearn, *Physics World*, 6/96, p. 9 (15412). Mark Hibbs, *NuclearFuel*, 5/20/96, pp. 1-2 (15007). Mark Hibbs, *NuclearFuel*, 5/6/96, p. 3 (15007).

RUSSIA WITH G7

4/20/96

Participants at the G7 summit in Moscow issued a final declaration on a "Program for Preventing and Combating Illicit Trafficking in Nuclear Material." In the declaration, the summit participants agreed to cooperate in preventing the theft of nuclear materials, to share intelligence to prevent transportation and sales of stolen materials, and to deter potential traffickers. Russian President Boris Yeltsin proposed a nine-point plan for nuclear security. Yeltsin's plan called for increasing international cooperation in designing and operating nuclear facilities, finalizing a convention on safe handling of nuclear waste, using nuclear materials from dismantled nuclear missiles for peaceful purposes, exchanging specialists and information, converting the military-industrial complex to civilian manufacturing, reinforcing the nuclear nonproliferation regime, observing mutual obligations not to deploy nuclear weapons on the territory of nonnuclear states, and fighting nuclear smuggling.

Craig Cerniello, *Arms Control Today*, 4/96, pp. 19, 25 (15621). *Monitor*, Vol. 2, No. 3, Summer 1996, p. 24-28 (15621). Aleksandr Krasulin and Nikolai Paklin, *Rossiiskaya Gazeta*, 4/23/96, pp. 1, 7 (15314). Oleg Bergazov, *Segodnya*, 4/23/96, p. 1 (15152).

RUSSIA WITH:

Georgia, Libya, Switzerland, and Turkey, 121

RUSSIA WITH GERMANY

3/25/96*

The Technical University of Munich (TUM) in Germany may attempt to purchase Russian HEU for the proposed FRM-2 nuclear reactor. The price of U.S.-origin HEU is higher than Russian-origin HEU, and FRM-2 can use U-235 (enriched to only 70 percent) in the future. The German firm NUKEM is expected to offer TUM 200 kg of HEU for cash, with another 200 kg of HEU placed under a contract option. Nukem officials claim that they could provide enough HEU for FRM-2 for the first 10 years of operation, although a European research reactor official has stated that Nukem has faced difficulties finding HEU, which is much more valuable than it was five years ago. Some sources indicate Nukem received a five-year supply of HEU from the fresh fuel inventory at the THTR-300 reactor for FRM-2, while the remaining 200 kg of HEU will be available at a premium from other inventories.

Mark Hibbs, *NuclearFuel*, 3/25/96, pp. 13-14 (14947).

4/96*

German police arrested a man for possession of 6 g of uranium. Investigators suspect that the uranium was illegally brought from Russia. Although it has not been confirmed that the stolen uranium is of Russian origin, storing radioactive materials continues to be a serious problem in Russia.

Aleksandr Kondrashov, *Argumenti i Fakti*, 4/96, p. 7 (15156).

5/96

Germany is considering a plan, presented to Chancellor Helmut Kohl by U.S. Presidential Science and Technology Advisor John Gibbons, to reprocess plutonium from Russian warheads. The plan stipulates that Russian-origin plutonium will be reprocessed into reactor-usable mixed-oxide (MOX) fuel at Siemens' partially built Hanau plant. In another report, German officials said that plutonium reprocessing equipment may be transferred from Siemens' MOX fuel fabrication plant in Hanau to Chelyabinsk-65, where the plutonium will be reprocessed.

Terence Gallagher, Reuter, 6/27/96; in Executive News Service, 6/27/96 (15610). Mark Hibbs and Ann MacLachlan, *NuclearFuel*, 6/3/96, pp. 11-13 (15511).

RUSSIA WITH GERMANY, HUNGARY, ROMANIA, SERBIA, AND SWITZERLAND

3/15/96*

Romanian police caught two Serbs at the Hungarian border smuggling a radioactive isotope of osmium destined for Switzerland, which was allegedly arranged by a German. Zivorad Vranic and Aleksandr Neskovic were caught driving across the Hungarian border at Bors, near the northern Romanian town of Oradea, carrying 15 g of osmium in glass canisters. Police spokesman Marian Chirion verified that the police discovered two fax messages from Germany arranging delivery of the osmium. The Romanian newspaper *Adevarul* reported that the osmium's final destination was a buyer in Switzerland. The suspects also had in their possession another fax order from Russia requesting 20 kg of osmium.

Reuter, 3/15/96; in Executive News Service, 3/15/96 (15072). *Tanjug* (Belgrade), 3/20/96; in FBIS-TAC-95-005, 3/20/96 (15072).

RUSSIA WITH:

Germany and Iran, 125

Germany, Japan, and United States, 131

RUSSIA WITH GERMANY AND TURKEY

3/7/96*

Turkish police arrested five Turkish nationals attempting to sell 20 kg of smuggled uranium for DM7 million in Antal'ya, Turkey. Turkish authorities suspect that the two special containers of uranium were brought illegally from Russia. During the past three years, Turkish police have registered more than 20 attempts to smuggle nuclear materials from Russia.

Byulleten' Tsentra Obshchestvennoy Informatsii Po Atomnoy Energii, No. 6, 1996, p. 79 (15476).

RUSSIA WITH GERMANY AND UNITED KINGDOM

5/8/96

The Krasnoyarsk Kray office of the Russian Federal Security Service (FSB) arrested a 41-year-old former Russian nuclear scientist identified only as "A. S." who worked formerly at a regional scientific research institute. Another report identified the scientist as "A. Plakhov." The suspect, who was a director of a Russian commercial firm, was arrested for the illegal production and sale of 5 kg of a powder containing zirconium and hafnium to a German importer. Another report said that the scientist had exported more than 1 kg of a radioactive dual-use substance to the United Kingdom and other unnamed countries. According to information provided by the FSB, the suspect worked for a federal agency and had access to classified political and defense information. Another report stated that the FSB arrested a

metallurgist technician, not a nuclear physicist, after discovering a 1 kg discrepancy between the plant's book and physical inventories of zirconium. According to Konstantin Moryev, a spokesman for the Krasnoyarsk FSB, the total amount of material sold abroad could range from 1 kg to 10 kg. It was initially reported that the substance was a radioactive powder that could have military applications. Anatoly Samkov, head of the Krasnoyarsk branch of the FSB, was later quoted as saying that the material "was not plutonium or uranium or anything of that sort [but] a substance that might be used as a component of nuclear devices—a [heat resistant] coating [i.e., zirconium], pipe, or something like that." The FSB was alerted when it found that the substance indicated on a package's export documentation did not correspond to the material within the package. The suspect had used his own "explosion technology" to produce the material—a radioactive powder consisting of particles approaching the hardness of artificial diamonds. The material, which was originally developed and patented by a laboratory at Krasnoyarsk Technical University, had been illegally manufactured by the suspect, who used his institute's facilities and equipment. Boris Kostenko, a spokesman for the FSB, said that the suspect was charged with "illegal exports of dual-purpose materials," but not with smuggling of fissile materials (as was originally stated by another FSB spokesman). FSB officials have begun an investigation and are searching for possible collaborators in the smuggling operation.

NTV (Moscow), 5/9/96; in FBIS-SOV-96-092, 5/9/96 (15105). Anatoly Verbin, Reuter (Moscow), 5/7/96; in Executive News Service, 5/7/96 (15591). UPI (Moscow), 5/7/96; in Executive News Service, 5/7/96 (15591). Itar-Tass (Moscow), 5/8/96; in FBIS-SOV-96-091, 5/8/96 (15591). Michael Binyon and Thomas de Wall, *Times* (London), 5/8/96, p. 13; in FBIS-TAC-96-006, 5/8/96 (15113). *Rossiiskaya Gazeta*, 5/8/96, p. 1 (15054). *Moskovskiye Novosti*, 6/9/96-6/16/96, p. 2 (15324). Aleksei Tarasov, *Izvestiya*, 5/12/96, p. 2 (15475).

RUSSIA WITH:

India, 123
Iran, 125
Iraq, 129

RUSSIA WITH ITALY, SLOVENIA, SOMALIA, AND SPAIN

6/96

Magistrates from Torre Annunziata, Italy, sent Russian presidential candidate Vladimir Zhirinovsky a judicial letter stating that he was under investigation for being part of an international smuggling ring dealing in weapons, plutonium, and osmium. Zhirinovsky aids allegedly acquired the Russian-origin arms from the Russian mafia. Barcelona Bishop Richard Martia Charles, Felice Maniero of Somalia, and Slovene arms dealer Nikolaj Aleksander Oman are also allegedly involved in the smuggling ring. A container holding 30 g of osmium found in a Venice bank's safety deposit box under the name of Oman's son and 3 billion lire in a bank account under Oman's name and that of Italian "criminal" Lorenzo Mazzega were uncovered. Zhirinovsky, despite being photographed in 1994 at Oman's castle in Slovenia, denies knowing the arms dealer. The investigation began when statements from former Italian secret service agent Francesco Elmo led to the discovery of the osmium and the secret bank accounts. The Vatican bank and the Roman Catholic charity "Caritas" were reportedly involved in laundering money for the smuggling ring. An international warrant has been issued by Italian judge Alfredo Ormanni for Oman's arrest.

John Phillips, *Sunday Times*, 6/16/96 (15433). Vladimir Vodusek, *Delo* (Ljubljana), 6/4/96, p. 2; in FBIS-EEU-96-112, 6/4/96 (15433). Luise Hahn, *Kurier*, 6/12/96 (15433). *Sueddeutsche Zeitung*, 6/12/96, p. 7 (15433).

RUSSIA WITH:

Japan, 131
Latvia, 132
North Korea, 135

RUSSIA WITH SLOVAKIA

2/1/96

Christian Democratic Movement (KDH) Deputy Chairman Mikulas Dzurinda revealed an intergovernmental deal in which Slovakia will import nuclear fuel exclusively from Russia. The so-called "Agreement on Assistance in the Completion of the First Two Units of the Mochovce (Nuclear) Power Plant" states that Russian suppliers have a monopoly on providing nuclear fuel to Slovak nuclear reactors.

Martin Kovacic, Narodna Obroda (Bratislava), 2/2/96, pp. 1-2; in FBIS-EEU-96-026, 2/2/96 (14590).

RUSSIA WITH SOUTH KOREA

3/27/96*

Because Russia has reportedly been disposing of nuclear waste directly into the Sea of Japan, South Korea will supply Russia with waste disposal equipment. The equipment, valued at $1 million, will include trucks, cranes, containers, and computers. According to an official from the South Korean Foreign Ministry, the aid, requested by Russia, is supposed to have been delivered by 7/96.

Reuter Insurance Briefing, 3/27/96 (15023).

RUSSIA WITH UKRAINE

4/5/96*

The Russian nuclear fuel company TVEL has won a contract, worth about $100 million, to build a nuclear fuel plant in Ukraine; TVEL will produce fuel assemblies for Ukraine's VVER-1000 reactors. After the uranium is enriched in Russia, the new plant will assemble nuclear fuel rods for Ukraine's VVER-1000 reactors. However, Russia must guarantee raw uranium and uranium enrichment prices or the bid will be given to the U.S. Westinghouse Electric Corporation. Under the contract, the plant will be completed in four years. It is expected that the plant will meet Ukraine's demand for fuel assemblies for 11 VVER reactors currently operating in Ukraine, as well two to four reactors under construction.

Post-Soviet Nuclear & Defense Monitor, 4/5/96, p. 14 (15344). Peter Coryn and Ann MacLachlan, *NuclearFuel*, 2/12/96, pp. 6-7 (15629). Matthew Kaminski, *Financial Times*, 2/5/96, p. 2 (14949). Unian (Kiev), 2/2/96; in BBC Monitoring Summary of World Broadcasts, 2/5/96 (15427).

6/25/96*

The Ukrainian State Atomic Committee signed a final agreement on nuclear reactor fuel with Russian fuel suppliers TVEL, Atompromkomplekt, and Atomresurs, backed by the Russian Ministry of Atomic Energy, at a meeting at the South Ukraine

nuclear power plant. Under the agreement, which followed TVEL's victory over ABB and Westinghouse in the 2/96 closed international tendering, Russia will supply Ukraine with nuclear fuel and provide uranium enrichment services at $75/kg of uranium for 10 years. TVEL agreed to be fully responsible for fuel quality and to provide necessary expertise on the fuel's use at Ukrainian power plants.

Peter Coryn, *NuclearFuel*, 6/17/96, pp. 13-14 (15617). I. Osypchuk, *Vseukrainskiye Vedomosti*, 6/11/96, p. 6; in FBIS-SOV-96-117, 6/11/96 (15617). Interfax (Moscow), 6/25/96; in FBIS-SOV-96-124, 6/25/96 (15617).

Russia with United States

2/20/96*

Convex Computer Corporation (a subsidiary of the U.S. firm Hewlett-Packard) wants to send three supercomputers, worth an estimated $8 million, to Russia. If the deal is approved by the U.S. Department of Commerce, two computers will be sent to the Russian nuclear weapons laboratories in Arzamas-16 and one computer to the nuclear laboratory at Chelyabinsk-70. All three of the computers operate faster than any computer currently in Russia. The two computers for Arzamas-16, worth $1.5 and $2.6 million, operate at 1,600 and 1,800 million operations per second (MOPS), while the computer for Chelyabinsk-70, worth $3.8 million, operates at 4,500 MOPS. Some officials are concerned that these supercomputers may be used to further develop Russia's nuclear arsenal. However, Convex maintains that the supercomputers will only be used for peaceful research. In addition, an inspection procedure will reportedly prevent Russia from using the computers for military-related research. Convex has argued that the supercomputers are needed to carry out existing U.S. Department of Energy (DOE) contracts that authorize cooperation between Russian and U.S. nuclear weapon laboratories.

Risk Report, 3/96, pp. 1, 12 (14945). Gary Milhollin, *New York Times*, 2/20/96, p. A15 (14945).

2/22/96

Director General of Teksnabexport Albert Shishkin said that in 1996, Russia will ship 360 MT of LEU blended down from 12 MT of weapons grade uranium to the U.S. Enrichment Corporation (USEC). The shipments are in accordance with the 1/94 USEC-Teksnabexport agreement, which stipulates that Russia supply LEU blended down from highly enriched uranium (HEU) to USEC for 20 years. According to USEC reports, the first 1996 shipment is scheduled to leave Russia in 2/96; the 1996 LEU total is expected to be 371 MT. According to U.S. Department of Energy spokesman Michael Newlin, it is expected that 12 MT of HEU will be sold to the U.S. in 1996.

Segodnya, 4/18/96, p. 1 (15061). Michael Knapik, *NuclearFuel*, 2/12/96, p. 9 (15402). Interfax (Moscow), 2/22/96; in FBIS-SOV-96-037, 2/22/96 (15402). *Kommersant-Daily*, 2/23/96, p. 4; in WPS, 2/28/96, p. 4 (14536).

4/96*

The U.S. has received shipments of LEU blended down from 8.7 MT of Russian HEU and will receive additional LEU blended down from 9.4 MT of Russian HEU by the end of 1996.

Craig Cerniello, *Arms Control Today*, 4/96, p. 20 (15485).

6/96*

The U.S. State Department announced that the U.S. is no longer maintaining its policy of denying license applications for the export of defense-related items and services to Russia. Russia will be removed from the list of prohibited destinations in section 126.1 of the International Traffic in Arms Regulations. Every case of defense-related exports to Russia will be considered "on a case-by-case basis with a presumption of approval."

The Export Practitioner, 6/96, p. 21 (15411).

6/96*

The Russian Joint Institute for Nuclear Research in Dubna is facing severe financial difficulties and physicists are leaving the center in order to make a living. Many scientists have emigrated to the U.S. and elsewhere in the West, while those who remain in Dubna are trying to find jobs in the private sector.

Aleksandr Dobrovolski, *Argumenti i Fakti*, 6/96, p. 4 (15202).

6/96

U.S. researchers at Lawrence Livermore National Laboratory developed key elements for the Advanced Recovery and Integrated Extraction System (ARIES), which will be shared with Russia to facilitate mutual nuclear stockpile reductions. The basic system includes five steps that remove plutonium from the "pits" of nuclear weapons and repackages it as an oxide powder or a metal ingot for eventual disposal. By destroying the pits, this process reduces the number of stockpiled nuclear weapon pits, and reduces the waste caused by dismantlement.

Science & Technology Review, 6/96, p. 2 (15347).

SLOVAKIA

Slovakia with Austria and Germany

5/29/96

German police arrested a 49-year-old Slovakian nuclear engineer in Ulm, Germany, where the suspect was storing 2.77 kg of low-enriched uranium (LEU) packaged in lead containers in a safe deposit box of a local bank. It is suspected that the smuggler, in concert with two accomplices, brought the uranium from the former Soviet Union to Germany intending to sell it later to an unidentified Austrian customer for about $1 million. The confiscated material, which was analyzed at the European Institute for Transuranium in Karlsruhe, Germany, consisted of 1.737 kg of natural uranium oxide powder and 946 g of 4.3 percent enriched uranium fuel pellets. An additional technical analysis will be required to determine definitively whether the material is suitable for weapons use. According to Interpol representatives, the uranium fuel pellets were intended for use in VVER-1000 type reactors. Investigators are more certain about the ex-Soviet origin of the fuel pellets portion of the contraband than about the origin of the contraband's remaining part. German police were tipped off to the deal by their Austrian counterparts, who discovered that the Slovakian national intended to sell the nuclear material as weapons grade uranium. The belief that the source of the uranium was the former Soviet Union was supported by evidence that the suspect had spent time

there.

EMP (Munich), 6/7/96 (15593). Mark Hibbs, *Nucleonics Week*, 6/13/96, pp. 2-3 (15593). U.S. Department of Energy's *Monthly Status Report: Illicit Trafficking of Nuclear Materials*, 6/96, p. 3 (15593).

SOUTH AFRICA

Internal Developments

2/23/96*

According to a report by RAND's National Defense Research Institute, using current fissile material stocks, South Africa could build 47 nuclear weapons. By the mid-1990s, it is anticipated that South Africa will possess enough fissile material to build 67 bombs per year.

Brain Chow, Richard Speier, and Gregory Jones, *The Proposed Fissile-Material Production Cutoff; Next Steps* (Santa Monica, Calif.: RAND, 1995), pp. 9, 13.

3/2/96*

South Africa's Atomic Energy Corporation (AEC) announced that it was unable to locate 2 MT of depleted uranium at the Pelindaba nuclear facility. During a press conference, AEC Chief Executive Officer Waldo Stumpf stated that the loss had been discovered while conducting an inventory, and speculated that the uranium may have been inadvertently buried within a nuclear condenser on Pelindaba's "Radiation Hill."

SABC SAfm Radio (Johannesburg), 3/2/96; in BBC Monitoring Service, 3/12/96 (14888).

3/20/96

South African Mineral and Energy Affairs Minister Pik Botha announced that the dismantlement of the uranium enrichment plants at Pelindaba will be nearly complete by 3/99. Botha indicated that the majority of the work at the AEC facility would be finished by 3/99, but that decontaminating the equipment might take an additional one or two years.

SAPA (Johannesburg), 3/20/96; in BBC Monitoring Service, 3/20/96 (14883).

South Africa with France

2/29/96

South Africa and France signed an agreement to cooperate on the development of South Africa's molecular laser isotope separation (MLIS) process. According to South Africa's Mineral and Energy Affairs Minister Pik Botha, the French company Cogema will invest $21.5 million in the South African technology, subject to "intergovernmental agreements being reached on nuclear cooperation and trade." According to Cogema Vice President for R&D Louis Patarin, South Africa's AEC has projected an annual budget of $13 million, and Cogema will support half of the project's expenditures over a three-year period. Prior to proceeding, however, both the IAEA and EURATOM must be informed about the project due to the "sensitive nature of international cooperation on uranium enrichment technology." Patarin also indicated that the AEC initially approached Cogema with a proposal to build a "micro-pilot" facility to conduct the final phases of the R&D project. The initial goal of the AEC was to construct a facility "capable of a nominal annual throughput of 10,000 SWU."

Ann MacLachlan, *NuclearFuel*, 3/11/96, pp. 4-5 (15256). Lynda Loxton, Reuter, 2/29/96; in Executive News Service, 2/29/96 (15256).

South Africa with:

Iran, 126

South Africa with United States

4/22/96*

U.S. officials are prepared to exchange diplomatic notes to finalize a U.S.-South African nuclear cooperation agreement, following the completion of a review by the South African Parliament.

Kathleen Hart, *NuclearFuel*, 4/22/96, pp. 6-7 (14887).

SOUTH KOREA

Internal Developments

1/96

Korea Electric Power Company (KEPCO) unveiled a new development program outlining South Korean plans to have 27 nuclear power plants in operation by 2010. The plan calls for 19 new units to be built between 1995 and 2010. Twelve of the new units will be based on the 1,000 MW standard Korean pressurized water reactor (PWR) design, which is itself based on Westinghouse's System 80 design. Yonggwang 3 and 4, which started up in 3/95 and 1/96 respectively, and Ulchin 3 and 4, which are currently under construction, account for four of these Korean PWRs. Four of the remaining eight units will be split between Yonggwang and Ulchin; the sites for the final four have not yet been determined. Three new units will be 700 MW pressurized heavy water reactors (PHWR) supplied by Atomic Energy of Canada. Already under construction, these PHWRs will be located at Wolsong. Four new units will be the 1,300 MW Korean Next Generation Reactor (KNGR), Korea's second standard PWR model. The decision to undertake design of a new generation reactor was reportedly made in 1995. These KNGRs will be divided between two sites, only one of which has been determined. It is also possible that two of the Korean PWR units may instead be two 900 MW PHWRs scheduled to go on line in 2005 and 2006. A feasibility study is being conducted prior to a final decision being made on this aspect of the program. The total of 27 units referred to in the program does not include the nuclear power plant at Kori, which is expected to shut down in 2009.

Nuclear Engineering International, 3/96, p. 2 (14667).

4/2/96

South Korea acceded to the Wassenaar Arrangement in Vienna, Austria. Designed to replace COCOM, the Wassenaar Arrangement restricts the export of defense technolo-

gies and dual-use items which could be sent to countries outside of its membership.

Yohnap (Seoul); in FBIS-EAS-96-064, 4/1/96 (14874).

6/25/96

South Korean Atomic Energy Commission Head, Deputy Premier, and Finance and Economy Minister Rha Woong-bae announced that atomic energy projects previously managed now the Ministry of Science and Technology are to be managed by the Ministry of Trade, Industry, and Energy. Responsibility for radioactive waste materials will be transferred from the Science and Technology Ministry's Atomic Energy Research Institute to the Ministry of Trade, Industry, and Energy's Korean Electric Power Corp. (KEPCO). The existing radioactive waste material fund will be replaced by an 84 billion won KEPCO "Atomic Energy Research- Development" fund. Atomic reactor planning will be handled by the Korean Electric Power Technology Co.

Korean Overseas Information Service, 6/26/96 (15526).

SOUTH KOREA WITH:

Argentina and Canada, 112
Australia, Indonesia, and Japan, 123
India, 123
North Korea, 135
Russia, 140

SPAIN

INTERNAL DEVELOPMENTS

4/96*

Spain's Empresion Nacional del Uranio, S.A. (ENUSA) oversees all nuclear fuel cycle development, including the "production, procurement and management of supplies of uranium concentrates, conversion and enrichment services, as well as manufacturing of fuel assemblies" for Spain's nuclear power plants. ENUSA oversees the design and manufacture of boiling water reactor (BWR) and pressurized water reactor (PWR) fuel assemblies. Spain's TENEO owns 60 percent of ENUSA shares, and the Research Center for Energy, Environment, and Technology controls 40 percent. ENUSA's Juzbado fuel fabrication plant has an annual capacity of 200 MT of uranium and could be upgraded to produce an additional 500 MT. With the exception of the 1,066 MWe Trillo-1 PWR, all Spanish nuclear power plants receive their fuel from the Juzbado facility.

Nukem, 4/96, p. 8 (15186).

SPAIN WITH:

Italy, Russia, Slovenia, and Somalia, 140

SPAIN WITH UNITED STATES

5/96*

Edlow International was issued a license by the U.S. Nuclear Regulatory Commission (NRC) to export low-enriched uranium (LEU) to Spain for reactor fuel.

Nuclear Regulatory Commission, 6/96 (15604).

TAIWAN

INTERNAL DEVELOPMENTS

5/96*

Taiwan's Radwaste Administration (RWA) has been renamed the Fuel Cycle & Material Administration (FCMA) and has been assigned new duties including "licensing, regulating and inspecting materials at all stages of the nuclear fuel [cycle]," in addition to controlling other radioactive materials. Taiwan's FCMA will also be responsible for all aspects of any "relevant facilities." RWA Chief S. T. Chiou will remain as director of the FCMA, while C. H. Len, former deputy head of isotope application at the Institute of Nuclear Energy, will become the deputy head of FCMA.

Nuclear Europe Worldscan, 5\96-6\96, p. 29 (15570).

7/1/96

An official of Taiwan's Atomic Energy Council said that Taiwan was planning to reopen the Taiwan Research Reactor for use in scientific experiments, medical equipment manufacture, and nuclear power technology development. The official said that the Atomic Energy Council was trying to obtain $4.1 billion to reopen the reactor, which had been shut down in the late 1980s after suspicions arose that Taiwan was developing nuclear weapons. The Atomic Energy Council must first receive approval from parliament (the Yuan) and the cabinet.

Reuter; in Executive News Service, 7/1/96 (15607).

TAIWAN WITH AUSTRALIA AND UNITED STATES

6/17/96*

Taiwan Power Co. has sought bids from numerous international companies for uranium for the years 1997 to 2004. Taiwan is particularly interested in buying from Australia, and is reportedly seeking 100,000 pounds per year from the U.S.

NuclearFuel, 6/17/96, p. 2 (15529).

TAIWAN WITH:

Bulgaria, Germany, Russia, and Ukraine, 137
China, 119

UKRAINE

INTERNAL DEVELOPMENTS

3/13/96*

A "radioactive supply unit" of cesium-137 was stolen from the Ammonium Phosphate Fertilizer Production Workshop No. 1 at the Pridneprovskiy chemical plant in Dneprodzerzhinsk, Ukraine. An investigation is being conducted by the security service, the Ministry of Internal Affairs, and the Prosecutor General's Office.

Unian (Kiev), 3/13/96; in FBIS-TAC-95-005, 3/13/96 (14926).