

# NUCLEAR-RELATED TRADE AND COOPERATION DEVELOPMENTS, SEPTEMBER 1993-JANUARY 1994

## EMERGING NUCLEAR SUPPLIER STATES

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### ARGENTINA

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#### INTERNAL DEVELOPMENTS

**11/10/93**

Argentina's Chamber of Deputies ratifies the 1967 Tlatelolco Treaty. Argentina's Senate had ratified the Treaty on 4/28/93.

*Reuter, 11/10/93; in Executive News Service, 11/10/93 (10358). Noticias Argentinas (Buenos Aires), 11/10/93; in JPRS-TND-93-037, 12/8/93, p. 31 (10662).*

**12/3/93**

Argentine President Carlos Saul Menem states that his country will accede to the Non-Proliferation Treaty (NPT) in 1995 regardless of Brazil's decision on accession.

*Naoaki Usui, Nucleonics Week, 12/9/93, p. 9 (10192).*

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*The number listed in parentheses following the bibliographic references refers to the identification number of the document in the Emerging Nuclear Suppliers Project Database, from which the news summaries were abstracted. Events listed in this issue of The Nonproliferation Review are abstracted from documents published between September 1993 and January 1994. Because of the rapidly changing nature of the subject matter, we are unable to guarantee that the information reported herein is complete or accurate, and we disclaim liability to any party for any loss or damage caused by errors or omissions.*

**1/18/94**

The Argentine government deposits its instrument of ratification of the Tlatelolco Treaty in Mexico City at the "VII Extraordinary Meeting" of the General Conference of the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL). Since Argentina waives the provision for entry into force, the treaty becomes effective for Argentina immediately.

*Embassy of the Argentine Republic, Washington D.C., Press Communiqué, 1/21/94 (10662).*

#### ARGENTINA WITH ABACC, BRAZIL, AND IAEA

**8/93**

In an effort to convince Brazilian legislators to approve the Quadripartite Agreement between Brazil, Argentina, the IAEA, and the Brazilian-Argentine Agency for the Accounting and Control of Nuclear Materials (ABACC), IAEA Director General Hans Blix and his safeguards deputy, Bruno Pellaud, visit the Chamber of Deputies to calm fears that international inspections will open the door to industrial espionage or impede technological development.

*Mark Hibbs, Nucleonics Week, 9/2/93, pp.13-14 (10775). Armin Schmid and Mark Hibbs, Nuclear Fuel, 10/11/93, p. 14 (10700).*

**9/22/93**

The Brazilian Chamber of Deputies ratifies the Quadripartite Agreement between Brazil, Argentina, the IAEA, and the Brazilian-

Argentine Agency for the Accounting and Control of Nuclear Materials (ABACC). Only Brazilian Senate approval remains as the last step for Brazil's ratification of the accord.

*Nuclear Engineering International, 11/93, p. 12 (10700).*

**10/93**

Argentina says that subsidiary arrangements for the Quadripartite Agreement with the Brazilian-Argentine Agency for the Accounting and Control of Nuclear Materials (ABACC), Brazil, and the IAEA are making progress. Argentina has ratified the Quadripartite Agreement; the Brazilian parliament, however, has not yet ratified the accord.

*Mark Hibbs, Nucleonics Week, 10/28/93, p. 18 (10302).*

**12/7/93**

Brazilian Senator Dirceu Carneiro says that negotiations in Vienna between Brazil and the IAEA have been completed, clearing the way for the Brazilian Senate to ratify the Quadripartite Agreement between Brazil, Argentina, the IAEA, and the Brazilian-Argentine Agency for the Accounting and Control of Nuclear Materials (ABACC). The Brazilian Senate could vote on the ratification of the Quadripartite Agreement in early 1994. (See Brazil with ABACC, Argentina, and IAEA.)

*Reuter, 12/07/93 (10700). Armin Schmid and Mark Hibbs, Nuclear Fuel, 10/11/93, p. 14 (10700). Tania Malheiros, O Estado De Sao Paulo, 12/8/93, p. 18; in JPRS-TND-94-001, 1/6/94, p. 11 (10700).*

1/94

The Brazilian Senate foreign relations committee fails to ratify the Quadripartite Agreement because of reservations about the subsidiary arrangements which were signed in 12/93. (See Brazil with ABACC, Argentina, and IAEA.)

Armin Schmid, *Nucleonics Week*, 1/20/94, p. 4 (10788).

#### ARGENTINA WITH BRAZIL

10/93

To date, ABACC, using 25 inspectors each from Brazil and Argentina, has carried out inspections on 45% of the two countries' 60 facilities, sites and locations that host nuclear activities or materials.

Armin Schmid and Mark Hibbs, *Nuclear Fuel*, 10/11/93, p. 14 (10700).

#### ARGENTINA WITH JAPAN

11/93

Argentina's National Commission for Atomic Energy (CNEA) signs an agreement with the Argentine University of Cordoba, the Argentine Nuclear Enterprise for Electric Power Plants (ENACE SA), and the Kajima Corporation of Japan to conduct resistance tests for 30 days on the Atucha-2 reactor building.

*Noticias Argentinas* (Buenos Aires), 11/2/93; in JPRS-TND-93-036, 11/17/93, p. 16 (10260).

#### ARGENTINA WITH MULTI-COUNTRY GROUP

10/93

Argentina is applying to join a number of international nuclear energy groups, including the Nuclear Energy Agency (NEA) of the OECD and the Nuclear Suppliers Group. These groups are likely to admit Argentina as a member in light of the country's recent record on nuclear energy.

Mark Hibbs, *Nucleonics Week*, 10/28/93, p. 18 (10302).

#### ARGENTINA WITH SPAIN

10/93

The Argentine Ministry of Industry contracts the consulting engineers Empresarios Agrupados (E.A.) of Spain to prepare an analysis of nuclear power industry performance in countries where nuclear power is under private ownership. Argentina is paying E.A. \$850 million for the study, which is to be ready by the end of 1993.

*Nucleonics Week*, 10/14/93, p. 6 (10304).

#### ARGENTINA WITH THAILAND

12/6/93

Officials from Argentina's Applied Research Institute (INVAP), a joint venture between the Rio Negro provincial government and the Atomic Energy Commission, say that "Argentina could be building a nuclear reactor for Thailand." Thailand recently sent a delegation to visit INVAP's research center at the request of the Argentine government, which extended the invitation as part of its efforts to attract a portion of Thailand's \$100 million tender to build a nuclear reactor.

*Buenos Aires Herald*, 12/7/93, p. 5; in JPRS-TND-94-001, 1/6/94, p. 42 (10529).

#### ARGENTINA WITH UNITED STATES

7/13/93

The U.S. Department of Energy (DOE) authorizes Westinghouse to transfer pressurized water reactor (PWR) technology and nuclear fuel to Argentina. The transfer requirements specify that Argentina must assure the U.S. that the technology will not be used in weapons production nor transferred to a third country without U.S. consent, and DOE must approve the specific Argentine organizations that will acquire the technology.

*Nuclear Fuel*, 11/22/93, p. 14 (10428).

9/21/93

Thomson Saginaw of the U.S. applies for a license to export \$1 million worth of ball screw assemblies and spare parts to Argentina for its Embalse reactor.

*U.S. Nuclear Regulatory Commission Export License Report*, 9/93 (10912).

10/93

South American officials say that Argentina has received a memorandum of understanding from the U.S. which gives Argentina "special treatment in receiving sensitive U.S. exports."

Mark Hibbs, *Nucleonics Week*, 10/28/93, p. 18 (10302).

10/4/93

The U.S. Department of Energy authorizes the American firm Century Specialties, Inc. to supply zirconium fabrication machine tools and necessary services to Argentina. The transfer requirements state that Argentina cannot transfer the technology to another country without U.S. approval.

*Nuclear Fuel*, 11/22/93, p. 14 (10428).

10/6/93

Teledyne Wah Chang of the U.S. is issued a license to export \$15 million worth of Zircaloy TREX to Argentina for its Atucha and Embalse reactors.

*U.S. Nuclear Regulatory Commission Export License Report*, 10/93 (10913).

12/7/93

Thomson Saginaw is issued a license to export \$1 million worth of ball screw assemblies and spare parts to Argentina for its Embalse reactor.

*U.S. Nuclear Regulatory Commission Export License Report*, 12/93 (10915).

1/27/94

Teledyne Wah Chang's license to ship Zircaloy TREX to Argentina is amended to "Add Condition to Authorize Additional Quantity to Ship."

*U.S. Nuclear Regulatory Commission Export License Report*, 1/94 (10916).

## BRAZIL

### INTERNAL DEVELOPMENTS

9/7/93

Brazil's Institute of Advanced Studies (Ieav) is developing a liquid-propelled gas dynamic laser for the enrichment of uranium at the Aerospace Technical Center (CTA) in Sao Jose dos Campos. Ieav project coordinator Marco Antonio Sala Minucci says that the principle objective of the project is to create a laser beam with a 16 micron wavelength and 10 billion watts of power, which in use would produce a higher concentration of enriched U-235 to be used as reactor fuel. Minucci also says that laser enrichment is the most accessible and least expensive technology for Brazil. The laser beam is generated by the combustion of nitrous oxide and benzene in a compact cylinder, a process which produces carbon dioxide, nitrogen and steam. Minucci predicts that the first experiment with liquid combustion will be completed by the middle of 1994. If this experiment succeeds, the next step for Brazil would be the construction of a pilot uranium enrichment plant and the transfer of technology to industry. At present, the project is in need of further financing. Minucci states that there is a possibility that they would receive funding from the National Research Council (CNPQ), but until a decision on their grant application is made in 10/93, they will continue using Ieav funds. Earlier research by Ieav included the construction in 1985 of "a laser powered by a supersonic wind tunnel," with a 10.6 micron wavelength and 10 watts of power, although a pulse could only be generated every half-hour. Minucci says that the goal of the laser project is to build a laser that could emit 1,000 pulses per second for a minimum of five minutes.

Virginia Silveira, *Gazeta Mercantil* (Sao Paulo), 9/7/93, p. 7; in *JPRS-TND-93-034*, 10/27/93, p. 23 (10534).

9/22/93

The Brazilian Chamber of Deputies approves the amendments to the Tlatelolco Treaty which provide the exclusive authority to the IAEA to request special inspections.

*Nuclear Engineering International*, 11/93, p. 12 (10700).

10/93

Brazil's state prosecutor recommends criminal proceedings for Furnas president Marcelo Siguera and two other plant directors for failing to notify the local government of an Angra-1 plant shut down due to an increase in primary circuit activity.

*Nuclear Engineering International*, 10/93, p. 8 (10665).

10/18/93

It is announced that two state-owned Brazilian companies, Nuclebras Equipamentos Pesados (Nuclep) and Nuclemon Areias Monaziticas (Nuclemon) will be privatized.

*Nuclear Engineering International*, 12/93, p. 4 (10259).

12/93

In 12/93, experts from Brazil's Rio Grande do Sul, RS, State Foundation for Environmental Protection confiscate 32 containers of radioactive waste from the ship Belatrix.

*Radio Nacional da Amazonia Network* (Brasilia), 12/24/93; in *JPRS-TND-94-002*, 1/18/94, p. 11 (10531).

1/18/94

In an announcement at a conference of the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL) held in Mexico City, Brazil confirms its intention to join the Tlatelolco Treaty in the near future.

*Sueddeutsche Zeitung*, 1/20/94, p. 6 (10246).

### BRAZIL WITH ABACC, ARGENTINA, AND IAEA

8/93

In an effort to convince Brazilian legislators to approve the Quadripartite Agreement between Brazil, Argentina, the IAEA, and the Brazilian-Argentine Agency for the Accounting and Control of Nuclear Materials (ABACC), IAEA Director General Hans

Blix and his safeguards deputy, Bruno Pellaud, visit the Chamber of Deputies to calm fears that international inspections will open the door to industrial espionage or impede technological development.

Mark Hibbs, *Nucleonics Week*, 9/2/93, pp.13-14 (10775). Armin Schmid and Mark Hibbs, *Nuclear Fuel*, 10/11/93, p. 14 (10700).

9/22/93

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Mark Hibbs, *Nucleonics Week*, 10/28/93, p. 18 (10302).

12/7/93

Brazilian Senator Dirceu Carneiro says that negotiations in Vienna between Brazil and the IAEA have been completed, clearing the way for the Brazilian Senate to ratify the Quadripartite Agreement between Brazil, Argentina, the IAEA, and the Brazilian-Argentine Agency for the Accounting and Control of Nuclear Materials (ABACC). The Brazilian Senate had questioned a number of provisions in the accord, including one that would have allowed surprise inspections of Brazilian nuclear facilities under construction or suspected of non-peaceful uses. Carneiro says that the IAEA is attempting to gain control over nuclear energy in Brazil. As a result, the Brazilian Senate would not ratify the agreement until negotiations between Brazil and the IAEA on this subject are concluded. The IAEA agrees with Brazil that a system of regulations govern-

ing unscheduled visits be implemented. Carneiro also says that the IAEA agrees to give advance notice of inspections and that facilities under construction would not require IAEA inspections. In addition, he says that control of nuclear materials would fall to the ABACC as opposed to the IAEA. The Brazilian Senate could vote on the ratification of the Quadripartite Agreement in early 1994.

*Reuter, 12/07/93 (10700). Armin Schmid and Mark Hibbs, Nuclear Fuel, 10/11/93, p. 14 (10700). Tania Malheiros, O Estado De Sao Paulo, 12/8/93, p. 18; in JPRS-TND-94-001, 1/6/94, p. 11 (10700).*

### 1/94

The Brazilian Senate foreign relations committee fails to ratify the Quadripartite Agreement because of reservations about the subsidiary arrangements which were signed in 12/93. According to Senator Dirceu Carneiro, the Senate was concerned about two aspects of the subsidiary arrangements: under the arrangements changes could be made in the agreement through an exchange in written notes without legislative approval, thus the subsidiary agreements needed to be more closely reviewed; and IAEA inspections could be carried out without prior approval of the Tlatelolco Board or the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL).

*Armin Schmid, Nucleonics Week, 1/20/94, p. 4 (10788).*

## BRAZIL WITH ARGENTINA

### 10/93

To date, ABACC, using 25 inspectors each from Brazil and Argentina, has carried out inspections on 45% of the two countries' 60 facilities, sites and locations that host nuclear activities or materials.

*Armin Schmid and Mark Hibbs, Nuclear Fuel, 10/11/93, p. 14 (10700).*

## BRAZIL WITH FRANCE AND UNITED STATES

### 11/93

Brazil sends a letter of intent to the joint venture of AEA Technology and Westinghouse Electric of the U.S. and

Comex Nucleaire of France to provide Brazil's Angra nuclear power plant with reactor pressure vessel head penetration inspection services. Under a cooperative agreement between the three companies, Westinghouse will supply "the main underdome manipulator to deploy the eddy current and ultrasonic probes along with the eddy current data acquisition system, Comex will supply the thin ultrasonic probes and end-effectors and AEA will supply the ultrasonic data acquisition and analysis system." Personnel from all three companies will participate in the inspections.

*Atom, 11/93-12/93 (10532).*

## BRAZIL WITH GERMANY

### 1987-1988

Centrifuge designer Bruno Stemmler of Germany's MAN Technologie seeks to sell Brazil and Iraq a license for a "patented process for applying homogenous oxide coating on maraging steel." However, neither country contracts Stemmler to teach them the proper coating process, which can be used for oxidizing maraging steel centrifuge rotors.

*David Albright, Bulletin of the Atomic Scientists, 12/93, pp. 29-36 (10838).*

### 1993

Brazil and Germany dissolve Nuclei, a partnership established by Siemens and Steag of Germany and Industrias Nucleares do Brasil for uranium enrichment involving a jet-nozzle technique. The partnership had almost completed a demonstration plant in 1989, when a parallel program run by the Brazilian navy showed that the centrifuge method was more economical.

*Nuclear Engineering International, 11/93, p. 12 (10911).*

### 10/93

The failure of the fuel cladding in 64 of 28,435 fuel rods in Brazil's Angra-1 nuclear power plant prompts Siemens of Germany to redesign the fuel assemblies used in that plant. It was determined that the fuel cladding failure was the result of "fretting against the fuel spacer grids that form part of each fuel assembly." Siemens of Germany is

scheduled to deliver new spacer grid sets to Brazil by late 1993, while fuel fabrication will be completed by Industrias Nucleares do Brasil. Angra-1 will not be ready to be restarted before 12/93.

*Nuclear Engineering International, 10/93, p. 8 (10665).*

### 10/7/93

German Foreign Minister Klaus Kinkel advances a number of conditions to the \$850 million German-Brazilian agreement with a consortium of German banks for financing construction of the 1300 MWe Siemens pressure water reactor (PWR) Angra-2 during a meeting with Brazilian President Itmar Franco. As a result, Brazil cancels the 10/11/93 trip of the Brazilian Energy Minister Paulino Cicero to Germany to sign the contract. Brazil reports that Germany's conditions to the agreement include the ratification of the Quadripartite Agreement between Argentina, Brazil, the IAEA, and the Brazilian-Argentine Agency for the Accounting and Control of Nuclear Materials (ABACC), which has not passed Brazil's Senate; Brazil's adherence to the NPT; and more financial guarantees from Brazil for its part in the deal. Kinkel says that after 1995 Germany will help Brazil with the construction of two nuclear plants only if Brazil formally commits itself to peaceful uses of atomic energy. Kinkel also reportedly says that Brazil should sign the NPT so that Germany could continue to cooperate with Brazil in the nuclear energy area. Kinkel indicates that Siemens still has a strong interest in continuing to participate in Angra-2 construction and invites Franco to visit Germany in 12/93. Brazilian officials reject the German request that Brazil sign the NPT, calling it "discriminatory," and citing their participation in the ABACC, the IAEA, and the Treaty of Tlatelolco as proof that they have peaceful intentions in regards to nuclear energy.

*Sao Paulo Gazeta Mercantil, 10/8/93; in JPRS-TND-93-037, 12/8/93, pp. 31-33 (10699). Nuclear Engineering International, 12/93, p. 4 (10303). DPA (Hamburg), 10/7/93; in JPRS-TND-93-034, 10/27/93, pp. 23-24 (10303). Voz do Brasil Network, 10/7/93; in JPRS-TND-93-034, 10/27/93, p. 24 (10303). Folha De Sao Paulo, 10/8/93, p. 11; in JPRS-TND-93-034, 10/27/93, p. 24 (10303).*

**10/8/93**

It is reported that Brazilian President Itmar Franco decides not to approve a financing agreement with Germany for the Angra-2 plant. He will not resume Angra-2 construction until he has received a report regarding that plant's situation from the Mines, Energy, and Metallurgy Ministry, whose minister Paulino Cicero was supposed to have travelled to Germany on 10/11/93 to sign the financing agreement. The financing agreement with Germany would have secured about \$1.5 billion for the completion of Angra-2.

*Voz do Brasil Network (Brasilia), 10/8/93; in JPRS-TND-93-034, 10/27/93, p. 24 (10528).*

**BRAZIL WITH INDIA**

**9/93**

Brazilian Foreign Minister Celso Amorim, in a meeting with Indian Minister of State for External Affairs Salman Khurshid, acknowledges the ongoing discussions between India and Brazil in the area of nuclear energy, and says that these discussions will be formalized "through cooperation, agreements, and programs."

*Gazeta Mercantil (Sao Paulo), 10/8/93; in JPRS-TND-93-037, 12/8/93, pp. 31-33 (10699).*

**BRAZIL WITH IRAQ AND IAEA**

**9/93**

IAEA officials uncover significant evidence that Brazil provided Iraq with "key materials" for its clandestine nuclear program. Despite the Brazilian government's lack of cooperation, the IAEA confirms that Brazil exported uranium oxide to Iraq and had plans to build a uranium oxide processing plant in Iraq. Intelligence officials claim that, prior to 1990, Iraq had also obtained at least one shipment of centrifuge-grade maraging steel and "a limited amount" of information on centrifuge design from Brazil. Brazil is suspected to be one of at least two sources of Iraq's approximately 100 metric tons of maraging steel that was found during IAEA inspections. According to unconfirmed intelligence reports, the Iraqi company Babil International and its Brazilian

affiliate, Bagbras, obtained Iraq's maraging steel from Brazil. Brazil is not cooperating with the IAEA on matters pertaining to its involvement in the Iraqi procurement network as it is working towards a trilateral inspection and safeguards agreement with the IAEA and Argentina. Officials believe that if Brazil were to disclose its involvement in the Iraqi nuclear program it would appear to undermine Brazil's commitment to non-proliferation.

*Mark Hibbs, Nucleonics Week, 9/2/93, pp.13-14 (10775).*

**9/93**

Recent reports which claim that Brazilian authorities seized 1.4 metric tons of thorium (Th-232) bound for Iraq puzzle IAEA officials who are unable to find any "indication that Iraq was ever interested in the thorium fuel cycle."

*Mark Hibbs, Nucleonics Week, 9/2/93, pp.13-14 (10775).*

**BRAZIL WITH UNITED STATES**

**12/13/93**

Westinghouse is issued a license to export components and Inconel Spacer Grids to Brazil for its Angra-1 reactor.

*U.S. Nuclear Regulatory Commission Export License Report, 12/93 (10915).*

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**INDIA**

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**INTERNAL DEVELOPMENTS**

**9/30/93**

At the IAEA General Conference in Vienna, R. Chidambaram, chairman of India's Atomic Energy Commission, announces India's willingness to export heavy water, a 5/10 MW multipurpose research reactor, and a 30 kW reactor, all under IAEA safeguards. In addition, Chidambaram invites other countries to use the training expertise available at India's Bhabha Atomic Research

Centre (BARC), which would be willing to create training programs to meet the specific needs of IAEA member states.

*Thomas Abraham, Hindu (Madras), 9/30/93, p. 6; in JPRS-TND-93-038, 12/29/93, pp. 14-15 (10830).*

**11/93**

In a speech at the U.N. General Assembly, M.M. Jacob, leader of the Indian delegation, calls for "an immediate freeze on production of nuclear weapons and fissile materials for weapons purposes by the nuclear weapons countries." Jacob calls for the formalization of such a freeze through the negotiation of a multilateral agreement, and reiterates that such an agreement is in keeping with the global nuclear weapons ban which India has been promoting for the last decade.

*All India Radio Network (Delhi), 10/26/93; in JPRS-TND-93-035, 11/10/93, p. 28 (10849).*

**11/93**

At the U.N. General Assembly, Indian delegate K.P. Unnikrishnan reiterates India's support for "all efforts at nuclear nonproliferation which are universal and non-discriminatory" and its stand against the NPT. Unnikrishnan also speaks in favor of the IAEA, stating that the IAEA's role is to apply safeguards under voluntarily accepted agreements, not to act as a police force in the detection of clandestine nuclear programs.

*India News, 11/15/93, p. 1 (10516).*

**1/94**

At India's first symposium on the Aging of Nuclear Facilities, Indian Atomic Energy Regulatory Board (AERB) Chairman A. Gopalakrishnan states that Indian nuclear power plants will be required to meet the minimum safety standards set by internationally accepted standards. Gopalakrishnan says that safety standards will have to be maintained despite such obstacles as the "lack of readily applicable indigenous tools and technologies, and the non-availability of imported spare parts."

*The Observer (Bombay), 1/14/94 (10822).*

## INDIA WITH BRAZIL

9/93

Brazilian Foreign Minister Celso Amorim, in a meeting with Indian Minister of State for External Affairs Salman Khurshid, acknowledges the ongoing discussions between India and Brazil in the area of nuclear energy, and says that these discussions will be formalized "through cooperation, agreements, and programs."

*Gazeta Mercantil (Sao Paulo)*, 10/8/93; in *JPRS-TND-93-037*, 12/8/93, pp. 31-33 (10699).

## INDIA WITH FRANCE AND UNITED STATES

9/93

India's nuclear scientists develop a new mixed oxide (MOX) fuel primarily to avoid supply problems at its Tarapur atomic power station, for which the U.S. had supplied low enriched uranium until 1983, when France took over the contract. The contract expires on 10/23/93.

*N. Suresh, Times of India (Bombay)*, 9/17/93, p. 7; in *JPRS-TND-93-035*, 11/10/93, pp. 30-31 (10828).

## INDIA WITH GERMANY

2/93-1/94

Despite the fact that Germany has been supporting strict export controls on dual-use items in order to prevent nuclear proliferation, German Chancellor Helmut Kohl's 2/93 promise to expand trade with India includes a list of high technology items. Although by 1/94 the two countries have not yet agreed upon any "specific technology exchange program," Indian firms have made it clear to German companies that they are interested in obtaining a wide range of dual-use items.

*Mark Hibbs, Nuclear Fuel*, 1/17/94, pp. 9-10 (10850).

## INDIA WITH IAEA AND UNITED STATES

10/16/93

IAEA Director General Hans Blix says that India needs to renegotiate a tripartite agreement with the U.S. and the IAEA for the

supply of fuel for its Tarapur nuclear reactor. Blix says that India's existing agreement with the U.S., which expires on 10/24/93, will be extended to the end of the year as an "interim measure."

*Reuter*, 10/16/93 (10834).

12/93

India and the U.S. agree to push back the deadline from 12/31/93 to 2/28/94 for settling the issue of IAEA safeguards and plutonium disposition at India's two boiling water reactors at Tarapur. India wants to extract plutonium from Tarapur's spent fuel and use it for mixed oxide fuel; the U.S. wants India to agree to submit to IAEA safeguards indefinitely and not to reprocess any of its spent fuel.

*Mark Hibbs, Nuclear Fuel*, 1/3/94, p. 10 (10937).

1/94

The head of India's nuclear program, R. Chidambaram, says that India will sign a new agreement with the IAEA for its U.S.-built Tarapur nuclear power plant. Chidambaram says that India's voluntary move will put the Tarapur twin reactors and the fuel reprocessing plants under IAEA inspections. India's offer is meant "to demonstrate to the world that we have no intention of using the reprocessed plutonium for anything other than running the power station."

*Neelam Jain, UPI*, 1/24/94; in *Executive News Service*, 1/24/94 (10831).

## INDIA WITH IRAN

9/20/93-9/22/93

Indian Prime Minister P.V. Narasimha Rao visits Iran for discussions with Iranian President Ali Akbar Hashemi Rafsanjani in order to encourage Iran to work with India in addressing regional strategic, economic, security, and development concerns and the economic and trade relations between India and Iran. As a result of U.S. pressure, India had refused to sell Iran a 10 MW nuclear reactor in late 1991 despite the fact that Iran had agreed to place the reactor under safeguards.

*UPI*, 9/19/93; in *Executive News Service*, 9/20/93 (10688).

## INDIA WITH ISRAEL

7/20/93

Israeli Prime Minister Yitzhak Rabin tells the editor of *The Hindustan Times* that Israel's commitments to the U.S. not to transfer defense-related technology it receives from the U.S. to third countries limit its consideration of technology transfers to India. However, Rabin mentions that Israel has other advanced technology, the transfer of which is only limited by international agreements.

*Hindustan Times (New Delhi)*, 7/26/93; in *Strategic Digest*, 12/93, pp. 2013-2017 (10250).

## INDIA WITH JAPAN

1/94

Japan urges India to sign the NPT during a second round of bilateral talks on nuclear nonproliferation. Japan makes the request in view of its guidelines for granting development assistance, which require that, "the recipient nation's military expenditures and development, production, import and export of weapons and missiles," be considered.

*UPI*, 1/17/94; *Executive News Service*, 1/17/94 (10515).

## INDIA WITH PAKISTAN

1/24/94

Indian Foreign Secretary J.N. Dixit submits a proposal to Pakistan intended to lower the risk of nuclear war between the two countries. The proposal assures no first-use of nuclear weapons by India in the event of a war, calls for an agreement limiting nuclear strikes to strategic targets in the case of nuclear war, and suggests the establishment of a direct "crisis" line between top military officials in India and Pakistan.

*Tim McGirk, Independent*, 1/26/94 (10832).

## INDIA WITH PAKISTAN AND PRC

12/29/93

Pakistani Prime Minister Benazir Bhutto acknowledges that both Pakistan and China would agree to a nuclear nonproliferation

pact as well as a nuclear-free zone in South Asia if India would also agree.

Jeffrey Parker, *Reuter*, 12/29/93; in *Executive News Service*, 12/29/93 (10524).

## INDIA WITH PRC

10/93

China's nuclear test on 10/5/93 is cited as being another reason why India should not accede to the NPT, despite pressure from the U.S. to do so. It is believed that the Indian and Chinese positions concerning the elimination and destruction of nuclear weapons are "close...though the two may espouse varying ways of reaching that objective."

*Hindu (International Edition)*, 10/16/93, p. 3 (10819).

## INDIA WITH THAILAND

11/93

Delegations led by Indian Foreign Minister Dinesh Singh and Thai Foreign Minister Prasong Sunsirirakul decide to sign a cooperation agreement on the peaceful use of nuclear energy. Indian Foreign Secretary J.N. Dixit and Thai Foreign Secretary Pracha Khunaskasen also take part in the discussions.

*Doordarshan Television Network (Delhi)*, 11/4/93; in *JPRS-TND-93-036*, 11/17/93, p. 17 (10191).

12/93

India offers Thailand an advanced nuclear research reactor. Indian Minister of State Bhuvanesh Chaturvedi tells the Lok Sabha (India's People's Assembly) that the relevant paperwork for the export and construction of such a reactor has already been submitted to the government of Thailand.

*All India Radio Network (Delhi)*, 12/16/93; in *JPRS-TND-94-002*, 1/18/94, p. 12 (10827).

## INDIA WITH UNITED STATES

9/15/93

The U.S. and India meet to discuss their differences over Indian plans to recycle U.S.-supplied nuclear fuel for the Tarapur atomic power plant. The U.S. asserts that India cannot reprocess spent fuel supplied under the

original U.S.-India agreement.

Seema Guha, *Reuter*, 9/13/93; in *Executive News Service*, 9/13/93 (10835). *UPI*, 9/10/93; in *Executive News Service*, 9/10/93 (10853).

10/93

U.S. diplomatic sources in Vienna announce that the United States will implement comprehensive IAEA safeguards on future nuclear activities only if India, Pakistan, and Israel agree to do so as well. The U.S. proposal is designed to appease concerns from Germany, Japan, and the European Community about the United States' commitment to nonproliferation and to push India, Pakistan, and Israel to accept full-scope IAEA safeguards.

Mark Hibbs, *Nucleonics Week*, 10/14/93, pp. 12-13 (10409).

11/93

State Department officials clarify that the U.S. has no intention of stopping aid to India, despite a recent proposal submitted to the U.S. Congress. The Clinton Administration proposal calls for legislation to prohibit aid to all non-nuclear weapon states with enrichment or reprocessing facilities that could be used to produce weapons-grade materials. However, the legislation would allow the U.S. President to exempt any nation from the ban "if the furnishing of such assistance is important to the national interests of the United States" and "will further U.S. nonproliferation objectives."

Jeffrey Smith, *Washington Post*, 11/25/93, p. A59 (10263).

11/30/93

Bingham-Willamette of the U.S. is issued a license to export \$444,159 worth of pump parts to India for units 1 and 2 of its RAPP nuclear power plant.

*U.S. Nuclear Regulatory Commission Export License Report*, 11/93 (10914).

12/93

At a luncheon held in honor of U.S. Senator Larry Pressler and other Senators visiting India, Indian Minister of State for External Affairs Salman Khurshid warns that the repeal of the Pressler Amendment by the U.S. would "legitimize Pakistan's clandestine nuclear weapons program." Khurshid says that the U.S. repeal of the amendment would

force India to "reappraise its defense policies."

*All India Radio Network (Delhi)*, 12/11/93; in *JPRS-TND-94-002*, 1/18/94, p. 13 (10848). *UPI*, 12/11/93; in *Executive News Service*, 12/11/93 (10527).

1/94

Indian national defense analyst K. Subrahmanyam calls for the U.S. and India to cooperate in a joint campaign urging the universal adoption of a non-discriminatory NPT, a comprehensive test ban, a ban on weapons-related fissile materials production, agreement on the no first use of nuclear weapons, and a convention to ban and eliminate nuclear weapons in a non-discriminatory fashion. Subrahmanyam says that knowledgeable individuals from the U.S. have acknowledged that India has "transferred no sensitive nuclear technology to other countries or exported no unsafeguarded nuclear technology or equipment."

K. Subrahmanyam, *Economic Times*, 1/26/94 (10833).

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## IRAN

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### INTERNAL DEVELOPMENTS

1993

A feasibility study shows that converting Iran's 5 MW nuclear research reactor, which uses HEU, to one that uses LEU, would be possible. Future studies will be conducted to compare the possible loadings for the LEU core. These studies will need to consider the economics of such conversion and the increased handling of uranium that it will entail.

S.M. Nejat, *Nuclear Engineering International*, 12/93, pp. 45-46 (10851).

9/93

Iranian Vice-President for Economic Affairs Moshen Nurbakhsh declares to the IMF and the World Bank in Washington that Iran will not seek to acquire weapons of mass destruction under any circumstances. Although the U.S. has claimed that Iran is attempting to

develop chemical and nuclear weapons, Nurbakhsh states that Iran has adhered to all international agreements concerning the proliferation of chemical and nuclear weapons.

*Voice of the Islamic Republic of Iran First Program Network (Tehran), 9/30/93; in JPRS-TND-93-031, 10/8/93, p. 16 (10416). Reuter, 9/29/93 (9418).*

### 9/27/93

In a speech to the IAEA General Conference, Reza Amrollahi, Vice-President of Iran and chief of Iran's Atomic Energy Agency, claims that Iran's nuclear program is completely peaceful, that Iran is the first country to promote a nuclear-weapon-free zone (NWFZ) for the Middle East and that creating such a zone will be put on hold until Israel cooperates on nuclear issues. Amrollahi also says that Iran's adherence to IAEA safeguards is clear and that Iran took the initiative of inviting the IAEA to visit Iran's nuclear facilities.

*IRNA (Tehran), 9/28/93; in JPRS-TND-93-034, 10/27/93, pp. 27-28 (10413). IRNA (Tehran), 2/29/93; in JPRS-TND-93-031, 10/8/93, p. 16 (10413).*

### 10/12/93

The U.K.-based International Institute for Strategic Studies says that according to its 1993-1994 edition of the Military Balance report, claims of an Iranian nuclear weapons program are unsubstantiated. The report says that although Iran is procuring missiles and aircraft that could deliver nuclear weapons, it is unlikely that Iran is planning to produce nuclear weapons. If Iran does have a nuclear weapons program, it would not be able to develop a weapon before the year 2000.

*IRNA (Tehran), 10/12/93; in JPRS-TND-93-034, 10/27/93 (10194).*

### 12/9/93

A U.S. official says, "The CIA believes that Iran could have nuclear weapons within eight to 10 years, even without critical assistance from abroad."

*Theresa Hitchens and Brendan McNally, Defense News, 12/13/93-12/19/93, p. 3 (10940).*

### 12/26/93

A report by the National Broadcasting Corporation (NBC) of the U.S. states that Iran, Algeria, Iraq, Libya, South Korea, and Tai-

wan are striving to develop nuclear weapons.

*CNA (Taipei), 12/27/93; in JPRS-TND-94-003, 1/31/94, p. 6 (10299).*

### 1/12/94

Iranian Atomic Energy Organization spokesman Ali Shirzadian says that claims of an Iranian nuclear weapons program reported in USA Today are "sheer lies" and that such accusations are part of a U.S. plot against the Islamic world, according to a report by Iran's IRNA news agency. Shirzadian says Iran is an active member of the IAEA and has been "faithful to its commitments as a signatory to the [NPT] treaty."

*Reuter, 1/12/94; in Executive News Service, 1/12/94 (10855).*

### 1/27/94

A press release issued by the Iranian Permanent Mission to the U.N. regarding CIA Chief James Woolsey's 1/25/94 testimony before the U.S. Congress denies that Iran has a nuclear weapons program and affirms that Iran cooperates with the IAEA in regards to inspections, such as the last IAEA visit in 11/93. The Mission states that Woolsey's remarks on Iran were "self-serving" and were made in the interest of "securing budgetary and otherwise allocations for the current administration" in the U.S.

*Islamic Republic of Iran, Permanent Mission to the U.N., Press Release No. 103, 1/27/94 (10855). IRNA (Tehran), 1/24/94; in JPRS-TND-94-003, 1/31/94, p. 12 (10855). Reuter, 1/27/94; in Executive News Service, 1/31/94 (10855).*

## IRAN WITH CZECH REPUBLIC

### Summer 1993

Various Iranian leaders visit the Czech Republic to try to finalize a number of deals arranged by Al Haj Azimi, vice-president of Iran's atomic energy commission, and Akbar Itamad, technical adviser to the Supreme National Security Council. The leaders involved include Assayed Attaleh Mohajerani, an adviser on nuclear matters to President Hashemi Rafasanjani; Reza Amrollahi, the head of Iran's atomic energy organization; and nuclear physicist Mahdi Chamran, head of the Vavak intelligence services.

*Intelligence Newsletter, 9/2/93, pp. 1, 5 (10940).*

### 10/28/93

The French weekly *Le Point* reports that the Czech firm Skoda Plzen has signed a contract to provide Iran with technology for nuclear reactors in exchange for petroleum products.

*CTK (Prague), 12/9/93; in JPRS-TND-94-001, 1/6/94, pp. 8-9 (10940).*

### 11/27/93-12/3/93

The director of the Czech firm Skoda Plzen, Lubomir Soudek, visits Tehran to discuss "energy cooperation" and "possible component deliveries for the construction of a nuclear power plant," according to a statement released by the company. According to the *New York Times*, U.S. intelligence believes that Iran has a clandestine program to develop nuclear arms and the U.S. fears that Czech supplies could help Iran produce nuclear waste from which it could extract plutonium for a nuclear bomb.

*Stephen Engelberg, New York Times; in San Francisco Chronicle, 12/16/93, p. A15 (10940). CTK (Prague), 12/22/93; in JPRS-TND-94-003, 1/31/94, pp. 43-44 (10854).*

### 12/93

In response to pressure from the U.S. against Czech sales of nuclear components to Iran, the Czech government states that it "has not decided, nor does it intend to decide in the foreseeable future, on any shipments of nuclear technology to Iran." Earlier in the month, the Czech minister of industry and trade had defended a possible deal between Skoda and Iran.

*Stephen Engelberg, New York Times; in San Francisco Chronicle, 12/16/93, p. A15 (10940).*

### 12/21/93

Iran's ambassador to the Czech Republic, Rasoul Movahedian, asserts that Iran's involvement with Skoda is directed only toward peaceful projects.

*John Mastrini, Reuter, 12/21/93; in Executive News Service, 12/21/93 (10940).*



**IRAN WITH CZECH REPUBLIC AND GERMANY**

**10/93**

Siemens challenges allegations that it is considering a plan to have a subsidiary of the Czech firm Skoda complete a reactor at the Bushehr nuclear power plant. Intelligence sources say that Siemens has a share in the subsidiary. Siemens spokesman Wolfgang Breyer denies that his company is "involved in any activities whatsoever which would enable third parties to complete the Bushehr plant."

*Robert S. Greenberger, Wall Street Journal, 10/14/93, p. A18 (10940). Terence Roth, Wall Street Journal, 10/18/93, p. A9 (10940).*

**12/93**

A report in the Israeli daily Ha'aretz by analyst Danny Keshem alleges that the Czech firm Skoda Plzen is providing access for Westinghouse of the U.S. and Siemens of Germany to the Iranian nuclear market, thus violating "the restrictions imposed by their home countries on trade with Iran." Skoda spokesman Jaroslav Hudec calls the report "misleading" and says that except for limited cooperation on a very specific set of products for nuclear power plants, Skoda has virtually no other connection with Westinghouse. Hudec adds that Skoda is involved in talks with Siemens, but only pertaining to joint production of turbines.

*Lidove Noviny (Prague), 12/17/93, p. 8; in JPRS-TND-94-002, 1/18/94, p. 38 (10940).*

**1/5/94**

The Head of Corporate Communications for Germany's Siemens, Eberhard Posner, in a letter to the New York Times, refutes speculation that his company is "somehow involved in Iran's attempts to acquire nuclear technology." Posner says, "Siemens has no joint venture with Skoda Plzen...in nuclear technology. We have no activities whatever to enable third parties to advance nuclear technology in Iran." He concludes that Siemens "has no plans to complete Bushehr - with Skoda or anyone else."

*Eberhard Posner, New York Times, 1/13/94, p. A14 (10940).*

**IRAN WITH CZECH REPUBLIC AND ISRAEL**

**12/93**

Israeli Prime Minister Yitzhaq Rabin asks Czech Foreign Minister Josef Zieleniec to prevent export from the Czech Republic to Iran of equipment that can be used in Iran's nuclear program, even for peaceful purposes, according to Israeli Ambassador to the Czech Republic Moshe Yegar. During his visit to Israel, Zieleniec claims that Czech exports could not be used by Iran for purposes that were not peaceful.

*CTK (Prague), 12/22/93; in JPRS-TND-94-003, 1/31/94, pp. 43-44 (10854).*

**IRAN WITH CZECH REPUBLIC AND RUSSIA**

**12/9/93**

The manager for technical service of nuclear power plants for the Czech firm Skoda Jaderne Stojirentsvi Plzen, Frantisek Svitak, says that Iran wishes to build a nuclear power plant and that Skoda could provide it with reactor equipment through a Russian general supplier.

*CTK (Prague), 12/9/93; in JPRS-TND-94-001, 1/6/94 (10940).*

**IRAN WITH CZECH REPUBLIC AND UNITED STATES**

**12/93**

A report in the Israeli daily Ha'aretz by analyst Danny Keshem alleges that the Czech firm Skoda Plzen is providing access for Westinghouse of the U.S. and Siemens of Germany to the Iranian nuclear market, thus violating "the restrictions imposed by their home countries on trade with Iran." Skoda spokesman Jaroslav Hudec calls the report "misleading" and says that except for limited cooperation on a very specific set of products for nuclear power plants, Skoda has virtually no other connection with Westinghouse.

*Lidove Noviny (Prague), 12/17/93, p. 8; in JPRS-TND-94-002, 1/18/94, p. 38 (10940).*

**IRAN WITH FRANCE**

**9/2/93**

It is reported that the French firm CKD is delivering nuclear materials to Iran. It is also reported that a secret clause in a French-Iranian agreement, signed on 12/29/91, provides for the resumption in 1994 of construction on three reactors in Iran.

*Intelligence Newsletter, 9/2/93, pp. 1, 5 (10940).*

**IRAN WITH GERMANY**

**1993**

Germany's Leybold AG sharply tightens its export controls on nuclear-related items, virtually prohibiting the transfer of dual-use items to countries such as Iran, Iraq, Israel, North Korea, Pakistan, and Syria. Leybold checks with German and U.S. authorities and investigates its potential buyers before making a sale, and through use of databases seeks to identify possible third-party front companies that might be attempting to buy items for threshold states.

*Linda Rothstein, Bulletin of the Atomic Scientists, 11/93, pp. 4-5 (10162).*

**1993**

Germany refuses to resume construction of the 80% complete Siemens-built nuclear power plant at Bushehr, Iran, for fear that it could be accused of helping advance Iran's nuclear weapons program.

*AFP (Paris), 12/19/93; in JPRS-TND-94-002, 1/18/94, p. 39 (10683).*

**IRAN WITH IAEA**

**11/15/93-11/21/93**

A group of IAEA officials, led by IAEA Deputy Director General for Safeguards Bruno Pellaud, visits Iranian nuclear facilities in Tehran, Esfahan, and Karaj. In 12/93, IAEA spokesman David Kyd reports that the officials "found no evidence which was inconsistent with Iran's declaration that all its nuclear activities are peaceful." Both the IAEA visit to Iran in 11/93 and an earlier IAEA visit to Iran in 1992 were carried out under "a standing invitation from Iran to discuss its nuclear program." According to

Kyd, the IAEA visit to Iranian nuclear facilities "was not an inspection per se but a familiarization visit" to see if anything had changed since the 2/92 IAEA visit to Iran. The visits were made partly in response to allegations in the West, including claims by members of Iranian opposition groups in exile and "pro-Israel researchers," that Iran has a secret nuclear weapons program.

*Jomhuri-Ye Eslami (Tehran)*, 12/4/93, p. 14; in *JPRS-TND-94-002*, 1/18/94, pp. 14-15 (10415). Mark Hibbs, *Nucleonics Week*, 12/16/93, pp. 10-11 (10856).

#### IRAN WITH INDIA

9/20/93-9/22/93

Indian Prime Minister P.V. Narasimha Rao visits Iran for discussions with Iranian President Ali Akbar Hashemi Rafsanjani in order to encourage Iran to work with India in addressing regional strategic, economic, security, and development concerns and the economic and trade relations between India and Iran. As a result of U.S. pressure, India had refused to sell Iran a 10 MW nuclear reactor in late 1991 despite the fact that Iran had agreed to place the reactor under safeguards.

*UPI*, 9/19/93; in *Executive News Service*, 9/20/93 (10688).

#### IRAN WITH ITALY AND GERMANY

11/11/93

Italian customs authorities seize eight steam condensers for nuclear reactors, manufactured by the Italian firm Ansaldo, and prevent them from being exported to Iran. Italian authorities suspect that the condensers, valued at about \$15 million, could be used for nuclear weapons production, and they are attempting to determine if the shipment of sensitive equipment was intended to be concealed by shipping it first to Germany. The order for the eight condensers was originally placed with Breda Termomeccanica (subsequently acquired by Ansaldo) by the German firm KWU for use in an Iranian nuclear power plant, but delivery was prevented by an embargo instituted during the Iran-Iraq war. Special authorization was needed to export the steam condensers, and

would have been necessary even prior to the 7/93 Italian export law which requires special authorization from the Trade Ministry for all dual-use equipment exports.

*Giorgio Cecchetti, La Repubblica (Rome)*, 11/12/93, p. 23; in *JPRS-TND-93-037*, 12/8/93, pp. 54-55 (10908).

#### IRAN WITH MULTI-COUNTRY GROUP

9/93

A House Subcommittee investigation documents that over 230 companies from the U.S., Japan, Germany, the U.K., France, and Italy have sold materials and equipment useful in the production of weapons of mass destruction to Iran. These transactions were made with the approval of their government export-control officials, according to Kenneth R. Timmerman.

*Kenneth R. Timmerman, New York Times*, 10/25/93, p. A15 (10414).

#### IRAN WITH NORTH KOREA

1993

North Korea and some of the former Soviet republics could be a source for Iran to obtain nuclear weapons. According to CIA chief James Woolsey, "North Korea is willing to sell [its nuclear weapons and missiles] to anyone." Spy satellite images of a large North Korean nuclear reactor reveal a potential plutonium production of up to 100 pounds of plutonium annually.

*Robert Jastrow and Max Kampelman, Wall Street Journal*, 11/19/93, p. A16 (10293).

12/9/93

According to the Korean Central News Agency (KCNA), North Korea and Iran conclude a fifth joint committee meeting centered around increasing economic, scientific, and technological ties. Iranian Defense Minister Mohammad Forouzandeh leads the Iranian delegation. Also in 12/93, Iran's IRNA news agency reports that in a meeting with Iran's ambassador to North Korea, North Korean President Kim Il-Sung stresses the necessity for closer ties with Iran.

*Reuter*, 12/10/93; in *Executive News Service*, 12/10/93 (10509). *Reuter*, 12/12/93; in *Executive News Service*, 12/13/93 (10509).

#### IRAN WITH RUSSIA

10/93

Iranian officials state that "little progress has been made" on Iran's purchase of Russian VVERs to be constructed at Bushehr.

*Mark Hibbs, Nucleonics Week*, 10/14/93, p. 9 (10597).

12/93

Russian Ambassador to Iran Sergei Tretyakov confirms that Russia will help Iran build a nuclear power plant, indicating that a preliminary agreement has been reached but that financing is still being negotiated.

*Radio Rossii Network (Moscow)*, 12/19/93; in *FBIS-SOV-93-242*, 12/20/93, p. 53 (10385).

12/93

It is reported that financial problems have stalled Russia's assistance to Iran in the construction of a nuclear power plant in Bushehr and in the completion of a second plant started by Germany but abandoned for political reasons. Iran has requested that Russia fund the projects, but Russia has refused due to its own financial crisis.

*AFP (Paris)*, 12/19/93; in *JPRS-TND-94-002*, 1/18/94, p. 39 (10683).

#### IRAN WITH RUSSIA AND TURKEY

10/5/93

Pinar Bakir, a Turkish businessman and economics professor, is arrested in Turkey for possession of 2.5 kg of uranium, which he was allegedly smuggling from Russia to Iran. Four Iranians and four Turkish citizens are arrested in the raid while trying to purchase the uranium from Bakir. Police suspect the four Iranians of working for Savama, the Iranian secret service. Police identify Turker Gelendost, who is among those arrested, as the central figure in the smuggling of the uranium from Russia to Turkey. According to chief of the police anti-smuggling department Salih Gungor, visitors from Russia brought the uranium into Turkey, where they sold it to Turks. Deputy Head of the Cekmeci Nuclear Research Center Erol Balıkcıgil announces that the smuggled material "only has about 2.5 to 3.5% uranium-235" and cannot be used in nuclear

weapons manufacture. Meanwhile, Iranian Deputy Foreign Minister Alaeddin Boroujerdi denies that Russian uranium is destined for Iran, calling the case a plot to undermine Turkish-Iranian relations and stating that Iran is willing to cooperate with Turkish security forces in the matter. Iran continues to deny that it is attempting to develop nuclear weapons. Another Iranian is being sought in connection with the case. The uranium was to be sold for 40,000 dollars per gram. However, a specialist at the Cekmeci Nuclear Research Center estimates that "the whole amount was worth only a few thousand dollars."

*Meral Tamer, Milliyet (Istanbul), 10/9/93, p. 6; in JPRS-TND-93-036, 11/17/93, p. 42 (10402). Istiklal Sevinc, Milliyet (Istanbul), 10/9/93, p. 16; in JPRS-TND-93-036, 11/17/93, p. 42 (10497). Deutsche Press Agentur, 10/7/93 (10504). Reuter, 10/7/93 (10507). Reuter, 10/6/93; in Executive News Service, 10/7/93 (10938).*

## IRAN WITH UNITED STATES

9/93

A House Subcommittee investigation documents that over 230 companies from the U.S., Japan, Germany, the U.K., France, and Italy, including over 50 U.S. businesses, have sold materials and equipment useful in the production of weapons of mass destruction to Iran. These transactions were made with the approval of their government export-control officials, according to Kenneth R. Timmerman. Timmerman claims that since the U.S. Congress passed additional restrictions on sensitive technology sales to Iran in 10/92, U.S. companies have been permitted by the U.S. Commerce Department to export centrifuges, gas separation devices, gas chromatographs, machine tools, mass spectrometers, and million-dollar supercomputers to Iran which can assist Iran in developing nuclear weapons. Between 1/93 and 6/93, one of these sensitive U.S. high-technology exports was shipped straight to Iran's Atomic Energy Organization. Acting Assistant Secretary for the Bureau of Administration of the Department of Commerce, Iain Baird, calls Timmerman's claims misleading, citing the Commerce Department's full compliance with the 1992 National Defense Authoriza-

tion Act. Baird adds that a \$1 million dollar computer exported to Iran was actually an outdated computer "attached to a well-logging system used in the oil and gas industry" which was not considered a national security concern.

*Kenneth R. Timmerman, New York Times, 10/25/93, p. A15 (10907). Iain Baird, New York Times, 11/3/93 (10907).*

9/93

The U.S. proposes to the G-7 nations that restrictions on COCOM countries be eased and a new system created to monitor the export of conventional weapons, raw materials, and dual-use technologies to developing countries. The U.S. wants to lower the restrictions on the sale of the components of high-speed computers. However, the U.S. will only weaken the restrictions in return for a pledge that the former socialist states will not export military technologies to developing countries engaged in regional conflicts, including Iran, Libya, Iraq, and North Korea.

*Vladimir Mikheyev, Izvestiya (Moscow), 9/14/93, p. 3; in FBIS-SOV-93-178, 9/16/93, p. 14 (10582).*

10/20/93

At a meeting of NATO Defense Ministers to discuss strategies for countering a "growing nuclear threat from maverick nations and guerilla groups," U.S. Defense Secretary Les Aspin submits proposals to NATO that include plans to improve intelligence networks to identify technologies or nuclear arms which may have been obtained or were being sought by nations such as Iran, Iraq, North Korea, and others. The U.S. plans also call for special sensors which may detect the smuggling of a crude nuclear device into a Western city or military base.

*Charles Aldinger, Reuter, 10/20/93; in Executive News Service, 10/21/93 (10397).*

## IRAQ

### INTERNAL DEVELOPMENTS

8/93

Former Iraqi Ambassador to Canada Hisham Al Shawi, a key figure in launching Iraq's nuclear program, defects to the U.K. From 1972 to 1974, Al Shawi was chairman of Iraq's Atomic Energy Commission and Minister of Higher Education and Scientific Research. Al Shawi helped coordinate Iraq's efforts to train Iraqi nuclear scientists and technicians; these efforts involved sending Iraqi students abroad to universities and international research facilities. However, there is no evidence that Al Shawi knew of efforts to use these trainees in a military nuclear program. From 1974 to 1976, Al Shawi was Iraq's representative on the board of the IAEA. Al Shawi and a fellow defector, former ambassador to Tunisia Hamid al Jabbouri, deny having any detailed knowledge of Iraq's nuclear program or its procurement network.

*Nuclear Engineering International, 10/93, p. 7 (10171).*

12/26/93

A report by the National Broadcasting Corp. (NBC) of the U.S. says that Iraq is one of six countries striving to develop nuclear weapons. The NBC report also names Algeria, Iran, Libya, South Korea, and Taiwan. *CNA (Taipei), 12/27/93; in JPRS-TND-94-003, 1/31/94, p. 6 (10299).*

### IRAQ WITH BRAZIL AND IAEA

9/93

IAEA officials uncover significant evidence that Brazil provided Iraq with "key materials" for its clandestine nuclear program. Despite the Brazilian government's lack of cooperation, the IAEA confirms that Brazil exported uranium oxide to Iraq and had plans to build a uranium oxide processing plant in Iraq. Intelligence officials claim

that, prior to 1990, Iraq had also obtained at least one shipment of centrifuge-grade maraging steel and "a limited amount" of information on centrifuge design from Brazil. Brazil is suspected to be one of at least two sources of Iraq's approximately 100 metric tons of maraging steel that was found during IAEA inspections. According to unconfirmed intelligence reports, the Iraqi company Babil International and its Brazilian affiliate, Bagbras, obtained Iraq's maraging steel from Brazil. Brazil is not cooperating with the IAEA on matters pertaining to its involvement in the Iraqi procurement network as it is working towards a trilateral inspection and safeguards agreement with the IAEA and Argentina. Officials believe that if Brazil were to disclose its involvement in the Iraqi nuclear program it would appear to undermine Brazil's commitment to non-proliferation.

Mark Hibbs, *Nucleonics Week*, 9/2/93, pp.13-14 (10775).

### 9/93

Recent reports which claim that Brazilian authorities seized 1.4 metric tons of thorium (Th-232) bound for Iraq puzzle IAEA officials who are unable to find any "indication that Iraq was ever interested in the thorium fuel cycle."

Mark Hibbs, *Nucleonics Week*, 9/2/93, pp.13-14 (10775).

## IRAQ WITH GERMANY

### 1988-1989

Centrifuge designer Bruno Stemmler of Germany's MAN Technologie provides Iraq with technical assistance and instruction in design and assembly for Iraq's centrifuge program. Stemmler was recruited to work with the Iraqis by former MAN colleague and H&H Metalform GmbH consultant Walter Busse, who accompanied him on his trips to Iraq. Stemmler maintains that he did not break any German laws and that he only revealed unclassified German centrifuge technology to the Iraqis. He determines that Iraq must have procured its centrifuge design drawings, which he believes are a "type of G1" Urenco design, from a foreign source, possibly from Pakistan via another country.

Stemmler informs Iraqi scientists about a "patented process for applying homogenous oxide coating on maraging steel," thus providing enough information for Iraq to begin oxidizing maraging steel centrifuge rotors. Although he sought to sell a license for the oxidation process to Iraq in 1988 and to Brazil in 1987 and 1988, neither country contracts him to teach them the proper coating process. He advises Iraq that oxidation furnaces and the appropriate inserts needed for the process can be purchased from Degussa of Germany. The Iraqis often ask Stemmler for information on cascading centrifuges and suggest that Stemmler observe a cascade at Urenco to obtain more details. Stemmler tells the Iraqis that a cascade will only be successful if 50-100 machines are connected and that he will think about how to make this connection of centrifuges. He feels that the Iraqi centrifuge experts show theoretical expertise but lack practical experience, leading to their interest in the practical insights he provides.

David Albright, *Bulletin of the Atomic Scientists*, 12/93, pp. 29-36 (10838).

### 8/30/93

Walter Dittel, manager of the German firm Rhein-Bayern-Fahrzeugbau, confesses that he supplied Iraq with electronic parts that may have been used in Iraq's weapons program. Dittel is later charged with selling Iraq materials for its rocketry and nuclear weapons program in violation of German export laws. Dittel and his supervisors, Anton Eyerle and Subramaniam Venkat, had been accused of violating German export policy by selling \$18.7 million of materials to Iraq since 1988. The German company reportedly made two illegal shipments after Iraq invaded Kuwait and the 8/90 U.N. embargo was imposed.

*Wall Street Journal*, 9/15/93, p. A4 (10245).

## IRAQ WITH GERMANY AND UNITED KINGDOM

### 1993

Germany's Leybold AG sharply tightens its export controls on nuclear-related items, virtually prohibiting the transfer of dual-use items to countries such as Iraq, Iran, Israel,

North Korea, Pakistan, and Syria. Leybold checks with German and U.S. authorities and investigates its potential buyers before making a sale, and through use of databases seeks to identify possible third-party front companies that might be attempting to buy items for threshold states.

Linda Rothstein, *Bulletin of the Atomic Scientists*, 11/93, pp. 4-5 (10162).

### 10/93

An Iraqi delegation headed by Deputy Foreign Minister Tariq Aziz reveals to the IAEA that a London-based agent named Malik arranged the procurement of 350-grade maraging steel from Germany by Iraqi Embassy personnel in Bonn. Payment for the material was arranged through Dresdner Bank AG, which also cleared accounts for the London-based Meed International, an Iraqi weapons procurement company. In the late 1980s, Iraqi commercial attaché at the embassy in Bonn Ali Muttalib Ali put Meed official Anis Wadi in contact with a number of German firms. Ali and Wadi set up meetings with German companies and, according to Telecom records, Iraq tried to obtain steel from several firms, hot isostatic presses from Leybold-Heraeus GmbH, and vacuum pump equipment from Balzer and Degussa AG. According to one official, the new information received by the IAEA regarding German companies "has been sent to Bonn where it must be expressly verified."

Mark Hibbs, *Nuclear Fuel*, 12/6/93, pp. 8-9 (10513).

### 11/93

It is reported that the U.K. government cannot verify the information revealed by Iraq in 10/93 regarding a London-based Iraqi agent named Malik who allegedly arranged for the procurement of maraging steel from Germany.

Mark Hibbs, *Nucleonics Week*, 11/25/93, pp. 4-5 (10841).

## IRAQ WITH IAEA AND RUSSIA

### 10/93

According to IAEA Deputy Director Maurizio Zifferero, the U.N. sent 170 tonnes of equipment to Iraq to aid in the removal from Iraq to Russia of approximately 40 kg

(90 lbs.) of nuclear fuel, enough to produce one or two nuclear bombs. The fuel, the "last known amounts" of irradiated uranium stocks in Iraq, is being stored at two locations near Tuweitha under IAEA custody. The U.N. has already removed approximately 12 kg (26 lbs.) of unprocessed fuel and estimates that the remaining fuel will take several months and cost tens of millions of dollars to remove from Iraq.

*Leon Barkho, Reuter, 10/7/93; in Executive News Service, 10/7/93 (10189).*

### 11/93

The IAEA supervises the shipment of 12 kg of unenriched uranium from Iraq to Russia. *AFP (Paris), 1/9/94; in JPRS-TND-94-003, 1/31/94, p. 40 (10730).*

### 12/93

The first shipment of 33 kg of enriched uranium leaves Iraq for Russia. The IAEA is now preparing for a second shipment of uranium to leave in 1/94, which will complete the transfer. The cost of shipping the material will be paid by Iraq.

*AFP (Paris), 1/9/94; in JPRS-TND-94-003, 1/31/94, p. 40 (10730). Aleksandr Yelistratov, ITAR-TASS (Moscow), 12/7/93; in FBIS-SOV-93-234, 12/8/93, p. 11 (10554).*

## IRAQ WITH IAEA AND UNITED NATIONS

### 8/30/93-9/10/93

U.N. and Iraqi officials hold high-level disarmament talks in New York. During the talks, led by UNSCOM chairman Rolf Ekeus and Iraqi General Amer Mohammed Rasheed, the officials develop detailed plans for on-going monitoring, evaluate the destruction of Iraqi weapons of mass destruction, and discuss the provision of a list of foreign firms that supplied Iraq's weapons programs. However, according to an envoy, there are "no dramatic disclosures of weapons procurement or a list of foreign suppliers." Rasheed says he believes that the outstanding problems concerning arms suppliers' lists and on-going monitoring will be resolved by 11/93. Rasheed seeks U.N. Security Council assurances that the embargo will be lifted as a prerequisite for implementing the long-term monitoring plans. Ekeus believes that UNSCOM would require at

least six months after an agreement is reached to verify all information and to implement monitoring plans before making any recommendation to the Security Council.

*Evelyn Leopold, Reuter, 9/11/93; in Executive News Service, 9/13/93 (10257). Evelyn Leopold, Reuter, 9/8/93; in Executive News Service, 9/18/93 (10257).*

### 9/20/93

UNSCOM releases a report in which UNSCOM Chairman Rolf Ekeus says that once Iraq supplies the missing information on its weapons programs, UNSCOM would need two months to finish weapons destruction. Ekeus reiterates that after Iraq accepts plans for long-term monitoring, UNSCOM will not be able to issue a recommendation on Iraqi compliance until it has had six months to establish a surveillance program. In the report, the IAEA states that it is "confident that the major elements of Iraq's nuclear weapons program are understood and have been dismantled." However, the IAEA also claims that Iraq must disclose the identity of its foreign suppliers of technical and design information and materials used in its nuclear program.

*Evelyn Leopold, Reuter, 9/20/93; in Executive News Service, 9/20/93 (10254).*

### 9/27/93

In a speech to the IAEA General Conference, IAEA Director General Hans Blix states that as the result of 21 inspection missions in Iraq, the IAEA can "conclude that in all essential aspects, the nuclear weapon program is mapped and has been destroyed by the [Gulf] War or neutralized thereafter." Blix further says that once the stocks of irradiated highly enriched uranium declared by Iraq are removed "no highly enriched uranium and no capacity to produce it should remain in Iraq." Stocks of the irradiated uranium are to be removed by 2/94.

*Steve Pagani, Reuter, 9/27/93; in Executive News Service, 9/29/93 (10164).*

### 9/27/93

More than 50 UNSCOM inspectors, led by Nikita Smidovich, travel to Iraq to get answers to questions regarding Iraq's suppliers network and weapons programs posed at arms talks in New York in early 9/93. This U.N. inspection, the largest mission so far,

is to "hunt...for evidence of banned weapons programs," to conduct surprise inspections at declared and undeclared facilities in order to verify information provided by Iraq at the 9/93 talks, and to inquire into "unconfirmed reports" that Iraq continues to hide weapons of mass destruction. Smidovich, commenting as to whether this inspection would be the last, says that it "depends on the results of this inspection."

*Leon Barkho, Reuter, 10/3/93; in Executive News Service, 10/3/93 (10306).*

### 10/1/93

UNSCOM chairman Rolf Ekeus arrives in Baghdad for political and technical talks, in an effort to persuade Iraq to comply with on-going monitoring of its weapons programs.

*Leon Barkho, Reuter, 10/3/93; in Executive News Service, 10/3/93 (10306).*

### 10/1/93

The IAEA General Conference passes a resolution calling upon Iraq to divulge to the U.N. the sources which provided Iraq with nuclear technical advice and to submit a "full, final, and complete declaration of its nuclear program."

*Reuter, 10/1/93 (10164).*

### 10/8/93

UNSCOM chairman Rolf Ekeus announces that the Iraqi government has provided more information about its network of arms suppliers, but has not yet fully complied with U.N. cease-fire demands. According to Ekeus, who describes the gesture as a positive step, Iraq gave UNSCOM a list of its chemical and nuclear weapons technology suppliers on the last day of Ekeus' eight days of meetings held in Baghdad. IAEA spokesman David Kyd says that the new information helps fill some gaps concerning Iraq's centrifuge development program; however, it does not include details concerning Iraqi front companies or its network of purchasing agents. Kyd warns that the network could be revived if it is not completely revealed and documented. The IAEA and UNSCOM sign "a secrecy agreement with Baghdad, pledging not to divulge to outsiders any information Iraq provided on its procurement network."

Jon B. Wolfsthal, *Arms Control Today*, 11/93, p. 21 (10666). Leon Barkho, *Reuter*, 10/8/93; in *Executive News Service*, 10/8/93 (10666). *Washington Times*, 10/9/93, p. A7 (10666). Mark Hibbs, *Nuclear Fuel*, 12/6/93, pp. 8-9 (10513).

### 10/15/93

UNSCOM chairman Rolf Ekeus issues a report, based on his recent meeting with Iraqi officials, in which he states that Iraq has complied with most demands in the nuclear weapons field. However, UNSCOM and IAEA officials state that the major sticking point remains Iraq's failure to agree to the long-term monitoring of its military industries.

Jon B. Wolfsthal, *Arms Control Today*, 11/93, p. 21 (10666). Leon Barkho, *Reuter*, 10/8/93; in *Executive News Service*, 10/8/93 (10666). *Washington Times*, 10/9/93, p. A7 (10666).

### 11/1/93

An IAEA team of 13 inspectors, headed by Rich Hooper, leaves for Iraq. On this trip IAEA inspectors will take water samples to determine if Iraq is working on any prohibited nuclear activity.

*Reuter*, 11/1/93; in *Executive News Service*, 11/1/93 (10280).

### 11/1/93

IAEA Director General Hans Blix announces to the U.N. General Assembly that "Iraq's clandestine nuclear weapons program has been mapped, and is either destroyed or neutralized." Although no "big pieces" are missing, Blix emphasizes that the U.N. must continue to fill in the gaps concerning Iraq's sources of material, technology, and assistance. Blix states that the IAEA had investigated rumors of a hidden Iraqi research reactor but found nothing.

Evelyn Leopold, *Reuter*, 11/1/93; in *Executive News Service*, 11/1/93 (10288).

### 11/15/93

U.N. and Iraqi officials begin high-level arms talks. U.N. officials expect that Iraqi Prime Minister Tariq Aziz will formally accept long-term monitoring of Iraq's weapons potential. UNSCOM chairman Rolf Ekeus said that inspectors will need to work for about six months on testing long-term monitoring techniques before he will be able to inform the Security Council that UNSCOM has done all it could to eliminate

nuclear, chemical, biological, and ballistic weapons in Iraq. According to Iraqi officials, Iraq's government has agreed to monitoring, but UNSCOM would like to have a formal agreement to ensure that Iraq is not able to reconstruct the prohibited weapons.

Evelyn Leopold, *Reuter*, 11/21/93; in *Executive News Service*, 11/21/93 (10403). Evelyn Leopold, *Reuter*, 11/15/93; in *Executive News Service*, 11/15/93 (10403).

### 11/26/93

In a letter from Iraqi Foreign Minister Mohammed Said al-Sahaf to the U.N. Security Council, Iraq agrees to allow the U.N. to conduct long-term monitoring of its facilities under U.N. Resolution 715 and calls for an immediate end to the economic embargo placed against it. UNSCOM chairman Rolf Ekeus says that although this acceptance represents a major step in the right direction, Iraq must continue to disclose information concerning its suppliers network and weapons programs. The U.N. Security Council states that it will not lift sanctions "until Iraqi sincerity in permitting arms monitoring is tested." Ekeus expects that it will take at least several months for UNSCOM to set up long-term monitoring procedures. In a year-end report to the U.N. Security Council, UNSCOM states that its future efforts will focus on implementing a long-term monitoring program rather than searching for weapons and estimates that it will take at least six months before it can determine Iraq was "in substantial compliance with its obligations."

Paul Lewis, *New York Times*, 11/27/93, pp. A1, A5 (10290). *Washington Times*, 11/28/93, p. A8 (10290).

### 12/16/93

The U.N. announces that it conducted aerial surveys over Iraq in an effort to track gamma emissions that would reveal any remaining nuclear weapons material in Iraq. There were no Iraqi objections to the survey, which measured electromagnetic radiation levels at five new sites around Baghdad and in central and northwestern Iraq.

*Reuter*, 12/16/93; in *Executive News Service*, 12/16/93 (10166).

## IRAQ WITH RUSSIA

### 10/93

The director of the Iraqi intelligence services, Faber al-Duri, visits Russia to request "urgent technical assistance" for the completion of the nuclear power plant in Yosfiyi, near Baghdad, which the Russians started building in 1990.

*Intelligence Newsletter*, 10/28/93, pp. 6-7 (10680).

## IRAQ WITH UNITED KINGDOM

### 9/93-1/94

Testimony in the investigation presided over by Lord Justice Scott reveals that senior-level ministers in the British government were not given intelligence reports in the late 1980s warning that British exports were going to Iraqi nuclear weapons procurement companies. Alan Clark, a former Trade and Defence Minister who served under former Prime Minister Margaret Thatcher, claims that British export procedures on sales to Iraq were purposely made vague so that officials had complete latitude in approving arms-related sales by British firms. According to the IAEA, Matrix Churchill supplied Iraq with 13 of the 47 most vital pieces of equipment used in the Iraqi nuclear weapons program, including centrifuge components for uranium enrichment sold under a contract code-named K-1000.

Dave Connett, *Independent*, 9/15/93, (10352). Mark Watts and Bill Goodwin, *Sunday Telegraph*, 12/19/93 (10514). *Foreign Report*, 11/11/93 (10352).

### 12/93

Ali Dagher and Jeanine Speckman, who were convicted in 1991 in the U.K. for attempting to sell capacitors to Iraq, are appealing their case with new evidence, based on U.N. documents, that their export company, Euromac, was not included on a U.N. list of British firms suspected of supplying the Iraqi nuclear program.

Mark Watts and Bill Goodwin, *Sunday Telegraph*, 12/19/93 (10514).

## IRAQ WITH UNITED STATES

11/9/93

Christopher Drogoul, the former manager of Atlanta's Banca Nazionale del Lavoro (BNL), claims during Congressional testimony that the CIA was aware that BNL was illegally loaning billions of dollars to Iraq, and that the money was used to finance Iraq's nuclear weapons program. To date, one U.S. company and six employees of BNL have been convicted on charges stemming from transactions that allowed Iraq to purchase billions of dollars worth of sensitive computers and weapons technology. Alan Friedman, *Financial Times*, 11/10/93 (10305). *International Herald Tribune*, 9/13/93 (10169).

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## ISRAEL

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### INTERNAL DEVELOPMENTS

11/3/93

Shlomo Aharonson, a professor at Jerusalem's Hebrew University, writes that in order to move toward peace in the Middle East, Israel will have to cede territories, and as a result, will need to develop a two-track nuclear security option. The first security option, supported by Yitzhak Rabin, is a strategic nuclear option aimed at Arab population centers and capitals. The second "is a battlefield nuclear option to be used in areas that will be vacated in the West Bank." Aharonson writes that an Israeli nuclear option would, in the face of overwhelming Arab conventional superiority, act as a deterrent to war.

Shlomo Aharonson, *Ha'olam Haze* (Tel Aviv), 11/3/93, p. 27; in *JPRS-TND-93-035*, 11/10/93, pp. 38-39 (10160).

11/16/93

During a National Press Club luncheon in Washington, Israeli Prime Minister Yitzhak Rabin states that Israel "will not be the first to introduce nuclear weapons to the context

of the Arab-Israeli, Islamic-Israeli conflict." Rabin also says that Israel is prepared to make bilateral agreements with its Arab neighbors to create a nuclear-free zone in the Middle East.

Reuter, 11/30/93; in *Executive News Service*, 11/30/93 (10251).

### ISRAEL WITH EGYPT

11/93

Opposition leader and former chief of staff of Israeli Defense forces Rafael Eitan accuses Israeli Energy Minister Moshe Shahal of revealing to the Egyptians the locations of uranium deposits in the Sinai Peninsula. In mid-11/93 Shahal visited Egypt and, as a gesture of goodwill, handed over geological maps, surveys, and three volumes of research conducted by Israeli scientists after the Six Day War. Shahal, however, says it is Eitan, leader of the Tsoment party, who revealed the secret to the Egyptians by bringing up the issue. Shahal says the location of the deposits was not detailed in the maps and surveys, all of which were previously published.

*Nucleonics Week*, 12/2/93, p. 17 (10476).

1/27/94

Israeli Environment Minister Yossi Sarid invites Egyptian scientists to visit the desert town of Dimona in response to Egyptian charges of radioactive emissions from the top-secret nuclear facility located nearby. Israel has refused demands to open the Dimona reactor to international inspection and says the reactor is for energy production.

*UPI*, 1/27/94 (10248).

### ISRAEL WITH GERMANY

1993

Germany's Leybold AG sharply tightens its export controls on nuclear-related items, virtually prohibiting the transfer of dual-use items to countries such as Israel, Iraq, Iran, North Korea, Pakistan, and Syria. As a result, Leybold will not supply spare parts for the approximately 100 vacuum pumps that the Israeli Atomic Energy Agency Commis-

sion has purchased since about 1973.

Linda Rothstein, *Bulletin of Atomic Scientists*, 11/93, pp. 4-5 (10162).

### ISRAEL WITH INDIA

7/20/93

Israeli Prime Minister Yitzhak Rabin tells the editor of *The Hindustan Times* that Israel's commitments to the U.S. not to transfer defense-related technology it receives from the U.S. to third countries limit its consideration of technology transfers to India. However, Rabin mentions that Israel has other advanced technology, the transfer of which is only limited by international agreements.

*Hindustan Times* (New Delhi), 7/26/93; in *Strategic Digest*, 12/93, pp. 2013-2017 (10250).

### ISRAEL WITH IRAN AND CZECH REPUBLIC

12/93

Israeli Prime Minister Yitzhak Rabin asks Czech Foreign Minister Josef Zieleniec to prevent export from the Czech Republic to Iran of equipment that can be used in Iran's nuclear program, even for peaceful purposes, according to Israeli Ambassador to the Czech Republic Moshe Yegar. During his visit to Israel, Zieleniec claims that Czech exports could not be used by Iran for purposes that were not peaceful.

*CTK* (Prague), 12/22/93; in *JPRS-TND-94-003*, 1/31/94, pp. 43-44 (10854).

### ISRAEL WITH SOUTH AFRICA

1977-1978

An Israeli intelligence agent, representing Israel's Office of Special Tasks, reaches an agreement to supply South Africa with 30 grams of tritium in exchange for 500-600 metric tons of natural uranium for Israel's Dimona reactor. However, in 5/93, the Atomic Energy Corporation of South Africa Ltd. (AEC) says only that "South Africa has in the past, imported tritium from different sources for application in commercial programs such as luminescent safety signs."

Mark Hibbs, *Nucleonics Week*, 1/20/94, pp. 5-6

(10956).

**11/8/93-11/9/93**

Waldo Stumpf of South Africa's Atomic Energy Corporation tells a U.S.-Russian sponsored nuclear seminar, held in New Delhi, that there has been no South African nuclear collaboration with Israel.

*K. Subrahmanyam, Economic Times (New Delhi), 11/12/93 (10762).*

**ISRAEL WITH SOUTH AFRICA AND UNITED STATES**

**1/4/94**

South Africa's Atomic Energy Corp. (AEC) rejects the allegation that Israel re-sold 324 U.S.-origin capacitors to South Africa. From 1980-1983, Milco International of the U.S. supplied 810 detonation capacitors to Israel. After a 1983 U.S. Customs raid stopped the transfer of 70 additional devices, Israel returned 486 of the capacitors to the U.S. U.S. agencies believe that Israel re-sold the remaining 324 capacitors, with potential applications for nuclear warheads, to South Africa to be used in an implosion weapons development program.

*Mark Hibbs, Nucleonics Week, 1/20/94, pp. 5-6 (10956).*

**ISRAEL WITH UNITED NATIONS**

**12/20/93**

The U.N. General Assembly passes an Egyptian-sponsored resolution calling on Israel to forswear ownership of nuclear weapons and to become a signatory to the NPT. The U.N. resolution aims to prevent states in the Middle East from using nuclear threats to gain a strategic advantage, and also seeks to thwart states from developing nuclear weapons as a deterrent.

*Al-Ahram (Cairo), 12/20/93, p. 9; in JPRS-TND-94-003, 1/31/94, pp. 13-14 (10698). Ahmand al-Qasir, Cairo Arab Republic Radio Network, 12/18/93; in JPRS-TND-94-002, 1/18/94, p. 13 (10698).*

**ISRAEL WITH UNITED STATES**

**10/93**

U.S. diplomatic sources in Vienna announce that the United States will implement com-

prehensive IAEA safeguards on future nuclear activities only if India, Pakistan, and Israel agree to do so as well. The U.S. proposal is designed to appease concerns from Germany, Japan, and the European Community about the United States' commitment to nonproliferation and to push India, Pakistan, and Israel to accept full-scope IAEA safeguards.

*Mark Hibbs, Nucleonics Week, 10/14/93, pp. 12-13 (10409).*

**12/93**

In reviewing U.S. President Bill Clinton's nuclear nonproliferation initiative, some Israeli government officials express "reservations," stating that Israel's future options should not be limited by any agreements. Other government officials have expressed support for the nuclear initiative. According to unidentified Israeli government sources, the key nuclear issue facing Israel is the NPT renewal. Israel believes that progress in the Middle East peace process will avert U.S. pressure on Israel to accede to the NPT.

*Aluf Ben, Ha'Aretz (Tel Aviv), 12/28/93, p. A1; in JPRS-TND-94-003, 1/31/94, p. 13 (10668).*

**12/4/93**

An Iranian publication, *Jomhuri-Ye Eslami*, asserts that the U.S. provides Israel with technical and financial support for its nuclear weapons program. The Iranian publication says IAEA Director Hans Blix's statement that Israel should give up its nuclear weapons capability as part of the peace process in the Middle East points to "the existence of [Israeli] nuclear weapons in occupied Palestine."

*Jomhuri-Ye Eslami (Tehran), 12/4/93, p. 14; in JPRS-TND-94-002, 1/18/94, pp. 14-15 (10415). Voice of Islamic Republic of Iran, First Program Network, 12/4/93; in JPRS-TND-94-001, 1/16/94, p. 14 (10415).*

**JAPAN**

**INTERNAL DEVELOPMENTS**

**1993**

Japan's Power Reactor and Nuclear Fuel Development Corp. (PNC) starts to develop "next-generation, sophisticated, advanced-material, high-performance centrifuges" in a joint research project between industry and government.

*Atoms In Japan, 11/93, pp. 4-8 (10880).*

**4/93**

Japan's Power Reactor and Nuclear Fuel Development Corp. (PNC) begins operating its full-scale cascade testing facility, which has 1,000 advanced-material high performance gas centrifuges, at its Ningyo-Toge Works.

*Atoms In Japan, 11/93, pp. 4-8 (10880).*

**4/93**

Japan begins construction of its Rokkasho-mura reprocessing plant. PNC's 10-ton mixed oxide (MOX) fuel fabrication facility at the Fugen advanced thermal reactor (ATR) and 5-ton facility at the Monju and Joyo fast breeder reactors (FBRs) had produced a total of 123 tons of MOX fuel through 3/93. PNC has carried out R&D on the fabrication of MOX fuels and is likely to transfer its fabrication technology to a private enterprise to facilitate commercialization, since there is discussion within the private sector of commercializing a 100-ton/year MOX fuel fabrication facility. Currently, an "appropriate quantity" of Japan's plutonium from overseas reprocessing will be fabricated into MOX fuel abroad. One of Japan's electric utilities has plans for using plutonium in light water reactors (LWRs). Japan transports its spent fuel to the U.K., France, or the Tokai Reprocessing plant. In the 1995 fiscal year, the U.K. and France will return radioactive wastes resulting from the reprocessing of Japan's spent fuel to Japan. Japan Nuclear Fuel Limited's waste management facility under



construction at Rokkasho-mura, scheduled for completion in 2/95, will store vitrifications returned to Japan from France and the U.K.

*Atoms In Japan*, 11/93, pp. 4-8 (10880).

### 6/93

During the economic summit in Tokyo, Japanese Foreign Ministry officials object to the Clinton administration's push for "indefinite and unconditional" extension of the NPT. Japanese officials feel that would restrict Japanese options in the face of new security threats which may emerge in the future.

*Selig S. Harrison, Washington Post*, 10/31/93; in *Executive News Service*, 10/31/93 (10481).

### 7/12/93

The Japanese government approves phase two of its centrifuge uranium enrichment plant at Rokkasho-mura, which will have three units, each with 150,000 separative work units (SWU) per year capacity. The three units are scheduled to become operational in 1996, 1997, and 1998, and by 1998 the combined capacity of phases one and two should be 1.05 million SWU per year. An additional three units—phase three of the project—are planned by Japan Nuclear Fuel Limited (JNFL).

*ENS NucNet*, 9/10/93 (10185).

### 8/93

Japanese Prime Minister Morihiro Hosokawa declares his support for indefinite NPT extension. Japan's Atomic Energy Commission (AEC) states that the NPT should be "reaffirmed."

*Selig S. Harrison, Washington Post*, 10/31/93; in *Executive News Service*, 10/31/93 (10481). *Atoms In Japan*, 11/93, pp. 4-8 (10880).

### 8/30/93

Budget requests for fiscal year 1994 submitted by Japan's Science and Technology Agency (STA) and Ministry of International Trade and Industry (MITI) call for a 1.7% increase in spending on nuclear-related programs.

*Atoms In Japan*, 9/93, pp. 4-12 (10941). *Naoaki Usui, Nucleonics Week*, 9/2/93, pp. 9-10 (10941).

### 9/10/93

Japan Nuclear Fuel Limited (JNFL) begins construction of phase two of its centrifuge uranium enrichment plant at Rokkasho-mura.

*ENS NucNet*, 9/10/93 (10185).

### 9/25/93

In Osaka, the Japan Atomic Industrial Forum (JAIF) and Japan's Citizens' Nuclear Information Center (CNIC) cosponsor a symposium entitled "Why Plutonium Now?" to discuss plutonium issues. During the debate, a director at Science and Technology Agency (STA) says the STA will seek to improve public access to information. All parties agree that plutonium information must be made more public and support the idea of similar symposia in the future.

*Atoms In Japan*, 9/93, pp. 17-18 (10847).

### 10/93

Japan's Power Reactor and Nuclear Fuel Development Corp. (PNC) restarts its mixed oxide (MOX) fuel fabrication plant, which had halted operation in 7/93 due to a breakdown, and will finish fuel fabrication for its 280 MW Monju fast breeder reactor (FBR) by 2/94. On 10/8/93, 24 MOX fuel assemblies are delivered to Monju from Tokai in the first fuel shipment since 5/93.

*Nikkeisangyo Shimbun*, 10/1/93 and *Nikkankogyo Shimbun*, 10/6/93 (10873). *Mainichi Shimbun*, 10/8/93 (10873). *Mainichi Shimbun*, *Sankei Shimbun*, and *Nikkeisangyo Shimbun*, 10/13/93 (10873).

### 10/1/93

In reply to a demand made by Socialist Member of Parliament Tadatosh Akiba, Japan's Science and Technology Agency (STA) releases the most detailed report to date on Japan's plutonium inventory. The disclosure indicates that as of the end of 1992, Japan had a cumulative supply of 8,230 kg of plutonium equivalents. Of this quantity, 3,714 kg were in use and 2,900 kg were at overseas reprocessing plants. As of 3/93, there were 1,630 kg of plutonium in Japan, including the 1,060 kg that arrived from France aboard the Akatsuki-Maru in 1/93.

*Atoms In Japan*, 10/93, pp. 4-5 (10926). *Naoaki Usui, Nucleonics Week*, 10/14/93, pp. 13-14 (10926).

### 11/9/93

Japan's Atomic Energy Commission (AEC) Chairman Satsuki Eda (who is also Director General of the Science and Technology Agency) presents the AEC's 1993 White Paper on Nuclear Energy, which is then approved by Prime Minister Hosokawa's cabinet. The AEC White Paper endorses Japan's fuel recycling program and gives an update on the progress of projects in spent fuel reprocessing, fast breeder reactor (FBR) development, plutonium transport and measures for dealing with high-level wastes. The paper says that plutonium handling safety, transparency, public support, and public access to information are necessary conditions for promoting a nuclear fuel recycling policy.

*Atoms In Japan*, 11/93, pp. 4-8 (10880).

### 11/18/93

Japan Nuclear Fuel Ltd. delivers its first shipment of enriched uranium from Rokkasho-mura, its first commercial nuclear fuel enrichment plant. The first transfer of 29 tons of enriched uranium is delivered to Japan Nuclear Fuel Conversion Company Limited (JCO) at Tokaimura, Ibarki Prefecture for conversion into uranium dioxide for the Tokyo Electric Power Company and for the Kansai and Chubu utilities. Rokkasho-mura's main attraction is a reprocessing plant with the capacity to produce 5 tonnes of plutonium per year. The Rokkasho-mura complex includes facilities for uranium enrichment, spent fuel reprocessing, and radioactive waste treatment.

*Ben Hills, Sydney Morning Herald*, 11/20/93, p. 8A (10482). *Japan Atomic Industrial Forum*; in *ENS NucNet*, 11/22/93 (10482). *Nucleonics Week*, 12/16/93, p. 16 (10482).

### 11/30/93

Japanese Prime Minister Morihiro Hosokawa's cabinet approves the Japanese Nuclear Safety Commission's (NSC's) 1993 White Paper. The report supports Japan's plans to use plutonium, claiming that the safety of Japan's plutonium burning reactors—the Monju fast breeder reactor, Fugen advanced thermal reactor and Tsuruga-1 boiling water reactor—has been "specifically confirmed." The NSC paper also ex-

plains the safety process regarding projects using plutonium.

Naoaki Usui, *Nucleonics Week*, 12/2/93, pp. 1-2 (10844).

### 12/6/93

Japan's Electric Power Development Company (EPD) says that it has delayed its 606 MW advanced thermal reactor (ATR) project at Oma in Aomori Prefecture by one year because of difficulties in negotiations with local fishermen. Construction is scheduled to begin in 4/96 and the reactor will start operating in March 2003. According to ENS NucNet, construction will begin in 4/97. Japan's government supports the mixed oxide fuel burning ATR as a component in its policy of utilizing fuels containing plutonium for peaceful uses.

*Nikkeisangyo Shimbun*, 12/7/93 (10876). *ENS NucNet*, 12/13/93 (10876).

### 1/94

In order to gain public approval for the use of plutonium, Japan's Science and Technology Agency (STA) considers releasing information regarding the design, safety, operation, and incident reports of Japan Nuclear Fuel Ltd.'s (JNFL's) reprocessing plant at Rokkasho-mura and other plutonium using facilities.

*Nihonkeizai Shimbun*, 1/9/94 (10846).

### 1/19/94

Japan's nine nuclear utilities decide to delay construction of their 660 MW demonstration fast breeder reactor (DFBR) for a few years, thus moving the beginning of construction from the late 1990s to the early 2000s. The utilities' presidents agree to try to begin commercial operation of fast reactors by 2030. It is expected that the first unit will begin operation around 2010 and that construction on the second unit, a 1200 MW unit, will begin around 2015. The presidents also ratify their previous decision to use a "top-entry loop" design, a blend of the tank and loop designs, for the DFBR.

Naoaki Usui, *Nucleonics Week*, 1/27/94, p. 5 (10920). *Nikkeisangyo Shimbun*, 12/10/93 and *Mainichi Shimbun*, 12/17/93 (10920).

## JAPAN WITH ARGENTINA

### 11/93

Argentina's National Commission for Atomic Energy (CNEA) signs an agreement with the Kajima Corporation of Japan, the Argentine University of Cordoba, and the Argentine Nuclear Enterprise for Electric Power Plants (ENACE SA) to conduct resistance tests for 30 days on the Atucha-2 reactor building.

*Noticias Argentina (Buenos Aires)*, 11/2/93; in *JPRS-TND-93-036*, 11/17/93, p. 16 (10260).

## JAPAN WITH BELARUS

### 11/93

Japan and Belarus sign a preliminary agreement to dismantle strategic nuclear missiles in a \$100 million Japanese-funded program. Japan will destroy the missiles and propellant, and Belarus will dismantle the warheads.

*Defense News*, 11/15/93, p. 4 (10370).

## JAPAN WITH FRANCE

### 1980

Japanese utilities sign contracts with Eurodif and Cogema of France for the supply of a total of 18,000,000 SWU in enrichment services over a 30-year span.

*Atoms In Japan*, 11/93, pp. 4-8 (10880).

### 10/4/93-10/6/93

High level nuclear officials from France and Japan meet in France as part of an informal effort to assist "coordination in nuclear policy" between the two countries. The group, called N20, issues a joint statement supporting the reprocessing of spent fuel and "plutonium recycling." Discussions cover plutonium utilization, fast reactor development, mixed oxide fuel technology development, the management of radioactive waste and possible future cooperation between Japan and France. At this third meeting of the N20, the French side is led by EDF Deputy General Director R. Carle and the Japanese group is headed by JAIF Vice-Chairman Hiroshi Murata.

*Nucleonics Week*, 10/14/93, pp. 15-16 (10842). *Atoms in Japan*, 10/93, pp. 21-23 (10842).

## JAPAN WITH GERMANY

### 4/91-12/93

Toshiba, Hitachi and Mitsubishi Heavy Industries of Japan have been involved with Siemens of Germany in a joint qualification program for the chemical decontamination process of nuclear power plants. Five boiling water reactors in Japan have been decontaminated under the program. The commercial arrangements Siemens has in Japan call for Siemens personnel to direct the decontamination activities, while the work is carried out by Japan's Ebara Industrial Cleaning.

Mark Hibbs, *Nucleonics Week*, 12/23/93, pp. 5-6 (10843).

### 10/93

The Japan Atomic Energy Research Institute (JAERI) schedules the first oscillation for its Superconducting Accelerator for Research of Light Emission at Tokai (SCARLET), a free-electron laser (FEL), for which Germany's Siemens supplied Japan with a super conducting accelerator. The oscillation is to take place by the end of 1993. According to Free Electron Laboratory director Yasuo Suzuki, FEL could possibly be used for the atomic vapor laser isotope separation (ALVIS) process for enriching uranium.

*Atoms In Japan*, 10/93, pp. 4-8 (10878).

## JAPAN WITH INDIA

### 1/94

Japan urges India to sign the NPT during a second round of bilateral talks on nuclear nonproliferation. Japan makes the request in view of its guidelines for granting development assistance, which require that, "the recipient nation's military expenditures and development, production, import and export of weapons and missiles," be considered.

*UPI*, 1/17/94; *Executive News Service*, 1/17/94 (10515).

**JAPAN WITH IRAN**

**9/93**

A U.S. House of Representatives Subcommittee investigation documents that over 230 companies from the U.S., Japan, Germany, the U.K., France, and Italy have sold materials and equipment useful in the production of weapons of mass destruction to Iran. These transactions were made with the approval of their government export-control officials, according to Kenneth R. Timmerman.

*Kenneth R. Timmerman, New York Times, 10/25/93, p. A15 (10414).*

**JAPAN WITH MULTI-COUNTRY GROUP**

**10/1/93**

Japan's Science and Technology Agency's (STA's) most detailed report to date on Japan's plutonium inventory reveals that as of the end of 1992, Japan had a cumulative supply of 8,230 kg of plutonium equivalents. Of this quantity, 4,820 kg were produced from overseas commission reprocessing, 2,925 kg were produced from domestic reprocessing, and 485 kg were purchased from abroad. Of the 4,820 kg produced from overseas reprocessing, 1,560 kg were recovered by British Nuclear Fuels Ltd. (BNFL) and 3,260 kg were recovered by COGEMA of France. Of the 485 kg that Japan imported from abroad, 320 kg came from the U.K., 100 kg from the U.S., 60 kg from Germany, and 5 kg from France.

*Atoms In Japan, 10/93, pp. 4-5 (10926).*

**JAPAN WITH NORTH KOREA**

**1980s**

Japan is a possible source of the DPRK's dual-use nuclear equipment, since 22% of the \$350-million in Japanese exports to North Korea involve "machinery."

*Mark Hibbs, Nucleonics Week, 1/6/94, pp. 8-9 (10783).*

**10/31/93**

The Japanese daily Tokyo Shimbun reports that Japan supports continuing dialogue rather than imposing sanctions in order to

resolve the North Korean nuclear issue. The newspaper quotes Japanese Foreign Ministry sources as citing China's and Russia's cautious views on placing sanctions on North Korea as one reason for the turnaround in Japan's stance.

*Yonhap (Seoul), 10/31/93; in JPRS-TND-93-036, 11/17/93, pp. 37-38 (10899).*

**11/26/93**

A North Korean Foreign Ministry spokesperson warns Japan and South Korea against the development of nuclear weapons and accuses them of using the North Korean nuclear issue as a means to become nuclear weapon states. As proof that Japan is intent on building nuclear weapons, the spokesperson cites an 11/19/93 article by the daily Mainichi Shimbun, which refers to a report by the U.S. Defense Department in which a "serious concern over Japan's nuclear armament" is expressed.

*KCNA (Pyongyang), 11/26/93; in JPRS-TND-93-038, 12/29/93, pp. 6-7 (10892).*

**12/15/93**

One of Japan's Korea specialists, Katsumi Sato, who is in charge of the Modern Korea Institute in Tokyo, says that Japan, by being a "conduit for cash, equipment and atomic scientists," is indirectly assisting North Korea in the development of its military program and nuclear weapons. Sato said that sympathetic Koreans who live in Japan send at least \$ 1.8 billion a year and items such as computers and semiconductors to North Korea. Sato claims that Japan's government has not only ignored the problem but has assisted the flow of goods and money through "lax customs inspections and favorable tax treatment." A Japanese government official says Sato's estimates are "exaggerated," adding that students from North Korea have been trained in nuclear science in Japan, but said that neither these scientists nor the components and money from Japan have been shown to have been used in North Korea for developing nuclear weapons.

*Teresa Watanabe, Los Angeles Times, 12/16/93, p. A6 (10670).*

**1/9/94**

Japanese Foreign Minister Tsutomu Hata formally proposes that Japan and North

Korea resume discussions aimed at normalizing relations between the two countries "at an early date." Chinese Foreign Minister Qian Qichen supports the idea. Western sources say that the Japanese and North Korean Embassies in Beijing are engaged in unofficial discussions on normalization between Japan and the DPRK. The same sources say that official talks could begin in 2/94 or 3/94. Hata says that Japan and China see the improvement in U.S.-DPRK "contacts" as positive.

*Yonhap (Seoul), 1/9/94; in JPRS-TND-94-003, 1/31/94, p. 3 (10860).*

**JAPAN WITH NORTH KOREA, SOUTH KOREA, AND UNITED STATES**

**10/10/93**

South Korean government officials announce that South Korea, the U.S., and Japan have agreed in principle to form a consortium to help North Korea import a light water reactor (LWR), based on the condition that the North makes its nuclear program transparent. This agreement is the result of a series of working-level meetings between the three countries held since the U.S. talks with North Korea on 7/19/93. The consortium apparently "would arrange financing and technical support" to aid North Korea in importing an LWR. However, before any kind of aid can be received by North Korea, the U.S., South Korea, and Japan have asked that the North accept special inspections by the IAEA and mutual inspections with the South. In his speech on Liberation Day, South Korean President Kim Young-sam said that South Korea "is ready to cooperate in North Korea's peaceful use of nuclear energy" once the nuclear issue has been solved.

*Yonhap (Seoul), 10/10/93; in JPRS-TND-93-034, 10/27/93, p. 53 (10606).*

**JAPAN WITH PAKISTAN**

**12/93**

Delegations led by Pakistani Foreign Secretary Shaharyar Khan and Japanese Deputy Foreign Minister Hiroshi Fukuda meet in Tokyo to discuss Pakistan's refusal to join

the NPT. The talks involve the allocation of Pakistan's 29th aid package from Japan which totals \$400 million. While nonproliferation is not mentioned explicitly in the aid package, Shinichi Kitajima, director of the Japanese Foreign Ministry's Development Assistance Charter, says that the Japanese law ensures that "full attention be paid to trends in recipient countries concerning military expenditures and the production of weapons of mass destruction."

*Nucleonics Week*, 12/2/93, p. 17 (10711).

## JAPAN WITH PRC

9/20/93

Japan's Kansai Electric Power Company announces that it has agreed to a "trial purchase contract" to buy uranium oxide, or yellowcake, from China Nuclear Energy Industry Corporation, a subsidiary of China National Nuclear Corporation. The contract calls for the purchase of 250 short tons of yellowcake (192 tons U) between 1994 and 1998. Fifty short tons will be sent annually to conversion plants in Europe and North America over the five year period, and will then be used at the Japanese firm's nuclear plants.

*Kyodo (Tokyo)*, 9/20/93; in *JPRS-TND-93-030*, 9/27/93, p. 63 (10296). *Atoms In Japan*, 9/93, p. 23 (10276).

10/15/93

It is reported that Tokyo Electric Power Company has transferred boiling water reactor (BWR) design information to China. Although China has no current plans for constructing BWRs, it is considering building them in the future. China is interested in the 600 MWe advanced BWR (ABWR), rather than the 1000 MWe ABWR.

*Nikkeisangyo Shimbun*, 10/15/93 (10186).

11/30/93

The Director General of Japan's Science and Technology Agency (STA), Satsuki Eda, and Chinese State Councillor, Song Jian, agree to sign a nuclear safety agreement by 3/94. The agreement will "allow cooperation and an exchange of information on the regulation of nuclear safety at nuclear power plants and experimental reactors, and on the handling of nuclear emergencies." Song is

also the minister of the State Science and Technology Commission.

*Kyodo (Tokyo)*, 11/30/93; in *JPRS-TND-93-001*, 1/6/94, p. 35 (10353). *Japan Atomic Industrial Forum*; in *ENS NucNet*, 12/17/93 (10295).

## JAPAN WITH RUSSIA

10/93

The Russian Navy dumps 900 tons of liquid radioactive waste into the Sea of Japan on 10/17/93. A second dumping is canceled after complaints from Japan and the wider international community. Russia urges Japan and other countries to assist in the construction of an \$8 million plant in the Russian Far East to process the nuclear waste.

*Kyodo (Tokyo)*, 11/5/93; in *JPRS-TND-93-036*, 11/17/93, p. 43 (10343). *Veronika Romanenkova*, *ITAR-TASS (Moscow)*, 10/21/93; in *FBIS-SOV-93-203*, 10/22/93, p. 14 (10550).

10/93

It is reported that officials from the Russian and Japanese foreign ministries will meet on 11/10/93 to discuss Japan's allocation of \$100 million for construction of land-based reservoirs for the burial of radioactive waste.

*Sergey Agafonov*, *Izvestiya (Moscow)*, 10/20/93, p. 3; in *FBIS-SOV-93-202*, 10/21/93, pp. 12-13 (10550).

10/93

Experts from the Japanese Nuclear Forum and Japanese Department for Ecology and Natural Calamities state that Russia's dumping of liquid low-level radioactive waste into the Sea of Japan poses no threat to their country.

*Vyacheslav Bantin*, *ITAR-TASS*, 10/21/93; in *FBIS-SOV-93-203*, 10/23/93, p. 13 (10443).

11/93

Japan and Russia sign an agreement for cooperation in eliminating Russia's nuclear weapons that are subject to dismantlement under international arms reduction agreements.

*Vladimir Suprun*, *ITAR-TASS*, 11/12/93; in *FBIS-SOV-93-218*, 11/15/93, p. 10 (10438).

11/93

Russian Minister of Atomic Energy Viktor Mikhailov suggests that Japan buy \$100 million of Russian uranium to help Russia build a waste disposal facility. Russia has

begun a feasibility study on a \$48.5 million waste processing plant, which it is hoping to finance with foreign aid. Russia says it has no choice but to dump an additional 800 cubic meters of liquid radioactive waste into the sea, and that dumping will have to be carried out at least once every 6 months for the next five years.

*Reuter*, 10/30/93 (10535). *Craig Whitney*, *New York Times*, 10/22/93, p. A4 (10535).

11/93

Russia and Japan discuss possible Japanese participation in the construction of a fast breeder reactor (FBR) in Russia. Private Japanese firms could work with Russia to build three BN-800 FBRs in the South Urals.

*Ernst & Young Report*, 11/9/93 (10285).

12/93

Russian and Japanese officials meet to discuss proposals for cooperation in the area of radioactive waste destruction and disposal. Joint construction of a large storage facility near Tomsk, Russia, is being considered to store uranium and plutonium from dismantled nuclear weapons. Japan's contribution to the projects would not exceed \$6 million.

*Andrey Varlamov*, *ITAR-TASS (Moscow)*, 12/9/93; in *FBIS-SOV-93-236*, 12/10/93, p. 16 (10496).

1/94

Nikolay Shapovalenko, a radiation safety expert with the Russian government, states that Russia accepts Japan's offer of a double-hull tanker ship to hold 10,000 gallons of radioactive waste, but that reprocessing facilities and burial sites will still be needed to resolve the issue permanently.

*Interfax (Moscow)*, 1/11/94; in *FBIS-SOV-94-008*, 1/12/94, p. 43 (10547).

## JAPAN WITH RUSSIA, UNITED STATES, AND EUROPEAN COMMUNITY

1/94

It is reported that an internationally funded plan to prevent the "brain drain" of nuclear scientists out of the former Soviet Union will be implemented "soon." Approximately \$70 million (\$25 million from the U.S., \$28 million from the E.C., and \$17 million from

Japan) will be used to establish a center to employ nuclear scientists and technicians in peace-related jobs.

*Los Angeles Times*, 1/27/94, p. A7 (10459).

## JAPAN WITH UNITED STATES

**1991**

Under the U.S.-Japan nuclear cooperation agreement, the Bush Administration gives Japan permission to reprocess its spent fuel in Europe until its own reprocessing plant at Rokkasho-mura is completed.

*Selig S. Harrison, Washington Post*, 10/31/93; in *Executive News Service*, 10/31/93 (10481).

**9/93**

Japan Atomic Power and Japan's Central Research Institute of the Electrical Power Industry are jointly contributing \$40 million to the U.S. integral fast reactor (IFR) program.

*Nuclear Engineering International*, 9/93, p. 14 (10187).

**9/93**

Tokyo Electric Power Co. (Tepco) grants fuel service contracts to General Electric (G.E.) of the U.S. to provide 1,756 initial core bundles in 1995-96 for its 1,356 MW Kashiwazaki-1 and -2 advanced boiling water reactors (ABWRs), which will become operational in 1996 and 1997, respectively. The ABWRs will use Japan Step 2 fuel, made at Japan Nuclear Fuel Co., which is partly owned by G.E. G.E. will supply Tepco with fuel components from its Wilmington, N.C. facility, and is providing the nuclear steam supply systems for the two ABWRs.

*Wilson Dizard III, Nuclear Fuel*, 9/27/93, pp. 7-8 (10936).

**9/7/93**

Mitsui & Co. of the U.S. applies for a license to export 16,281 kg of 4.95% LEU and natural uranium in the form of UF<sub>6</sub> and UO<sub>2</sub> to Japan for units 1 and 16 of its Fukushima I plant.

*U.S. Nuclear Regulatory Commission Export License Report*, 9/93 (10912).

**9/8/93**

Mitsui & Co. applies for licenses to export 5,562 kg of 4.45% LEU and natural uranium, in the form of UF<sub>6</sub>, to Japan for its Tokai-2 and -14 reactors, and to sell Japan 1,357 kg of 4.95% LEU and natural uranium in the form of UF<sub>6</sub> for Tsuruga-1 and -22.

*U.S. Nuclear Regulatory Commission Export License Report*, 9/93 (10912).

**9/10/93**

Marubeni America Corp. is issued a license to export 24,111 kg of 4.95% LEU, in the form of UF<sub>6</sub> and UO<sub>2</sub>, to Japan for units 4 and 13 of its Fukushima I plant.

*U.S. Nuclear Regulatory Commission Export License Report*, 9/93 (10912).

**10/93**

The Japan Atomic Energy Research Institute (JAERI) schedules the first oscillation of its Superconducting Accelerator for Research of Light Emission at Tokai (SCARLET), a free-electron laser (FEL) for which the U.S. supplied key components. The oscillation is to take place by the end of 1993. According to Free Electron Laser Laboratory director Yasuo Suzuki, FEL could possibly be used for the atomic vapor laser isotope separation (ALVIS) process for enriching uranium. The U.S. firm Spectra Technology Inc. supplied an undulator, and Micro Technology Co., also of the U.S., supplied an optical resonator, both key components for the FEL.

*Atoms In Japan*, 10/93, pp. 10-12 (10878).

**10/1/93**

Mitsui & Co. applies for a license to export 27,453 kg of 4.45% LEU to Japan for its Tokai-2 and -14 reactors, and for a license to sell 9,918 kg of 4.95% LEU to Japan for Tsuruga-1 and -2.

*U.S. Nuclear Regulatory Commission Export License Report*, 10/93 (10913).

**10/4/93**

Marubeni America Corp. applies for a license to export 32,992 kg of 4.45% LEU in the form of UF<sub>6</sub> to Japan for units 4 and 6 of its Fukushima II plant.

*U.S. Nuclear Regulatory Commission Export License Report*, 10/93 (10913).

**10/7/93**

Mitsubishi International of the U.S. applies for a license to export 0.00806 kg of 93% HEU to Japan for its Takahama plant.

*U.S. Nuclear Regulatory Commission Export License Report*, 10/93 (10913).

**10/19/93**

UCAR Carbon Co. of the U.S. applies for a license to sell 50,000 kg of graphite blocks to Japan, increasing the quantity of material allowed by a previous license.

*U.S. Nuclear Regulatory Commission Export License Report*, 10/93 (10913).

**10/22/93**

Mitsui & Co. is issued a license to export 28,865 kg of 4.45% LEU and natural uranium in the form of UO<sub>2</sub>, to Japan for units 6 and 12 of its Fukushima I plant.

*U.S. Nuclear Regulatory Commission Export License Report*, 10/93 (10913).

**10/28/93**

Mitsui & Co. is issued a license to export 164,682 kg of 4.95% LEU and natural uranium, in the form of oxide, to Japan for the initial core at its Kashiwazaki Kariwa-6 reactor.

*U.S. Nuclear Regulatory Commission Export License Report*, 10/93 (10913).

**11/9/93**

A White Paper issued by Japan's Atomic Energy Commission says that at present Japanese electric utilities acquire 3,000,000 SWU/year from uranium enrichment services, and by 2000 will obtain 4,000,000 SWU/year from the U.S. The report predicts that Japan will need 6,000,000 SWU/year of uranium enrichment services by 2000 and 8,000,000 SWU/year by 2010.

*Atoms In Japan*, 11/93, pp. 4-8 (10880).

**11/9/93**

Mitsubishi International applies for a license to export 22,397 kg of 4.05% LEU in the form of UF<sub>6</sub> to Japan for its Takahama-2 and -19 reactors.

*U.S. Nuclear Regulatory Commission Export License Report*, 11/93 (10914).

**11/15/93**

Edlow International of the U.S. applies for a license to export 10,175 kg of 4.05% LEU in the form of UF6 to Japan for its Mihama-2 and -20 reactors. Marubeni America Corp. applies for a license to export 36,801 kg of 4.45% LEU in the form of UF6 and UO2 to Japan for units 2 and 9 of its Fukushima II plant.

*U.S. Nuclear Regulatory Commission Export License Report, 11/93 (10914).*

**11/23/93**

Edlow International is issued a license to export 9,645 kg of 4.15% LEU in the form of UF6 to Japan for its Ikata-1 and -16 reactors. Mitsubishi International is issued a license to export 2,326 kg of 4.15% LEU in the form of UF6 to Japan for Ikata-1 and -16. Mitsui & Co. is issued a license to export 5,562 kg of 4.45% LEU and natural uranium in the form of UF6 to Japan for its Tokai-2 and -14 reactors. Mitsui & Co. is issued a license to export 1,357 kg of 4.95% LEU and natural uranium in the form of UF6 to Japan for its Tsuruga-1 and -22 reactors. Mitsui & Co. is issued a license to export 16,281 kg of 4.95% LEU and natural uranium in the form of UF6 and UO2 to Japan for units 1 and 16 of its Fukushima I plant.

*U.S. Nuclear Regulatory Commission Export License Report, 11/93 (10914).*

**11/30/93**

Mitsubishi International is issued a license to export 0.00806 kg of 93% HEU to Japan for the fission chambers at its Takahama plant.

*U.S. Nuclear Regulatory Commission Export License Report, 11/93 (10914).*

**12/1/93**

Mitsubishi International applies for a license to export 12,423 kg of 4.15% LEU in the form of UF6 to Japan for its Sendai-2 and -11 reactors. Mitsui & Co. applies for a license to export 6,305 kg of 4.95% LEU in the form of UF6 to Japan for its Hamaoka-1 reactor.

*U.S. Nuclear Regulatory Commission Export License Report, 12/93 (10915).*

**12/8/93**

The local government in Tsuruga accepts

Japan Atomic Power Co.'s (JAPCO's) plans to build Tsuruga-3 and -4, both to be 1,420 MW "Advanced PWRs." Mitsubishi Heavy Industries Co. is expected to be the main contractor, with Westinghouse of the U.S. as a subcontractor.

*Nikkeisangyo Shimbun, 12/9/93 and Nihonkeizai Shimbun, 12/9/93 (10875). Naoaki Usui and Ann MacLachlan, Nucleonics Week, 12/9/93, p. 14 (10875).*

**12/13/93**

Japan's Chubu Electric Power Co. submits an application to the local government and seven fishermen's unions to construct the Hamaoka-5 reactor, a 1,350 MW advanced boiling water reactor (ABWR) designed by Hitachi and Toshiba of Japan and General Electric (G.E.) of the U.S. The schedule calls for construction of the ABWR to begin in 1998 and for commercial operation to start in 2003. The Japanese newspaper Nikkeisangyo Shimbun reports that it is expected that the contractor for the ABWR will be either Toshiba, Hitachi, or G.E.

*Philip Sheppard, ENS NucNet, 12/14/93, p. A (10872). Nikkeisangyo Shimbun, 12/14/93 (10872).*

**12/16/93**

Edlow International applies for a license to export 6,938 kg of 4.15% LEU in the form of UF6 to Japan for its Sendai-2 and -11 reactors.

*U.S. Nuclear Regulatory Commission Export License Report, 12/93 (10915).*

**12/21/93**

Marubeni America Corp. is issued a license to export 32,992 kg of 4.45% LEU in the form of UF6 to Japan for units 4 and 6 of its Fukushima II plant. Mitsui & Co. is issued a license to export 27,453 kg of 4.45% LEU and natural uranium in the form of UO2 to Japan for its Tokai-2 and -14 reactors. Mitsui & Co. is issued a license to export 9,918 kg of 4.95% LEU and natural uranium in the form of UO2 to Japan for its Tsuruga-1 and -22 reactors.

*U.S. Nuclear Regulatory Commission Export License Report, 12/93 (10915).*

**1/11/94**

Nissho-Iwai of the U.S. applies to extend the expiration date on two previous contracts to sell Japan 45.90% HEU.

*U.S. Nuclear Regulatory Commission Export License*

*Report, 1/94 (10916).*

**1/21/94**

Edlow International is issued a license to export 10,175 kg of 4.05% LEU in the form of UF6 to Japan for its Mihama-2 and -20 reactors. Marubeni America Corp. is issued a license to export 36,801 kg of 4.45% LEU in the form of UF6 and UO2 to Japan for units 2 and 9 of its Fukushima II plant. Mitsubishi International is issued a license to export 22,397 kg of 4.05% LEU in the form of UF6 to Japan for its Takahama-2 and -19 reactors.

*U.S. Nuclear Regulatory Commission Export License Report, 1/94 (10916).*

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## LIBYA

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### INTERNAL DEVELOPMENTS

**12/26/93**

A report by the National Broadcasting Corp. (NBC) of the U.S. says that Libya is one of six countries striving to develop nuclear weapons. The NBC report also names Algeria, Iran, Iraq, South Korea, and Taiwan. *CNA (Taipei), 12/27/93; in JPRS-TND-94-003, 1/31/94, p. 6 (10299).*

### LIBYA WITH PRC

**9/28/93**

U.S. Senate Governmental Affairs Committee Chairman John Glen says that China has had "negotiations of one kind or another" to supply weapons of mass destruction to Libya.

*Reuter, 9/28/93; in Executive News Service, 9/28/93 (10319).*

### LIBYA WITH UKRAINE

**10/93**

Ukraine denies accusations that it has sold nuclear technology to Libya and Pakistan.

*Uniar (Kiev), 10/6/93; in JPRS-TND-93-034, 10/27/93, p. 38 (10198).*

## NORTH KOREA

### INTERNAL DEVELOPMENTS

**8/24/93**

North Korean defector Im Young-sun, a first lieutenant in the North Korean army, reports that a nuclear accident occurred at Yongbyon when the North attempted to move a reactor to a hidden site so that international inspectors would not discover it. Im also claims that scientists and engineers have died from radiation exposure while working on a nuclear bomb.

*U.S.-Korea Review*, 9/93, p. 3 (10181).

**9/3/93**

At the Conference on Disarmament in Geneva, DPRK Permanent Representative to the U.N. Yi Chol expresses North Korea's "full support" for proposals for the immediate initiation of negotiations on a comprehensive nuclear test ban treaty to be concluded by 1995. Yi says North Korea's offer to replace its graphite moderated reactors with light water moderated nuclear reactors expresses his government's interest in resolving the nuclear issue.

*KCNA (Pyongyang)*, 9/3/93; in *JPRS-TND-93-029*, 9/17/93, pp. 14-15 (10323).

**9/6/93**

The CIA suspects that North Korea has dumped liquid plutonium waste on the grounds of its Yongbyon nuclear facility. The liquid plutonium waste is believed to have been stored underground in unsuitable storage tanks which could leak. The CIA believes that North Korea used these containers in an effort to quickly hide the plutonium waste from IAEA inspectors.

*Newsweek*, 9/6/93 (10183).

**9/15/93**

North Korea threatens to reinstate its withdrawal from the NPT if the issue of its non-compliance with IAEA safeguards is referred to the U.N. Security Council.

*Mark Hibbs and Naoaki Usui, Nucleonics Week*, 9/30/93, pp. 1-2 (10229).

*KBS-1 (Seoul)*, 9/21/93; in *FBIS-EAS-93-182*, 9/22/93, p. 17 (10229).

**9/16/93**

North Korean President Kim Il-sung attempts to play down rumors of the DPRK's alleged nuclear weapons program in a meeting with visiting senior Chinese Communist Party official Wang Hanbin. Kim tells Wang that North Korea has "no capability, no technology and no funds to develop nuclear arms."

*Reuter*, 9/16/93; in *Executive News Service*, 9/16/93 (10232).

**10/93**

According to a U.S. official, there are indications that North Korea may complete construction of a 200 MW reactor at Yongbyon around 1995. A 200 MW reactor would enable North Korea to produce enough plutonium for ten warheads each year. North Korea reportedly suspended work on the complex after being pressured by the U.S. and other Western states. The U.S. official also states that a 50 MW reactor at "the complex north of Pyongyang" will be completed in several months. According to two North Korean defectors, there is a secret, underground nuclear complex in the Chagang province.

*Yonhap (Seoul)*, 10/15/93; in *JPRS-TND-93-034*, 10/27/93, pp. 5-6 (10870). *Yonhap (Seoul)*, 10/12/93; in *Kyodo News Service* (10870).

**10/5/93**

North Korean Vice Foreign Minister Song Won-ho tells the U.N. General Assembly that the DPRK "does not have the intention, money or need" to develop nuclear weapons.

*Yonhap (Seoul)*, 10/6/93; in *JPRS-TND-93-034*, 10/27/93, p. 5 (10607).

**10/13/93**

The South Korean Defense Ministry reports that North Korea has successfully tested detonators and that it is now closer to producing nuclear weapons by 1995. The Ministry also states that nuclear triggering devices were tested approximately 70 times between 1983 and 1988. The Ministry adds that the North Koreans were constructing "a facility capable of reprocessing 200 tons of spent fuel a year to produce plutonium."

*International Herald Tribune*, 10/14/93 (10609). *Choson Ilbo (Seoul)*, 10/15/93, p. 3; in *JPRS-TND-93-034*, p. 14 (10950).

**10/16/93**

North Korean Deputy Chairman of the Reunification Policy Committee Kim Yong-sun is quoted as saying, "if the light water reactor (LWR) issue is solved successfully, then [North Korea] will stay in the NPT. If not, then we have no alternative but to develop our own nuclear technology."

*Peter Hayes, Asahi Evening News*, 10/29/93, pp. 1, 3 (10606).

**10/22/93**

A report by North Korea's Korean Central News Agency denies South Korea's claim, made in its recently published "White Paper on 93-94 Defence," that the North is developing nuclear arms, and says that the South is helping to spread false information about the DPRK from both Britain and France.

*KCNA (Pyongyang)*, 10/22/93; in *JPRS-TND-93-035*, 11/10/93, pp. 63-64 (10890).

**11/93**

Spy satellite images of a large North Korean nuclear reactor reveal a potential plutonium production of up to 100 pounds of plutonium annually. According to CIA chief James Woolsey, "North Korea is willing to sell [its nuclear weapons and missiles] to anyone."

*Robert Jastrow and Max Kampelman, Wall Street Journal*, 11/19/93, p. A16 (10293).

**11/93**

It is reported that "the North Korean power reactor due for completion in 1995" may have the capacity to produce up to 316 kg of weapons-grade plutonium per year, enough for 50-60 fission bombs annually if operated without safeguards.

*Peter Hayes, Asahi Evening News*, 11/2/93, p. 1 (10475).

**11/93**

The Uranium Information Centre of Australia reports that North Korea is constructing a 50 MWe nuclear power plant at Yongbyon, and a 200 MWe nuclear power plant at Taechon, both of which are of indigenous design based on the U.K.'s Magnox gas-

cooled reactor, and both of which will use natural uranium fuel and a graphite moderator. In addition, there are indications that North Korea is planning to build three 635 MWe light water reactors.

*UIC Newsletter*, 11/93-12/93, p. 1 (10795).

### 11/93

U.S. Defense Secretary Les Aspin says he believes that North Korea has not unloaded a significant amount of plutonium-rich irradiated fuel from its 30 MWt reactor at Yongbyon since 1989. According to Nuclear Fuel, the U.S. believes this is the case because of the poor quality of the refueling machine used by North Korea. The refueling machine requires three months to remove all the fuel rods; outages of more than several days "would be detected by surveillance," according to a U.S. official. The power reactor, which began operating in 1986, was "shut down for a 100-day outage" in 1989. North Korean officials assert that the reactor, which has not been refueled in seven years, has to be refueled for safety concerns. The U.S., however, claims that there is "no technical deadline" for the refueling of the reactor. Intelligence information suggests that the fuel rods may have been regularly replaced since the 1989 outage. However, a U.S. official says that the DPRK is at an infant stage in the development of fuel fabrication technology and that persistent leakage problems have compromised design integrity at the reactor. U.S. intelligence sources claim the 100-day outage in 1989 may have provided the DPRK with an opportunity to remove all the irradiated fuel, from which up to 15 kg of plutonium could have been recovered. This amount would be sufficient for one or two bombs. U.S. agencies further believe that the fuel irradiated since the 1989 outage could have provided enough weapons-grade plutonium for approximately four to five nuclear devices. This assumes operation at full power (30 MW) and a capacity factor of 65% to 70%.

Mark Hibbs, Nuclear Fuel, 12/20/93, pp. 6-7 (10696).

### 12/8/93

According to research published by ROK Technological Institute for Atomic Safety Director Yim Yong-kyu and presented at a

workshop on "North Korea's Science and Technology and Prospects for North-South Exchange in Science and Technology" in Seoul, the North Korean nuclear program presents a danger to South Korea, not only from the prospect of a North Korean nuclear weapon, but from the low level of safety at North Korea's nuclear facilities. North Korea began nuclear research in 1956 when it established the atomic power research center at Yongbyon and atomic power engineering departments at Kim Il-song University and Kim Chaek Engineering University.

*Choson Ilbo* (Seoul), 12/8/93, p. 6; in *JPRS-TND-94-002*, 1/18/94, pp.8-9 (10796).

### 12/12/93

U.S. Defense Secretary Les Aspin states that U.S. intelligence sources believe that North Korea has produced enough plutonium for one or two bombs and there is a "possibility that they might at this moment possess a single nuclear device." He says that U.S. intelligence has determined that North Korea's nuclear reactor is currently operating and that in order to extract more plutonium, the reactor would have to be shut down.

Eric Schmitt, *New York Times*, 12/13/93, p. A3 (10866).  
*Reuter*, 12/13/93 (10866).

### 12/19/93

Hong Kong's Sunday Morning Post reports that North Korea has imported "high explosive testing material and neutron initiator materials such as polonium 210 and tritium." The article, which is based on information from senior European diplomats who have recently returned from Pyongyang, also states that North Korea has a secret nuclear test site on the banks of the Kuryang River, near Pyongyang.

*Reuter*, 12/19/93; in *Executive News Service*, 12/19/93 (10944).

### 12/30/93

According to South Korea's Yonhap news agency, North Korean defector Kim Kil-song, who recently fled to South Korea, says that during his service in North Korea's army in 1979-1988 he was sent to Kaesong to assist in digging a tunnel for the storage of nuclear materials. Kim reports that he heard rumors of uranium mining taking place in

Pyongsan County in the North Hwanghae province.

*Reuter*, 12/30/93; in *Executive News Service*, 12/30/93 (10480).  
*Yonhap* (Seoul), 12/30/93; in *JPRS-TND-94-003*, 1/31/94, p. 5 (10793).

### 1/94

U.S. intelligence agencies are divided as to whether or not the DPRK has completed the construction of a nuclear bomb. Based on a recent U.S. National Intelligence Estimate, one report claims that North Korea has already built one or two nuclear devices. However, a White House official claims that the CIA and the Defense Intelligence Agency (DIA) are "protecting themselves by openly suggesting that North Korea has already built a bomb" after failing to do so in the case of Iraq. U.S. State Department officials say that there is no concrete evidence to suggest that the DPRK has fully completed a nuclear bomb. A U.S. Department of Defense official states that "North Korea has all the pieces in place" and that "while possession of a bomb [by the DPRK] is clearly a worst case, we are confident they are working on it, and the credibility of the worst case is growing over time." North Korea has had a plutonium production capability since the mid-1980s. Other evidence, such as the more than 70 high-explosive tests, some of which may indicate "development of lenses for use in an implosion device," and the conversion of plutonium nitrate into metal, point toward a North Korean nuclear weapons program.

Mark Hibbs, Nucleonics Week, 1/6/94, pp. 8-9 (10783).

### 1/94

It is reported that in 1992, the DPRK began making the first core of uranium fuel for its second "graphite-moderated reactor" that is currently being built in Yongbyon. Fabrication of the fuel took place at North Korea's second fuel fabrication facility, which has been in operation since 1986. This same facility was used in constructing the second 50 metric ton (MT) uranium core that will be placed in the first 30 MWt reactor at Yongbyon. The first fuel core, which the DPRK claims is still in the 30 MWt reactor, was processed at a pilot fuel fabrication facility that was in operation from 1983-1986. The IAEA briefly inspected the "largely



abandoned" first fuel fabrication plant in 1993. Both cores for the 30 MWt reactor are believed to contain a combined total of 100 MT of uranium. The second fabrication plant can handle both magnesium-zirconium cladding and magnesium-aluminum cladding fuel and has a larger design capacity of 30-50 MT/year compared to the 15 MT/year of the first plant. The second reactor, which the IAEA visited a year ago, is expected to be completed in 1995. A third and larger reactor is scheduled to be built in Taechon by 1996, but construction is in its early stages. North Korea has two mining and uranium processing facilities for U308 production at Pakchon and Pyongsan.

Mark Hibbs, *Nuclear Fuel*, 1/17/94, p. 9 (10871).

#### 1/10/94

A South Korean Unification Board report says that North Korea, in preparation for possible U.N. military sanctions, deployed some 300 anti-aircraft guns around the Yongbyon nuclear complex before it agreed last week that it would open all its declared nuclear sites to IAEA inspection.

*Washington Times*, 1/11/94, p. A11 (10861).

#### 1/21/94

Li Song-jin, a North Korean representative to the U.N., calls for a complete abolition of nuclear arms while addressing an NPT preparatory committee. Li says that a comprehensive test ban treaty would help prevent vertical proliferation but it would not contribute to the elimination of nuclear weapons; therefore, the NPT must be modified in 1995 to achieve this goal. Li concedes that the NPT has helped to limit the spread of nuclear arms to a degree but that the total number of weapons existing is several times greater than before the NPT.

Anthony Goodman, *Reuter*, 1/21/94 (10786).

#### 1/25/94

U.S. CIA Director James Woolsey informs the Senate Intelligence Committee that North Korea may soon shut down the reactor at Yongbyon in order to extract spent fuel and reprocess plutonium to make additional nuclear weapons.

Bill Gertz, *Washington Times*, 1/26/94, p. A11 (10927).

### NORTH KOREA WITH GERMANY

#### 1993

The German corporation Leybold AG sharply tightens its export controls on nuclear-related items, virtually prohibiting the transfer of dual-use technology to North Korea, Israel, Pakistan, Iran, Iraq, and Syria. Leybold checks with German and U.S. authorities and investigates its potential buyers before making a sale, and through use of databases seeks to identify possible third-party front companies that might be attempting to buy items for threshold states.

Linda Rothstein, *Bulletin of the Atomic Scientists*, 11/93, pp. 4-5 (10163).

### NORTH KOREA WITH GERMANY AND SWITZERLAND

#### 1980s

Swiss and German firms, including Degussa AG, Maag AG, Siemens AG, Berthiez SA, and Leybold-Heraeus GmbH, supply North Korea with dual-use nuclear equipment.

Mark Hibbs, *Nucleonics Week*, 1/6/94, pp. 8-9 (10783).

### NORTH KOREA WITH IAEA AND UNITED NATIONS

#### 9/1/93-9/3/93

The IAEA and North Korea hold consultations in Pyongyang on nuclear safeguards inspections, as part of an agreement reached earlier between the U.S. and the DPRK in Geneva. North Korea makes the question of the IAEA's partiality the focus of the talks, and says the inspection issue can be resolved once the partiality issue is adequately addressed. The IAEA delegation proposes that a second round of talks take place in Vienna and says that it would like to resume ad hoc inspections. If the North does not respond to the Agency's request, the IAEA will report the DPRK's failure to implement the nuclear accord to the IAEA Board of Governors and U.N. Security Council next week. *KCNA (Pyongyang)*, 9/8/93; in *JPRS-TND-93-029*, 9/17/93, p. 14 (10182). *KBS-1 (Seoul)*, 9/14/93; in *JPRS-TND-93-030*, 9/27/93, p. 7, (10182). *Yonhap (Seoul)*, 9/8/93; in *JPRS-TND-93-030*, 9/27/93, p. 8 (10234). *Yonhap (Seoul)*, 9/10/93; in *JPRS-TND-93-030*, 9/27/93, pp. 5-6 (10234).

#### 9/10/93

Due to North Korea's failure to respond to the IAEA's proposal to hold a second round of talks, IAEA spokesman David Kyd announces that the IAEA will report the past developments of the DPRK nuclear issue to the U.N. General Assembly and Security Council.

*Yonhap (Seoul)*, 9/8/93; in *JPRS-TND-93-030*, 9/27/93, p. 8 (10234). *Yonhap (Seoul)*, 9/10/93; in *JPRS-TND-93-030*, 9/27/93, pp. 5-6 (10234).

#### 9/15/93

Under pressure to submit to consultations with the IAEA, North Korea "officially proposes" to hold a second round of talks with the Agency. However, North Korea fails to set a date or agenda for the talks, and asks that the negotiations be held in Pyongyang. IAEA spokesman David Kyd, commenting on the proposal contained in a recent letter from North Korean Atomic Energy Minister Chi Hak-gun to IAEA Director General Hans Blix, says that the North does not oppose the resumption of Agency technical visits to check on surveillance equipment, but that it continues "to resist the idea of 'real inspections.'"

*KBS-1 Radio Network (Seoul)*, 9/15/93; in *JPRS-TND-93-030*, 9/27/93, p. 4 (10234). *International Herald Tribune*, 9/17/93 (10234). *Yonhap (Seoul)*, 9/17/93; in *JPRS-TND-93-030*, 9/27/93, p. 5 (10234). *Nihonkeizai Shimbun*, 9/22/93 (10234). Steve Pagani, *Reuter*, 9/23/93; in *Executive News Service*, 9/23/93 (10234).

#### 9/16/93

The IAEA sends a message to North Korea pushing it to accept the second round of talks in Vienna rather than in Pyongyang, stating that the North Korean counter-proposal was insufficient. IAEA Director General Hans Blix offers to hold consultations with Chi Hak-gun concerning inspections during the IAEA General Conference and requests that ad hoc inspections be held from 9/25/93 to 10/9/93.

*KBS-1 Radio Network (Seoul)*, 9/15/93; in *JPRS-TND-93-030*, 9/27/93, p. 4 (10234). *International Herald Tribune*, 9/17/93 (10234). *Yonhap (Seoul)*, 9/17/93; in *JPRS-TND-93-030*, 9/27/93, p. 5 (10234). *Nihonkeizai Shimbun*, 9/22/93 (10234). Steve Pagani, *Reuter*, 9/23/93; in *Executive News Service*, 9/23/93 (10234).

9/23/93

IAEA spokesman David Kyd says that in response to the IAEA's proposal to hold talks "in tandem with" the General Conference, North Korea has only said that it would hold a separate round of talks in Vienna after the Conference.

Steve Pagani, *Reuter*, 9/23/93; in *Executive News Service*, 9/23/93 (10234).

9/25/93

North Korean Atomic Energy Minister Chi Hak-gun informs IAEA Director General Hans Blix in a letter that North Korea is rejecting the IAEA's offer to restart consultations in 10/93, due to efforts to put discussion of North Korea's nuclear program on the agenda of the IAEA General Conference. Diplomatic sources say the General Conference may declare North Korea in noncompliance with its IAEA safeguards obligations on 10/1/93. A draft resolution sponsored by the U.S., Japan and South Korea will urge the DPRK to cooperate with IAEA inspections, but will not refer the North Korean nuclear issue to the U.N. Security Council.

Steve Pagani, *Reuter*, 9/27/93; in *Executive News Service*, 9/27/93 (10229). Steve Pagani, *Reuter*, 9/30/93; in *Executive News Service*, 10/1/93 (10229).

9/27/93-9/30/93

DPRK delegate to the IAEA Li Sung-hyon tells the IAEA General Conference his country rejects the use of "fabricated intelligence information by a third country" as a basis for inspections and claims some IAEA officials "misused the safeguards agreement for opening our military installations under the manipulation of a superpower." Blix tells the IAEA General Conference that the DPRK's "area of noncompliance with the comprehensive safeguards agreement is widening" due to its lack of cooperation in helping the Agency continue its surveillance activities. On 9/28/93, the IAEA General Conference votes 69-1 in favor of including the North Korean dispute on the agenda, with 10 abstentions.

Steve Pagani, *Reuter*, 9/30/93; in *Executive News Service*, 10/1/93 (10229). Mark Hibbs and Naoaki Usui, *Nucleonics Week*, 9/30/93, pp. 1-2 (10229).

10/1/93

The IAEA General Conference passes a resolution urging North Korea to "cooperate immediately with the Agency in the full implementation of the safeguards agreement." The resolution notes the IAEA's "grave concern that the DPRK has failed to discharge its safeguards obligations and has recently widened the area of non-compliance by not accepting scheduled Agency ad hoc and routine inspections as required by its safeguards agreement." The resolution receives 72 votes in favor, 11 abstentions, and negative votes by Libya and the DPRK. China, India and Pakistan are among the states that abstain.

Mark Hibbs, *Nucleonics Week*, 10/7/93, pp. 1, 10-11 (10607). Steve Pagani, *Reuter*, 10/1/93; in *Executive News Service*, 10/1/93. (10607).

10/5/93

North Korean Vice Foreign Minister Song Won-ho tells the U.N. General Assembly that the North Korean nuclear issue can be solved only through direct talks with the U.S. *Yonhap (Seoul)*, 10/6/93; in *JPRS-TND-93-034*, 10/27/93, p. 5 (10607).

10/7/93

Yun Ho-jin, an aide to DPRK Ambassador to Austria Kim Gwang-sop, tells *Nucleonics Week* that the North "will likely reconsider" an earlier "agreement" to permit the IAEA to resume routine monitoring of DPRK sites in response to the IAEA resolution. Yun adds that the DPRK's 6/93 note to the U.S. suspending its withdrawal from the NPT, "is not legally sufficient to balance out our [DPRK] instrument of withdrawal under NPT Article 10. So we [the DPRK] are legally and technically out [of the NPT] and politically in." Yun also says that North Korea has "no immediate plans" for refueling its 5 MW reactor at Yongbyon, which an IAEA official indicated would need to be refuelled soon to avoid safety problems.

Mark Hibbs, *Nucleonics Week*, 10/7/93, pp. 1, 10-11 (10607). Steve Pagani, *Reuter*, 10/1/93; in *Executive News Service*, 10/1/93 (10607).

10/12/93

North Korean Atomic Energy Industry Minister Choi Hak-gun announces that the DPRK will not negotiate with the IAEA concerning the nuclear issue, and accuses the

Agency of forging a letter by U.N. Secretary General Boutros Boutros-Ghali to try to force North Korea to open its sites to inspection. In a statement carried by Korean Central News Agency (KCNA), Chi says "The IAEA has lost its qualification and face to have further negotiation with the DPRK (North Korea) as it even staged the drama of forging a 'letter' at the moment when the scope of its partiality concerning the 'nuclear problem' of the DPRK was being further expanded." The statement adds that "the 'nuclear problem' of the DPRK can be solved only through DPRK-U.S. talk." The letter to which North Korea is referring is a statement which was read to the 37th IAEA General Conference by the representative to the U.N. Secretary-General on 9/27/93. The U.N. rejects North Korea's allegations as "nonsense," and a U.N. spokesperson says that "the [U.N.] statement was legitimate and the only thing wrong with it was that it refers to North Korea by that name, instead of using the country's official name, the Democratic People's Republic of Korea."

Roger Crabb, *Reuter*, 10/12/93; in *Executive News Service*, 10/12/93 (10898). *Reuter*, 10/12/93; in *Executive News Service*, 10/12/93, (10898). Jan Krčmar, *Reuter*, 10/12/93; in *Executive News Service*, 10/12/93 (10898). *International Herald Tribune*, 10/13/93 (10896). Michael Breen, *Washington Times*, 10/13/93, p. A11 (10896). *Reuter*, 10/11/93; in *Executive News Service*, 10/11/93 (10896). *Yonhap (Seoul)*, 10/13/93; in *JPRS-TND-93-034*, 10/27/93, p. 6 (10896). *Yonhap (Seoul)*, 10/18/93; in *JPRS-TND-93-035*, 11/10/93, p. 14 (10896).

10/12/93

IAEA spokesman David Kyd says that the IAEA will not agree to any more limited inspections in North Korea and that the validity of the DPRK safeguards information collected in the past by the IAEA was "steadily deteriorating." IAEA officials state that current monitoring equipment in North Korea is expected to run out of batteries and film in 11/93 and that North Korea has prevented inspectors from conducting maintenance inspections.

*International Herald Tribune*, 10/14/93 (10609). David Sanger, *New York Times*, 10/15/93, p. A7 (10781). Cha Man-sun, *KBS-1 (Seoul)*, 10/14/93; in *JPRS-TND-93-034*, 10/27/93, p. 7 (10781). Jon B. Wolfsthal, *Arms Control Today*, 11/93, p. 21 (10477).

**10/13/93**

Officials announce that the U.S. and South Korea are likely to refer the North Korean nuclear issue to the U.N. Security Council by the end of the month. The announcement follows a statement on 10/12/93 by North Korean Minister for Atomic Energy Chi Hak-gun that the North will discontinue talks with the IAEA and only continue discussions with the U.S. regarding the inspection issue.

*International Herald Tribune*, 10/14/93 (10609).

**10/17/93-10/19/93**

While attending an international nuclear energy symposium in South Korea, IAEA Director General Hans Blix says that since the DPRK continues to delay IAEA access to check monitoring equipment, any assurance that North Korea is not diverting nuclear materials to weapons purposes is becoming less credible. "In the spring, our main concern was about the possible existence of undeclared plutonium and non-acceptance of special inspections, but today increasingly the concern is that the declared facilities and materials could also be diverted from peaceful purposes," Blix says. While the IAEA had submitted status reports on the North Korean nuclear issue to the U.N. Security Council in 9/93 and in early 10/93, Blix denies reports in the South Korean press that the Agency would push for sanctions. The IAEA "is not in the position to suggest or recommend to the Security Council any sanctions against North Korea. It can simply report to the council North Korea's non-compliance with the safeguards agreement, after which point it is completely up [to] the council to decide what action to take," Blix says. During his visit to South Korea, Blix meets with South Korean President Kim Young-sam to discuss the DPRK nuclear issue. Although no details are disclosed, South Korean officials say that Blix indicated the time remaining for the resolutions of the nuclear issue is "critical."

*Korea Herald*, 10/20/93 (10610). *International Herald Tribune*, 10/20/93 (10610). *Asahi Evening News*, 10/19/93 (10610). *Yonhap (Seoul)*, 10/18/93; in *JPRS-TND-93-035*, 11/10/93, p.14 (10610).

**Mid-10/93**

North Korean officials tell researcher Peter Hayes that they are willing to "allow routine safeguards to be implemented" at sections of the Yongbyon nuclear complex. Hayes says that North Koreans believe that "their rigidity over the nuclear issue was beginning to produce results."

*John J. Fialka*, *Wall Street Journal*, 10/25/93, p. A9 (10780).

**10/28/93**

North Korea informs the IAEA that it will not allow ad hoc inspections to take place, but that it will allow inspectors to carry out a technical visit in order to change batteries and film in cameras so as to maintain the monitoring equipment at its facilities.

*AFP (Paris)*, 11/3/93; in *JPRS-TND-93-036*, 11/17/93, p. 40 (10895). *Hanguk Ilbo (Seoul)*, 11/1/93, p. 2; in *JPRS-TND-93-036*, 11/17/93, pp. 39-40 (10895).

**10/29/93**

The IAEA announces that North Korea will allow inspectors to conduct routine maintenance of surveillance equipment but that Pyongyang continues to block more thorough inspections of suspected nuclear facilities. Batteries and film supplies will soon run out on surveillance cameras in North Korea because the DPRK has refused to allow IAEA maintenance of the equipment since the summer of 1993. North Korea notifies the IAEA that it will not permit ad hoc or routine inspections. An official says that a recent letter to the IAEA from North Korea protests the scheduled 11/1/93 annual report by IAEA Director General Hans Blix to the U.N., which is expected to highlight North Korea's lack of cooperation in verifying its adherence to the NPT. Speculating that the U.N. Security Council may impose sanctions against it, North Korea warns that inspections under such circumstances are impossible.

*Yonhap (Seoul)*, 10/29/93; in *JPRS-TND-93-035*, 11/10/93, p. 14 (10864). *Tim Weiner*, *New York Times*, 10/30/93, p. A3 (10782).

**11/1/93**

IAEA Director General Hans Blix tells the U.N. General Assembly that a country cannot "pick and choose which aspects of inspection programs it would permit to go ahead." Blix also informs the U.N. General

Assembly that "it remained possible that [North Korea] was trying to build a nuclear bomb."

*AFP (Paris)*, 11/3/93; in *JPRS-TND-93-036*, 11/17/93, p. 40 (10895).

**11/1/93**

The U.N. General Assembly passes a nine-point resolution which urges North Korea "to cooperate immediately with the Agency [IAEA] in the full implementation of the safeguards agreement." The resolution passes with 140 in favor, North Korea voting against, and with nine abstentions including China, Cuba, and Vietnam. Before the resolution is voted on, North Korean Ambassador Pak Kil-yon attempts to revise item No. 9 of the resolution: "expressing its grave concern that the DPRK has failed to discharge its safeguards obligations and has recently widened the area of non-compliance"; and item No. 7: "commends the Director General and the Secretariat of the Agency for their impartial efforts to implement the safeguards agreement still in force between the Agency and the DPRK and urges the DPRK to cooperate immediately with the Agency in the full implementation of the safeguards agreement," but the attempt is rejected by more than 100 countries.

*Kyodo (Tokyo)*, 11/2/93; in *JPRS-TND-93-036*, 11/17/93, pp. 35-36 (10888). *Korea Times (Seoul)*, 11/3/93, p. 4; in *JPRS-TND-93-036*, 11/17/93, p. 38 (10888). *KBS-1 Radio Network (Seoul)*, 10/30/93; in *JPRS-TND-93-036*, 11/17/93, p. 38 (10888). *Hong Sung-wan*, *Yonhap (Seoul)*, 11/2/93; in *JPRS-TND-93-036*, 11/17/93, pp. 13-14 (10888).

**11/2/93**

An IAEA spokesperson says that the Agency will not be sending an inspection team to North Korea following North Korea's refusal to permit full-scope inspections, and that the North Korean proposal "is inappropriate."

*AFP (Paris)*, 11/3/93; in *JPRS-TND-93-036*, 11/17/93, p. 40 (10895). *Hanguk Ilbo (Seoul)*, 11/1/93, p. 2; in *JPRS-TND-93-036*, 11/17/93, pp. 39-40 (10895).

**11/24/93**

The IAEA sends a message to North Korea urging it to accept an overall inspection of its nuclear facilities.

*KBS-1 (Seoul)*, 12/1/93; in *JPRS-TND-94-001*, 1/6/94, p. 4 (10798).

**12/1/93**

North Korea's first Deputy Minister of Foreign Affairs, Kang Sok-ju, sends IAEA Director General Hans Blix a message offering to grant permission for IAEA inspectors to go to North Korea in order to install new batteries and film in monitoring cameras. Kang adds that North Korea "already froze the movement of nuclear material" and that "the inspection cameras and seals of the IAEA remain on the nuclear facilities" in North Korea. An IAEA official says that there is no alternative now but to turn the North Korean issue over to the U.N. Security Council at the end of 1993. The IAEA may declare North Korea in violation of its safeguards agreement if North Korea does not allow the inspectors access to suspect sites.

David E. Sanger, *New York Times*, 12/3/93, p. A6 (10669). *KBS-1 (Seoul)*, 12/1/93; in *JPRS-TND-94-001*, 1/6/94, p. 4 (10798).

**12/2/93-12/3/93**

During a meeting of the IAEA Board of Governors IAEA Director General Hans Blix says that due to North Korea's refusal to allow IAEA inspections, the IAEA cannot "provide any meaningful assurance of peaceful use of the DPRK's nuclear installations and material." According to IAEA officials, Blix, under pressure from Japan, the U.S. and South Korea, has deferred formally declaring that the Agency "can no longer track nuclear material in North Korea."

Mark Hibbs, *Nucleonics Week*, 12/23/93, pp. 2-3 (10518). David E. Sanger, *New York Times*, 12/3/93, p. A6 (10669).

**12/3/93**

Following a report by IAEA Director General Hans Blix, the IAEA Board of Governors announces that it agrees on "the need for urgent action" to resolve the problems associated with North Korea's nuclear program. In the chairman's summary, the Board expresses its concern over North Korea's noncompliance with its safeguards responsibilities and urges the DPRK to allow IAEA inspection. U.S. governor to the IAEA Nelson Sievering states that unless North Korea accepts IAEA inspections of its nuclear facilities, there would not be a third

round of U.S.-North Korean negotiations and that the matter would be taken up by the U.N. Security Council. Yun Ho-chin, North Korea's ambassador to Vienna, says that the nuclear issue can be solved automatically if the U.S. agrees with North Korea on a package involving an improvement in bilateral relations. Yun adds that "responsibility in the North Korean nuclear issue rests entirely on the IAEA and the United States."

*Yonhap (Seoul)*, 12/4/93; in *JPRS-TND-94-001*, 1/6/94, p. 39 (10612). *Yonhap (Seoul)*, 12/3/93; in *JPRS-TND-94-001*, 1/6/94, pp. 38-39, (10612). *KCNA (Pyongyang)*, 12/9/93; in *JPRS-TND-94-001*, 1/6/94, p. 44 (10612).

**12/3/93**

The DPRK offers the IAEA unlimited access to five of the DPRK's seven declared nuclear facilities and limited access to the other two: a 30 MW gas-cooled reactor and a reprocessing facility in order to replace the film and batteries in surveillance cameras. The cameras at Yongbyon are already out of film. The IAEA rejects the DPRK's offer for limited inspections.

Mark Hibbs, *Nucleonics Week*, 12/23/93, pp. 2-3 (10518).

**12/6/93**

Both U.S. President Bill Clinton and the IAEA announce that North Korea's offer to allow the IAEA access to some of its nuclear sites is inadequate and unacceptable. U.N. and U.S. officials state that the North Korean proposal restricts access to two of the key nuclear-related sites. IAEA spokesman David Kyd says that "there must be unrestricted access to all declared sites" and that "restrictions on the two facilities are not negotiable." The last full inspection of the declared North Korean nuclear facilities was carried out by the IAEA in 1/93. During visits in 5/93 and 8/93 inspectors were limited to exchanging film and batteries in surveillance equipment.

Ruth Marcus and R. Jeffrey Smith, *Washington Post*, 12/7/93, p. A19 (10611). Martin Sieff, *Washington Times*, 12/7/93, p. A10 (10884).

**12/8/93**

U.N. Secretary-General Boutros Boutros-Ghali announces that he will visit North Korea when he goes to South Korea and Japan at the end of 12/93. The North Korean

nuclear issue will be on the agenda, although Boutros-Ghali does not expect to play a role in the resolution of the crisis. The U.S. response to the announcement was cool, and U.S. officials say that Boutros-Ghali's visit to North Korea is not related to U.S. negotiations with North Korea.

*Washington Post*, 12/9/93, p. A36 (10882).

**12/22/93**

North Korea tells the U.S. that it will accept comprehensive inspections on all of its declared nuclear facilities.

*Asahi Shimbun*, 12/27/93 (10671).

**12/23/93**

Unless North Korea permits the IAEA to inspect 40 seals, affixed in 1992, at a reprocessing plant and materials inventories at the Yongbyon complex, the IAEA cannot officially verify that North Korea's nuclear materials have not been modified or moved. Photographic records of activities at the complex are incomplete because surveillance cameras have run out of film. Since the IAEA rejected a DPRK proposal on 12/3/93 to carry out limited inspections at the site, the DPRK, "claiming informally" that its safeguards agreement signed in 1985 has "lapsed," has refused to allow the IAEA to check the seals. IAEA inspectors were allowed to enter the Yongbyon complex during a mid-year inspection. However, the inspection was held at night and the inspectors, with only flashlights for illumination, were unable to verify that the seals were intact. The IAEA has informed the DPRK that it needs to verify the complete physical inventory, reconcile discrepancies, put new film in cameras, count the number of spent fuel rods, and design a method for safeguarding the refueling of the core of a 30 MWt reactor.

Mark Hibbs, *Nucleonics Week*, 12/23/93, pp. 2-3 (10518).

**12/26/93**

According to a South Korean news agency report, an official from South Korea says that North Korea is expected to resume talks with the IAEA on 1/4/94. In the case of agreement between the DPRK and the IAEA on the details of inspections, an IAEA inspection team will go to North Korea around 1/

10/94 at the earliest.

*Asahi Shimbun*, 12/27/93 (10671).

### 12/27/93

U.N. Secretary-General Boutros Boutros-Ghali says that "patience" and negotiation are the keys to resolving the North Korean nuclear issue. Boutros-Ghali also says that he sees the necessary "political will" in all parties concerned to peacefully solve the inspections issue. Boutros-Ghali has recommended that North Korea negotiate with the U.S., the IAEA, and South Korea simultaneously. In reference to a report recently released by the CIA which states that North Korea may already possess one or two nuclear devices, Boutros-Ghali says that he is not a "military expert" and cannot comment on the report's veracity.

Steven Mufson, *Washington Post*, 12/27/93, p. A9 (10886). David Schlesinger, *Reuter*, 12/27/93; in *Executive News Service*, 12/27/93 (10886).

### 12/30/93

U.S. officials say that North Korea has agreed to permit IAEA inspection of its seven declared facilities once the DPRK agrees with the Agency on "the exact inspection procedures." In exchange, the U.S. will cancel Team Spirit after the inspections take place and dialogue with South Korea resumes. U.S. Undersecretary of State for Security Affairs Lynn Davis says the U.S. will begin a third round of talks with the North Koreans once the inspections are underway. North Korean Ambassador at the DPRK mission in New York Ho Jong confirms the news and says that IAEA inspections will be permitted in order to "keep the continuity" of international safeguards. Ho also says that the U.S. and North Korea made "some very substantial progress" during negotiations in 12/93 in New York. However, Ho adds that the IAEA's demand for access to two additional military sites suspected of harboring nuclear weapons development is "totally out of the question." An IAEA official refuses to comment on whether the Agency had accepted the plan, but says that the DPRK's continued "refusal to acknowledge its legal responsibility to allow as much access as the IAEA wants... leaves us feeling uneasy."

Michael Gordon, *New York Times*, 12/31/93, pp. A1, A6 (10954). *Reuter*, 1/1/94; in *Executive News Ser-*

*vice*, 1/1/94 (10900). R. Jeffrey Smith, *Washington Post*, 1/4/94, p. A11 (10900). Steven Greenhouse, *New York Times*, 1/6/94, p. A6 (10943). Warren Strobel and Martin Sieff, *Washington Times*, 1/6/94, p. A13 (10943).

### 1/1/94

A North Korean Foreign Ministry spokesperson is quoted over the Korean Central News Agency as saying that the DPRK and the U.S. agree "to allow inspection needed entirely for guaranteeing the continuity of safeguards, not routine and ad hoc inspections from the legal requirements pursuant to the [NPT] treaty." The IAEA says that the statement comes after the U.S. announced its willingness to halt U.S.-South Korean Team Spirit exercises. In Kim Il-sung's New Year's address, he expresses a positive attitude towards solving the nuclear issue, stating that "since a joint statement has been adopted by [North] Korea and the United States, the nuclear problem on the Korean peninsula can be settled fairly."

R. Jeffrey Smith, *Washington Post*, 1/4/94, p. A11 (10900). *Reuter*, 1/1/94; in *Executive News Service*, 1/1/94 (10900).

### 1/4/94

U.S. officials say they are likely to make the important concession of accepting North Korea's proposal of a complete one-time inspection of its seven declared sites in the hopes that additional inspections can be agreed upon in the future. Although IAEA officials have no comment on the news, they express "fears that the idea of a one-time inspection would set a bad precedent, perhaps encouraging other countries to seek to limit inspections." IAEA spokesperson David Kyd says that, "if conditions of any type are attached to a resumption of inspections in North Korea, then those terms would have to be examined very carefully." U.S. State Department Undersecretary Lynn Davis says that the "agreement in principle" reached between the U.S. and North Korea that will allow IAEA inspections is one of the "interim steps" before the U.S. will agree to a third round of talks with the DPRK. The other step involves North Korea resuming dialogue with the South in exchange for the cancellation of Team Spirit by the U.S. and South Korea. Davis says that the IAEA and DPRK are expected to meet soon to discuss

details of the inspections.

Steven Greenhouse, *New York Times*, 1/5/94, pp. A1, A2 (10900). John J. Fialka, *Wall Street Journal*, 1/6/94, p. A8 (10900).

### 1/10/94

The vice-minister of the Unification Committee of South Korea's Parliament states that the DPRK will allow only one inspection of its 5 MW nuclear reactor and radiochemical lab by the IAEA, which is requesting continual inspections of the seven declared nuclear-related sites in North Korea. The vice-minister also says that the ROK would cancel the Team Spirit exercise, the DPRK would open talks on exchanging special envoys with the ROK, and the U.S. would initiate a third round of U.S.-DPRK talks as soon as the DPRK and the IAEA reach an agreement and IAEA inspectors arrive in Pyongyang.

*Asahi Shimbun*, 1/11/94 (10867).

### 1/10/94

The IAEA gives North Korea a list of safeguards measures that it will require at an upcoming inspection in order to confirm that no nuclear material has been diverted since its 1993 inspections. A week later, North Korea says that "a significant number" of the measures will not be permitted, according to IAEA spokesman David Kyd. Kyd says that the IAEA will not carry out any inspections unless North Korea agrees to meet all of the IAEA's requests.

Douglas Hamilton, *Reuter*, 1/20/94; in *Executive News Service*, 1/20/94 (10947).

### 1/17/94

After a meeting between IAEA Director General Hans Blix and DPRK envoy Yun Ho-jin, an unidentified official says that "it was understood by both sides that the forthcoming inspection will have no legal bearing on North Korea's suspension of its NPT membership." U.S. sources claim that the U.S. State Department is pressuring the IAEA to be flexible in its negotiations with North Korea over inspections. However, IAEA spokesman David Kyd says that Blix has not been under "any pressure" from the U.S. to rapidly reach an agreement with the DPRK on the issue of inspections. Kyd states that the U.S. "understands" that IAEA

inspection rights under the safeguards agreement with the DPRK are “non-negotiable.” Diplomatic sources claim that the IAEA composed a detailed paper covering the safeguards objectives it hopes to accomplish at the seven sites and a “complete written justification” of the IAEA position. The paper makes reference to “periodic inspections” and indirect references to “special inspections.” It also states that regular inspections are the only way to ensure the continuity of safeguards. The IAEA’s most important task is to examine the 40 IAEA seals on nuclear material and reprocessing equipment at the Yongbyon nuclear facility to determine if any nuclear material has been diverted since the last IAEA inspection in early 1993.

Mark Hibbs, *Nucleonics Week*, 1/20/94, pp. 4-5 (10776).

#### NORTH KOREA WITH IRAN

1993

North Korea and some of the former Soviet republics could be a source for Iran to obtain nuclear weapons. According to CIA chief James Woolsey, “North Korea is willing to sell [its nuclear weapons and missiles] to anyone.” Spy satellite images of a large North Korean nuclear reactor reveal a potential plutonium production of up to 100 pounds of plutonium annually.

Robert Jastrow and Max Kampelman, *Wall Street Journal*, 11/19/93, p. A16 (10293).

12/9/93

According to the Korean Central News Agency (KCNA), North Korea and Iran conclude a fifth joint committee meeting centered around increasing economic, scientific, and technological ties. Iranian Defense Minister Mohammad Forouzandeh leads the Iranian delegation. Also in 12/93, Iran’s IRNA news agency reports that in a meeting with Iran’s ambassador to North Korea, North Korean President Kim Il-Sung stresses the necessity for closer ties with Iran.

Reuter, 12/10/93; in *Executive News Service*, 12/10/93 (10509). Reuter, 12/12/93; in *Executive News Service*, 12/13/93 (10509).

#### NORTH KOREA WITH JAPAN

1980s

Little is known about North Korea’s procurement network of dual-use nuclear equipment. Japan is a possible source of the DPRK’s dual-use nuclear equipment, since 22% of the \$350-million in Japanese exports to North Korea involved “machinery.”

Mark Hibbs, *Nucleonics Week*, 1/6/94, pp. 8-9 (10783).

10/31/93

The Japanese daily *Tokyo Shimbun* reports that Japan supports continuing dialogue rather than imposing sanctions in order to resolve the North Korean nuclear issue. The newspaper quotes Japanese Foreign Ministry sources as citing China’s and Russia’s cautious views on placing sanctions on North Korea as one reason for the turnaround in Japan’s stance.

*Yonhap* (Seoul), 10/31/93; in *JPRS-TND-93-036*, 11/17/93, pp. 37-38 (10899).

12/15/93

One of Japan’s Korea specialists, Katsumi Sato, who is in charge of the Modern Korea Institute in Tokyo, says that Japan, by being a “conduit for cash, equipment and atomic scientists,” is indirectly assisting North Korea in the development of its military program and nuclear weapons. Sato said that sympathetic Koreans who live in Japan send at least \$ 1.8 billion a year and items such as computers and semiconductors to North Korea. Sato claims that Japan’s government has not only ignored the problem but has assisted the flow of goods and money through “lax customs inspections and favorable tax treatment.” A Japanese government official says Sato’s estimates are “exaggerated,” adding that students from North Korea have been trained in nuclear science in Japan, but said that neither these scientists nor the components and money from Japan have been shown to have been used in North Korea for developing nuclear weapons.

Teresa Watanabe, *Los Angeles Times*, 12/16/93, p. A6 (10670).

1/9/94

Japanese Foreign Minister Tsutomu Hata formally proposes that Japan and North Korea resume discussions aimed at normal-

izing relations between the two countries “at an early date.” Chinese Foreign Minister Qian Qichen supports the idea. Western sources say that the Japanese and North Korean Embassies in Beijing are engaged in unofficial discussions on normalization between Japan and the DPRK. The same sources say that official talks could begin in 2/94 or 3/94. Hata says that Japan and China see the improvement in U.S.-DPRK “contacts” as positive.

*Yonhap* (Seoul), 1/9/94; in *JPRS-TND-94-003*, 1/31/94, p. 3 (10860).

#### NORTH KOREA WITH JAPAN AND SOUTH KOREA

11/26/93

A North Korean Foreign Ministry spokesperson warns Japan and South Korea against the development of nuclear weapons and accuses them of using the North Korean nuclear issue as a means to become nuclear weapon states. As proof that Japan is intent on building nuclear weapons, the spokesperson cites an 11/19/93 article by the daily *Mainichi Shimbun*, which refers to a report by the U.S. Defense Department in which a “serious concern over Japan’s nuclear armament” is expressed. The spokesperson further cites dailies in the U.S. and the U.K. which have reported that South Korea has managed to stockpile 10 tons of plutonium, saying this proves South Korea is attempting to develop nuclear weapons.

*KCNA* (Pyongyang), 11/26/93; in *JPRS-TND-93-038*, 12/29/93, pp. 6-7 (10892).

#### NORTH KOREA WITH NATO

12/9/93

Defense ministers from the 16 NATO nations (except France) express “serious concern” over North Korea’s nuclear weapons program and call on North Korea to obey the NPT.

*AFP* (Paris), 12/9/93; in *JPRS-TND-94-001*, 1/6/94, pp. 44-45 (10797).

**NORTH KOREA WITH PRC**

**1960s-1993**

Several hundred DPRK experts have been trained in plutonium separation and other nuclear processes in China and the USSR since the 1960s.

Mark Hibbs, *Nucleonics Week*, 1/6/94, pp. 8-9 (10783).

**10/1/93**

China abstains from the vote on an IAEA General Conference resolution that calls on North Korea to "cooperate immediately with the Agency in the full implementation of the safeguards agreement." The resolution, which passes with a vote of 72 to 2 with 11 abstentions, notes the IAEA's "grave concern that the DPRK has failed to discharge its safeguards obligations and has recently widened the area of non-compliance by not accepting scheduled Agency ad hoc and routine inspections as required by its safeguards agreement."

Mark Hibbs, *Nucleonics Week*, 10/7/93, pp. 1, 10-11 (10607). Steve Pagani, *Reuter*, 10/1/93; in *Executive News Service*, 10/1/93 (10607).

**11/9/93**

Chinese Foreign Minister Qian Qichen says dialogue, rather than pressure, is more likely to break the nuclear stalemate in North Korea.

*Reuter*, 11/9/93; in *Executive News Service*, 11/9/93 (10697).

**12/26/93**

Chinese Premier Li Peng says that China opposes the use of sanctions against North Korea.

Steven Mufson, *Washington Post*, 12/27/93, p. A9 (10886). David Schlesinger, *Reuter*, 12/27/93; in *Executive News Service*, 12/27/93 (10886).

**1/15/94**

Following a two-day parliamentary conference in Manila, Chinese lawmakers join legislators from 17 other countries, including the U.S. and Japan, in issuing a joint communique urging North Korea to comply with IAEA safeguards and allow full inspections of its nuclear facilities.

*Reuter*, 1/15/94 (10785).

**NORTH KOREA WITH RUSSIA**

**1960s-1993**

Several hundred DPRK experts have been trained in plutonium separation and other nuclear processes in China and the USSR since the 1960s.

Mark Hibbs, *Nucleonics Week*, 1/6/94, pp. 8-9 (10783).

**1980s**

The USSR is a possible source of the DPRK's dual-use nuclear equipment, since machine tools comprise 30% of the USSR's \$500-million in exports to the DPRK.

Mark Hibbs, *Nucleonics Week*, 1/6/94, pp. 8-9 (10783).

**9/6/93**

The Korean Central News Agency, citing a broadcast made by Radio Number One of South Korea, claims that a rumor that North Korean lumberjacks in the Khabarovsk territory of Russia were smuggling uranium out of the mines is "a groundless, sheer fabrication."

KCNA (Pyongyang), 9/6/93; in *JPRS-TND-93-029*, 9/17/93, p. 18 (10745).

**10/29/93**

It is reported that Russia has implied that it will supply a light water reactor (LWR) to North Korea if the North can find financing and if it fully complies with safeguards under the NPT.

Peter Hayes, *Asahi Evening News*, 10/29/93, pp. 1, 3 (10606).

**11/93**

Moscow's security ministry confirms that Russia expelled North Korean Major General Nam Gae-wok for recruiting Russian missile and space technology experts to work on Pyongyang's nuclear weapons program. First Deputy Security Minister Sergei Stepashin says that Moscow agents thwarted a large-scale plan to bring Russian scientists to North Korea. The North Korean embassy confirms that Nam left Moscow "some time ago" but says that he was not a general and that he had not been trying to recruit Russian experts.

Anne McElvoy and Wolfgang Munchau, *The Times*, 11/17/93 (10267).

**1/94**

A confidential report by the Russian General Staff on North Korea, released by a Japanese periodical, states that Pyongyang has succeeded in building one to two nuclear warheads and several hundred delivery systems, and has accumulated 10-12 kilograms of uranium-235 and 20 kilograms of plutonium-239. The report also states that 160 Russian nuclear experts have worked for the DPRK, and that nine nuclear scientists and 17 highly-qualified missile technology experts are working there currently, adding that Russian experts helped in creating the Nodong-1 missile and in accumulating enriched uranium. The Russian report recommends establishing a regional anti-missile defense system, in which Russia, Japan and the U.S. would participate, and reviewing all technological agreements with North Korea.

Sergey Agafonov, *Izvestiya*, 1/27/94, pp. 1, 4 (10572).

**NORTH KOREA WITH SOUTH KOREA**

**9/1/93**

North Korean spokesman for inter-Korean affairs An Byung-su calls for "urgent talks" with South Korea concerning the long-standing dispute over inspections of nuclear facilities.

Lee Su-wan, *Reuter*, 9/2/93; in *Executive News Service*, 9/3/93 (10235). Lee Su-wan, *Reuter*, 9/7/93; in *Executive News Service*, 9/7/93 (10235).

**9/2/93**

South Korean Prime Minister Hwang In-sung sends a letter to North Korean Prime Minister Kang Song-san, proposing a preliminary meeting on 9/7/93 at the border village of Panmunjom in order to discuss the exchange of special envoys. Hwang also confirms in his letter that three South Korean delegates will meet with North Korean delegates at Panmunjom on 9/10/93, as proposed by the North. However, Hwang warns that if the North is "genuinely interested in solving the nuclear issue and other pending issues between the South and North, no conditions should be attached to the South-North dialogue." Resuming talks with South Korea is a criteria the U.S. demands of North

Korea in exchange for future talks and aid. *Lee Su-wan, Reuter, 9/2/93; in Executive News Service, 9/3/93 (10235). Lee Su-wan, Reuter, 9/7/93; in Executive News Service, 9/7/93 (10235).*

**9/9/93**

North Korea says that it will not attend the talks scheduled for 9/10/93 because South Korea has not met its demand to halt the military exercises with the U.S. North Korea had also failed to appear at a meeting scheduled for 9/8/93 to discuss the procedural matters for the 9/10 meeting.

*Reuter, 9/9/93; in Executive News Service, 9/9/93 (10946). Financial Times, 9/9/93 (10946).*

**10/5/93**

North and South Korean officials meet at Panmunjom to discuss the possibility of exchanging high-level special envoys. Little progress is made. North Korea uses the meeting to renew its demands that South Korea cancel the Team Spirit military exercises and pledge not to seek international support against the DPRK over the nuclear issue. These talks were the first held between North and South Korea since 1/93.

*International Herald Tribune, 10/5/93 (10930). Asahi Shimbun, 10/5/93 (10930). Washington Times, 10/8/93, p. A12 (10930).*

**10/15/93**

North and South Korean officials meet again at Panmunjom to discuss a possible exchange of envoys, but the talks are once again stalled. The chief South Korean negotiator, Song Young-dae, says that the discussions brought the two sides closer to an agreement on the exchange of envoys.

*UPI, 10/15/93; in Executive News Service, 10/15/93 (10931).*

**10/22/93**

An analyst for the North Korean daily *Nodony Sinmun* claims that the nuclear threat on the Korean peninsula lies in nuclear weapons that have been deployed to South Korea and from the "nuclear war exercises" held in South Korea. The analyst notes that in the view of the international community, the only solution to the Korean nuclear issue lies in talks between the DPRK and the U.S., and claims that South Korea is trying to block the talks.

*KCNA (Pyongyang), 10/22/93; in JPRS-TND-93-035, 11/10/93, pp. 63-64 (10890).*

**10/25/93**

North and South Korean officials hold a third meeting at Panmunjon to discuss the possibility of exchanging envoys to discuss the nuclear issue, but no agreement is reached. Another meeting is scheduled for 11/4/93.

*Yonhap (Seoul), 10/25/93; in JPRS-TND-93-035, 11/10/93, p. 11 (10929).*

**11/3/93**

North Korea cancels a meeting scheduled for 11/4/93 with South Korea to discuss exchanging presidential envoys to address the nuclear issue. The DPRK cancellation coincides with high-level discussions between U.S. Secretary of Defense Les Aspin and South Korean Defense Minister Kwon Young-hae to consider a response to North Korea's rejection of inspections. In a statement issued by North Korean Vice Defense Minister Kim Kwang-jin, the DPRK accuses the South of "[bringing] the Korean peninsula to the brink of war" and states that Kwon has "charged us [the DPRK] with...fictitious nuclear development." South Korean officials say North Korea's cancellation of the meeting could have been motivated, in part, by a desire to buy time to consider the outcome of the U.S.-ROK security meetings and as a reaction to the U.N. resolution calling on North Korea to fulfill its NPT obligations.

*Asahi Evening News, 11/4/93 (10478). Reuter, 11/4/93; in Executive News Service, 11/3/93 (10478).*

**1/10/94**

The vice-minister of the Unification Committee of South Korea's Parliament states that the DPRK will allow only one inspection of its 5 MW nuclear reactor and radiochemical lab by the IAEA, which is requesting continual inspections of the seven declared nuclear-related sites in North Korea. The vice-minister also says that the ROK would cancel the Team Spirit exercise, the DPRK would open talks on exchanging special envoys with the ROK, and the U.S. would initiate a third round of U.S.-DPRK talks as soon as the DPRK and the IAEA reach an agreement and IAEA inspectors arrive in Pyongyang.

*Asahi Shimbun, 1/11/94 (10867).*

## **NORTH KOREA WITH SOUTH KOREA, JAPAN, AND UNITED STATES**

**10/10/93**

South Korean government officials announce that South Korea, the U.S., and Japan have agreed in principle to form a consortium to help North Korea import a light water reactor (LWR), based on the condition that the North makes its nuclear program transparent. This agreement is the result of a series of working-level meetings between the three countries held since the U.S. talks with North Korea on 7/19/93. The consortium apparently "would arrange financing and technical support" to aid North Korea in importing an LWR. However, before any kind of aid can be received by North Korea, the U.S., South Korea, and Japan have asked that the North accept special inspections by the IAEA and mutual inspections with the South. In his speech on Liberation Day, South Korean President Kim Young-sam said that South Korea "is ready to cooperate in North Korea's peaceful use of nuclear energy" once the nuclear issue has been solved.

*Yonhap (Seoul), 10/10/93; in JPRS-TND-93-034, 10/27/93, p. 53 (10606).*

## **NORTH KOREA WITH UNITED STATES**

**7/14/93-7/19/93**

Representatives from the U.S. and the DPRK convene in Geneva for a second round of high-level talks in order to discuss solutions to the North Korean nuclear issue. Both the U.S. and the DPRK agree it is desirable that the DPRK obtain light water moderated reactors (LWRs) as replacements for its graphite moderated reactors with the help and support of the U.S. North Korea and the U.S. both agree that "full and impartial application of IAEA safeguards is essential to accomplish a strong international nuclear non-proliferation regime," and stress the importance of the North-South Joint Declaration on the Denuclearization of the Korean Peninsula. North Korea agrees to resume consultations with the IAEA and South Korea as soon as possible. Finally, the U.S. and North Korea agree to hold a third round of



talks within the next two months in order to discuss improving relations between the two countries and any "outstanding matters related to resolving the nuclear issue."

*U.S.-Korea Review*, 9/93, p. 6 (10180).

### 9/15/93

In a meeting between the U.S. and North Korean counsellors in Beijing, the DPRK rejects the conditions that the U.S. has imposed for the continuation of U.S.-DPRK talks: inter-Korean talks and resumption of negotiations with the IAEA. North Korea also threatens to reinstate its withdrawal from the NPT if the issue of its non-compliance with IAEA safeguards is referred to the U.N. Security Council.

Mark Hibbs and Naoki Usui, *Nucleonics Week*, 9/30/93, pp. 1-2 (10229). *KBS-1 (Seoul)*, 9/21/93; in *FBIS-EAS-93-182*, 9/22/93, p. 17 (10229).

### 10/5/93

North Korean Vice Foreign Minister Song Won-ho tells the U.N. General Assembly that the North Korean nuclear issue can be solved only through direct talks with the U.S. *Yonhap (Seoul)*, 10/6/93; in *JPRS-TND-93-034*, 10/27/93, p. 5 (10607).

### 10/9/93-10/12/93

U.S. Representative Gary L. Ackerman, chairperson of the House subcommittee on Asia-Pacific affairs, meets with various North Korean officials, including North Korean leader Kim Il-Sung, to ask that the North "act quickly to dispel suspicions" that it is attempting to build nuclear weapons. Ackerman also meets with North Korean Vice-Premier and Foreign Minister Kim Yong-nam, and Vice Foreign Minister Kang Sok-ju, who is the head of the delegation to bilateral negotiations with the U.S. Ackerman refuses to provide details of his meeting with Kim Il-Sung, saying only that it was "useful and productive" and that the North Korean leaders are "very anxious for a third round of talks with the United States." During Ackerman's visit to North Korea, North Korean officials hint that the IAEA will be allowed to continue technical checks of its monitoring equipment "in order to maintain the continuity of nuclear safeguards despite its doubt about the 'impartiality' of the Agency."

*International Herald Tribune*, 10/13/93 (10896).

Michael Breen, *Washington Times*, 10/13/93, p. A11 (10896). *Reuter*, 10/11/93; in *Executive News Service*, 10/11/93 (10896). *Yonhap (Seoul)*, 10/13/93; in *JPRS-TND-93-034*, 10/27/93, p. 6 (10896). *Yonhap (Seoul)*, 10/18/93; in *JPRS-TND-93-035*, 11/10/93, p. 14 (10896).

### 10/13/93

Officials announce that the U.S. and South Korea are likely to refer the North Korean nuclear issue to the U.N. Security Council by the end of the month. The announcement follows a statement on 10/12/93 by North Korean Minister for Atomic Energy Chi Hak-gun that the North will discontinue talks with the IAEA and only continue discussions with the U.S. regarding the inspection issue.

*International Herald Tribune*, 10/14/93 (10609).

### 10/15/93

U.S. State Department spokesperson Michael McCurry says that the U.S. will push for U.N. sanctions against North Korea if it does not allow IAEA inspections of two suspected sites and that dialogue with the U.S. will be dependent upon the progress the North Koreans make on the inspection issue with the IAEA. McCurry specifies that the U.S. is interested in the IAEA obtaining access to the two sites in order to check the film in the monitoring equipment. McCurry adds that if this does not occur within "a couple of weeks" and "if the IAEA determines that the safeguards have been breached, the United States will feel compelled [to] end its dialogue with North Korea."

*Reuter*, 10/16/93 (10609).

### 10/16/93

According to analyst Peter Hayes, North Korea is adamant about U.S. involvement in arranging for the supply of a light water reactor (LWR) because it would force the collapse of domestic and international trade barriers against the transfer of technology to North Korea. Hayes claims that even if the U.S. were to promise to supply financing or technology for the transfer of an LWR to North Korea, it could do little to guarantee such assistance since U.S. firms do not presently make LWRs in the U.S. North Korean Deputy Chairman of the Reunification Policy Committee Kim Yong-sun is

quoted as saying, "if the light water reactor issue is solved successfully, then [North Korea] will stay in the NPT. If not, then we have no alternative but to develop our own nuclear technology." Russia has implied that it will supply a LWR to North Korea if the North can find financing and if it fully complies with safeguards under the NPT.

Peter Hayes, *Asahi Evening News*, 10/29/93, pp. 1, 3 (10606).

### 10/21/93

During informal talks in New York, the U.S. notifies North Korea that the U.S. and South Korea agree to include political issues such as the improvement of U.S.-DPRK relations as an official item in the next round of high-level U.S.-DPRK negotiations. The U.S. and the ROK maintain that in order for a third round of talks to begin, the DPRK must accept "ordinary" IAEA inspections by the end of 10/93 and that progress must be made in ROK-DPRK efforts to exchange special envoys.

*KBS-1 (Seoul)*, 10/24/93; in *JPRS-TND-93-035*, 11/10/93, p. 61 (10865). Warren Strobel, *Washington Times*, 10/26/93, p. A10 (10865).

### 10/21/93

Diplomatic sources in Washington reveal that North Korean Deputy Ambassador at the North Korean mission to the U.N. Ho Jong and North Korea desk officer of the U.S. State Department C. Kenneth Quinones hold behind-the-scenes negotiations to discuss the resumption of IAEA ad hoc inspections. The issue of suspending high-level U.S.-North Korean talks if the continuity of safeguards in North Korea is broken, due to film and batteries in surveillance equipment running out, has also been discussed during a series of such behind-the-scenes contacts. When questioned about reports of these contacts, Ho denies that he participated in a meeting with Quinones on 10/19/93, and refuses to make any more comments. Another meeting is reported to have taken place in which Ho openly acknowledged his government's willingness to negotiate on the nuclear issue, including the special inspection issue, in return for the U.S.'s establishment of diplomatic relations with the DPRK. North Korea is reported to have made a preliminary agreement to al-

low IAEA ad hoc inspections by late 10/93 if the inspection of certain facilities could be delayed. The U.S. and South Korea may consider suspending Team Spirit exercises at the next Security Consultative Meeting (SCM) in South Korea on 11/3/93-11/4/93 if the North "shows a positive attitude" at the upcoming inter-Korean meeting on 10/28/93 and if it accepts IAEA inspections before the end of 10/93. Regarding North Korea's requests for the financing of light water reactors to replace its current reactors, diplomatic sources say that it would be "difficult for the U.S. Government to comply because the aid would amount to billions of dollars and the replacement would take no less than 10 years." Furthermore, the same sources "dismissed as premature" reports that the U.S. would establish diplomatic relations with North Korea if it accepted special inspections.

*Yonhap (Seoul), 10/22/93; in JPRS-TND-93-035, 11/10/93, pp. 60-61 (10608). KBS-1 Radio Network (Seoul), 10/21/93; in JPRS-TND-93-035, 11/10/93, pp. 16-17 (10608). Pak Tu-sik, Choson Ilbo (Seoul), 10/23/93, p. 1; in JPRS-TND-93-035, 11/10/93, p. 17 (10608). Yonhap (Seoul), 10/25/93; in JPRS-TND-93-035, 11/10/93, p. 60 (10608).*

#### 10/22/93

An analyst for the North Korean daily Nodony Sinmun claims that the nuclear threat on the Korean peninsula lies in nuclear weapons that have been deployed to South Korea and from the "nuclear war exercises" held in South Korea. The analyst notes that in the view of the international community, the only solution to the Korean nuclear issue lies in talks between the DPRK and the U.S., and claims that South Korea is trying to block the talks.

*KCNA (Pyongyang), 10/22/93; in JPRS-TND-93-035, 11/10/93, pp. 63-64 (10890).*

#### 10/25/93

North Korean officials say that they are willing to "allow routine safeguards to be implemented" at sections of the Yongbyon nuclear complex. The U.S. announces that it is prepared to cancel its annual Team Spirit military exercise in an effort to end the seven month stalemate with North Korea over the nuclear issue. Peter Hayes, an expert on North Korea, says that North Koreans believe that "their rigidity over the nuclear is-

sue was beginning to produce results."

*John J. Fialka, Wall Street Journal, 10/25/93, p. A9 (10780).*

#### 10/28/93

The U.S. and North Korea conduct their fourth unofficial meeting this month to discuss IAEA inspections. Ambassador Kim Jong-su and Ambassador Ho Jong, who are the two key North Korean officials involved in the secret talks, were recently joined by Choi U-jin, North Korea's primary arms control negotiator. U.S. State Department officials Gary Samore, the director of regional proliferation affairs, and Kenneth Quinones, who is in charge of the North Korea desk, have also participated in the secret talks.

*Tim Weiner, New York Times, 10/27/93, p. A4 (10934). Nihonkeizai Shimbun, 10/28/93 (10934).*

#### 10/29/93

U.S. diplomats say that the third round of meetings between U.S. Assistant Secretary of State Robert Gallucci and North Korea's Deputy Foreign Minister Kang Jok-su may be canceled unless the issue of inspections is resolved.

*Tim Weiner, New York Times, 10/30/93, p. A3 (10782).*

#### 11/93

It is reported that the U.S. government has offered to assist North Korea with monitoring personnel and technical support for the upcoming refueling of the North Korean 5 MW graphite-moderated reactor at Yongbyon. The U.S. has also told North Korea that it will help to replace North Korea's gas-cooled reactors with U.S. light water reactors if the DPRK provides the IAEA with blanket access to its nuclear program and concludes a bilateral nuclear cooperation agreement with the U.S. to open the door for nuclear trade. The IAEA is of the opinion that supervision of the fuel and loading at the Yongbyon facility should be discussed under the bilateral safeguards agreement between the IAEA and the DPRK and not between the U.S. and the DPRK. According to one U.S. official, Washington has made it clear that its offer of assistance is intended as "a supplement to, not a substitute for, IAEA safeguards." The U.S. fears that the DPRK can divert the remaining plu-

tonium in the fuel core for the manufacture of a nuclear device. According to the CIA, 15-20 kg of plutonium may have already been extracted from the original core of the reactor, thus giving the DPRK the opportunity to build a bomb "within a year." During bilateral talks, Pyongyang has assured U.S. officials that the 5 MW reactor will not be secretly refueled.

*Mark Hibbs, Nuclear Fuel, 11/8/93, pp. 1, 14-15 (10269).*

#### 11/2/93

A high-ranking U.S. official says U.S.-ROK Team Spirit military maneuvers will continue next year if North Korea does not submit to regular IAEA inspections. On 10/27/93 the DPRK told the U.S. that it would submit to regular inspections only if the U.S. cancels the Team Spirit exercises.

*Mainichi Shimbun, 11/3/93 (10474).*

#### 11/7/93

On NBC television's "Meet the Press," President Clinton says North Korea "cannot be allowed to develop a nuclear weapon," and states that any North Korean attack on the South will be considered an attack on the U.S. Clinton refuses to comment on the possibility of surgical military strikes against North Korean nuclear facilities and expresses frustration over the stalled talks between the U.S., the DPRK, and the IAEA. In response, North Korea denies that it had any plans to develop nuclear weapons and characterized President Clinton's remarks as "bellicose" and counter-productive.

*Paul Horvitz, International Herald Tribune, 11/8/93, pp. 1, 6 (10697). Washington Post, 11/10/93, p. A30 (10697). Reuter, 11/09/93; in Executive News Service, 11/09/93 (10697).*

#### 11/9/93

The U.S. and North Korea hold working-level discussions, according to South Korea's Yonhap news agency. Yonhap states that North Korea's request for the discussions points toward its desire to negotiate a solution to the nuclear problem.

*Lee Su-wan, Reuter, 11/10/93; in Executive News Service, 11/10/93 (10697).*

#### 11/11/93

North Korean First Vice Foreign Minister Kang Sok-ju, who leads the DPRK delega-

tion in talks with the U.S., says there is a "definite prospect for the settlement" of the nuclear issue. Kang says that if the U.S. changes its hostile policy, withdraws the threat to use nuclear weapons, and accepts a "package solution," in which both sides define actions to be taken simultaneously, North Korea will fulfill all its safeguards obligations and reaffirm its commitment to the NPT.

*UPI, 11/11/93 (10479).*

### 11/17/93

U.S. Secretary of State Warren Christopher warns North Korea that it should allow international inspection of its nuclear facilities or face punishment in the form of sanctions. Christopher states that the U.S. prefers to settle the situation through diplomacy but would recommend that the U.N. impose economic sanctions if North Korea continues to deny inspectors access to its nuclear sites and does not resume talks with South Korea for a nuclear free Korean peninsula. Christopher emphasizes that North Korea must fully comply with its international commitments and must not be allowed to become a nuclear threat to the region.

*Steven Holmes, New York Times, 11/18/93, p. A7 (10869). Frank Murray, Washington Times, 11/18/93, p. A13 (10869). Jim Mann and Sam Jameson, Times, 11/18/93, pp. A1, A8 (10869).*

### 11/23/93

U.S. President Bill Clinton and South Korean President Kim Young-sam agree that the DPRK must submit to international inspections by mid-12/93. As an incentive, President Clinton offers to reevaluate U.S. security policy toward North Korea, but not until after North Korea allows inspections of its nuclear facilities. A White House spokesman says North Korea can be given assurances that it will not be threatened by U.S. nuclear missiles.

*Robert Guest, Daily Telegraph, 11/25/93 (10477). Jon B. Wolfsthal, Arms Control Today, 11/93, p. 21 (10477).*

### 11/24/93

U.S. Assistant Secretary of State for East Asian and Pacific Affairs Winston Lord says the U.S. has not taken any steps on the North Korean nuclear issue without the consensus of South Korea and Japan, and that the ob-

jectives of the U.S. position are "a non-nuclear Korean Peninsula and a strong international non-proliferation regime."

*Reuter Transcript Report, 11/24/93 (10294).*

### 11/24/93

The U.S. reportedly responds to the DPRK's proposal for a "package solution" saying that such a solution would not be possible until North Korea resumes dialogue with the South and allows IAEA inspections.

*Chungang Ilbo (Seoul), 12/2/93, p. 1; in JPRS-TND-94-001, 1/6/94, p. 5 (10863).*

### 11/29/93

A DPRK Ministry of Foreign Affairs spokesman says the DPRK would have no reason to continue suspension of its withdrawal from the NPT if the U.S. decides to halt U.S.-DPRK negotiations. The North Korean spokesman adds that the DPRK will not go forward with the U.S.-DPRK negotiations if it is pressured by the U.S.

*Nihonkeizai Shimbun, 11/30/93 (10291).*

### 12/2/93

White House officials say that President Clinton will continue to push for a "slow, diplomatic approach" towards North Korea. However, U.S. and South Korean officials warn of an escalation of tensions if North Korea removes the nuclear fuel rods from the Yongbyon nuclear reactor without the presence of IAEA inspectors. A U.S. official states that if North Korea removes the spent fuel without IAEA oversight, a new diplomatic effort would focus more on force than persuasion. International demands call for North Korea to remain a member to the NPT, to refrain from reprocessing any additional fuel, and to allow the IAEA to conduct regular and unscheduled inspections of its nuclear facilities.

*Barbara Opall, Defense News, 12/6/93-12/12/93, pp. 3, 28 (10510).*

### 12/2/93

The Korean Central News Agency (KCNA) issues a response to comments made by the U.S. CIA director James Woolsey on 11/30/93. KCNA says that the statements are indications that the U.S. is intent on halting a third round of talks between North Korea and the U.S. on the nuclear issue, that the

U.S. is hostile towards North Korea, that the U.S. is a nuclear threat to North Korea, and that the U.S. must abandon its "cold war" mentality and stop trying to control North Korea through strength and threats.

*KCNA (Pyongyang) 12/2/93; in JPRS-TND-94-001, 1/6/94, pp. 5-6 (10794).*

### 12/2/93

The South Korean daily Chungang Ilbo reports that in order to settle the ongoing dispute over its nuclear weapons program, North Korea has made six demands of the U.S. The DPRK demands a written guarantee that no nuclear weapons be used against it and that none be deployed in South Korea. It also calls for a permanent cancellation of joint U.S.-South Korean Team Spirit military exercises, for an official peace treaty to replace the Korean armistice, and for the U.N. to stop referring to it as a terrorist state and to back a proposal seeking reunification. According to a government official, the U.S. holds that there is room for compromise on all of these points except the issue of reunification.

*UPI, 12/2/93; in Executive News Service, 12/2/93 (10863). Chungang Ilbo (Seoul), 12/2/93, p. 1; in JPRS-TND-94-001, 1/6/94, p. 5 (10863).*

### 12/6/93

Both U.S. President Bill Clinton and the IAEA announce that North Korea's offer to allow the IAEA access to some of its nuclear sites is inadequate and unacceptable. U.N. and U.S. officials state that the North Korean proposal restricts access to two of the key nuclear-related sites. U.S. Vice President Al Gore says that economic sanctions are an option if North Korea does not open all of its nuclear facilities to IAEA inspection, although Gore and other U.S. officials have emphasized their desire to avoid military threats or confrontation with North Korea. U.S. officials call on North Korea to pledge to exchange envoys with South Korea to discuss the nuclear situation.

*Ruth Marcus and R. Jeffrey Smith, Washington Post, 12/7/93, p. A19 (10611). Martin Sieff, Washington Times, 12/7/93, p. A10 (10884).*

### 12/10/93

The U.S. offers to cancel Team Spirit and begin discussions on diplomatic recognition and economic assistance if North Korea ac-

cepts full inspections of its nuclear facilities and begins talks with South Korea. On 12/17, the North Korean Foreign Ministry denounces the offer, saying there is "nothing new in it," but fails to reject it outright.

David Sanger, *New York Times*, 12/18/93, p. A3 (10942).

### 12/12/93

U.S. Defense Secretary Les Aspin states that Washington wants to resolve the dispute with North Korea through diplomatic efforts before turning to other options.

Eric Schmitt, *New York Times*, 12/13/93, p. A3 (10866).  
Reuter, 12/13/93 (10866).

### 12/21/93

A U.S. official says that differences between the U.S. and North Korea in secret talks held in New York over the nuclear inspections issue are "steadily narrowing." A South Korean Foreign Ministry official says that improvement has been made in the talks, although expectations are not met on some items. North Korean delegation head Ho Jong says that "simultaneous steps have to be taken." U.S. State Department spokeswoman Christine Shelly says that "we are studying" a North Korean proposal. Ho says that North Korea will not agree to allow "wider access" to U.N. inspectors under the present circumstances.

*International Herald Tribune*, 12/22/93 (10887).  
*Washington Post*, 12/21/93, p. A13 (10887).

### 12/24/93

South Korean newspapers write that an unidentified South Korean government official says that the U.S. has accepted the latest offer made by North Korea in a series of talks between the two countries to solve the issue of IAEA inspections in North Korea. The U.S. and North Korea refuse to comment on the talks, although Suk Ryul-yu, Director General of the South Korean Foreign Ministry's Department for National Security and Unification Studies, says that both countries "... appear to have made progress, but some issues remain." South Korean President Kim Young-sam says that the North Korean nuclear program has to be stopped "at any cost." A number of leading South Korean newspapers, including Dong-A Ilbo and Choson Ilbo, report that the U.S.

will announce that the Team Spirit military exercise will be canceled and that North Korea will announce that all seven of its reported nuclear sites will be open to inspection.

*Washington Times*, 12/24/93, p. A15 (10887).  
*Washington Post*, 12/21/93, p. A17 (10887).

### 12/29/93

North Korea Deputy Ambassador Ho Jong meets at the U.N. headquarters with U.S. Secretary of State for East Asia and the Pacific Tom Hubbard. The North Korean Foreign Ministry spokesman calls the results of the talks a "breakthrough," and the U.S. subsequently announces that North Korea has agreed to allow inspectors access to its seven declared nuclear sites.

Evelyn Leopold, *Reuter*, 12/29/93; in *Executive News Service*, 12/29/93 (10954).  
*Reuter*, 12/30/93; in *Executive News Service*, 12/30/93 (10954).  
Michael R. Gordon, *New York Times*, 12/31/93, pp. A1, A6 (10954).

### 1/10/94

The vice-minister of the Unification Committee of South Korea's Parliament states that the ROK will cancel the Team Spirit exercise, the DPRK will open talks on exchanging special envoys with the ROK, and the U.S. will initiate a third round of U.S.-DPRK talks as soon as the DPRK and the IAEA reach an agreement and IAEA inspectors arrive in Pyongyang. Some ROK government sources say that the U.S. willingness to cancel Team Spirit depends on the attitude of the DPRK.

*Asahi Shimbun*, 1/11/94 (10867).

## NORTH KOREA WITH UNITED STATES AND SINGAPORE

### 11/90

The efforts of a DPRK agent to obtain detonation capacitors in Singapore from the U.S. firm EG&G are uncovered and halted. The capacitors are used in implosion or conventional warheads.

Mark Hibbs, *Nucleonics Week*, 1/6/94, pp. 8-9 (10783).

## PAKISTAN

### INTERNAL DEVELOPMENTS

#### 9/93

Pakistani Senator Qazi Hussain Ahmed, chief of the Pakistan Islamic Front (PIF), vows to make Pakistan a nuclear power if his party is elected. Ahmed says that nuclear capability would serve as a deterrent which would secure peace and tranquility.

*Pakistan Observer* (Islamabad), 9/16/93, p. 5; in *JPRS-TND-93-030*, 9/27/93, p. 16 (10266).

#### 10/93

Recently-elected Pakistani Prime Minister Benazir Bhutto says that Pakistan will proceed with its nuclear program, which U.S. intelligence believes is oriented toward the development of nuclear weapons. Bhutto states that the nuclear program "will be continued because Pakistan cannot allow India to have an atom bomb while we stay out of the running."

Edward A. Gargan, *New York Times*, 10/21/93, p. A9 (10156).

#### 10/93

During a presentation in Islamabad to the Islamic Conference Organization's (ICO) Committee on Scientific and Technology Cooperation, Secretary General Hamid al-Ghabid and President Wasim Sajjad call for peaceful nuclear cooperation among Islamic countries. Al-Ghabid says, "Our enemy is using nuclear energy against us, so we have to be careful."

*Pakistan Observer* (Islamabad), 9/20/93, pp. 1,4; in *JPRS-TND-93-031*, 10/8/93, p. 22 (10264).

#### 11/28/93

A debate in Pakistan's parliament, convened at the request of the opposition to discuss the country's nuclear policy, ends when the opposition walks out to protest "a government attempt to obstruct open discussion." The debate centers on conflicting remarks made by Prime Minister Benazir Bhutto and

her predecessor, Nawaz Sharif, as to which of them did more to make Pakistan a nuclear power and who is to blame for halting Pakistan's nuclear program.

*Jane Macartney, Reuter, 11/28/93; in Executive News Service, 11/28/93 (10412).*

**12/93**

A Pakistani Foreign Office spokesman states that inspections of Pakistani nuclear facilities would only be accepted "on a regional basis." The spokesman further elaborates by saying that nonproliferation efforts in South Asia should take the form of bilateral agreements between Pakistan and India, and should "create a reasonable balance in conventional arms strength." He says that "consultations on this issue will continue from time to time, including with the United States."

*Maulana Baabar, The News (Islamabad), 12/2/93, p. 1; in JPRS-TND-94-001, 1/6/94, p. 17 (10408).*

**1/94**

Pakistani Prime Minister Benazir Bhutto issues a directive effectively banning public statements on nuclear power plants after Federal Minister for Special Education Sher Afghan Niazi and Pakistan Atomic Energy Commission Chairman Ashfaq Ahmed made statements concerning the state of the Chashma Nuclear Power Plant. Afghan Niazi reportedly told Bhutto that the 300 MW Chashma nuclear power plant, being built with Chinese assistance, could be unsafe because Pakistan was forced to build its monitoring system domestically.

*Muslim (Islamabad), 1/2/94, p. 2; in JPRS-TND-94-003, 1/31/94, p. 14 (10523).*

#### PAKISTAN WITH CANADA

**1/94**

A group of Canadian engineers working under the auspices of the IAEA-sponsored Safe Operation KANUPP (SOK) conduct an inspection of Pakistan's 137 MW Karachi Nuclear Power Plant (KANUPP) and find no evidence of hydride corrosion of the fuel channel walls, a common problem found in the Canadian-produced Candu reactors after twenty years of service.

*Nucleonics Week, 1/13/94, p. 6 (10410).*

#### PAKISTAN WITH FRANCE

**11/93**

Pakistani Prime Minister Benazir Bhutto says that Pakistan has reopened talks with France on obtaining a nuclear power plant promised by French President Francois Mitterand in 1990. France had put the discussion of the transaction on hold because of uncertainty as to whether Pakistan would allow full IAEA inspections of its nuclear facilities. Bhutto has since told France that "Pakistan is ready to fulfill all the safeguards in this regard."

*Reuter, 11/25/93 (10719).*

#### PAKISTAN WITH FRANCE AND UNITED ARAB EMIRATES

**11/93**

A British resident of Pakistani or Indian nationality, named Malik, may have provided 50 metric tons of French maraging steel to Pakistan via the United Arab Emirates. Malik was identified by the Iraqi government as an Iraqi agent who supplied Iraq's centrifuge program with maraging steel. Western governments are investigating transfers to Iraq and Pakistan which involved Western companies.

*Mark Hibbs, Nucleonics Week, 11/25/93, pp. 4-5 (10841).*

#### PAKISTAN WITH GERMANY

**1993**

The German corporation Leybold AG sharply tightens its export controls on nuclear-related items, virtually prohibiting the transfer of dual-use technology to Israel, Pakistan, North Korea, Iran, Iraq, and Syria. Leybold checks with German and U.S. authorities and investigates its potential buyers before making a sale, and through use of databases seeks to identify possible third-party front companies that might be attempting to buy items for threshold states.

*Linda Rothstein, Bulletin of the Atomic Scientists, 11/93, pp. 4-5 (10163).*

#### PAKISTAN WITH INDIA

**1/24/94**

Indian Foreign Secretary J.N. Dixit submits a proposal to Pakistan intended to lower the risk of nuclear war between the two countries. The proposal assures no first-use of nuclear weapons by India in the event of a war, calls for an agreement limiting nuclear strikes to strategic targets in the case of nuclear war, and suggests the establishment of a direct "crisis" line between top military officials in India and Pakistan.

*Tim McGirk, Independent, 1/26/94 (10832).*

#### PAKISTAN WITH JAPAN

**12/93**

Delegations led by Pakistani Foreign Secretary Shaharyar Khan and Japanese Deputy Foreign Minister Hiroshi Fukuda meet in Tokyo to discuss Pakistan's refusal to join the NPT. The talks involve the allocation of Pakistan's 29th aid package from Japan which totals \$400 million. While nonproliferation is not mentioned explicitly in the aid package, Shinichi Kitajima, director of the Japanese Foreign Ministry's Development Assistance Charter, says that the Japanese law ensures that "full attention be paid to trends in recipient countries concerning military expenditures and the production of weapons of mass destruction."

*Nucleonics Week, 12/2/93, p. 17 (10711).*

#### PAKISTAN WITH PRC

**1983**

U.S. intelligence agencies determine that China has supplied Pakistan with the design of a nuclear weapon with a yield of about 20 kilotons.

*Aleksandr Chudodeyev, Novoye Vremya (Moscow), 10/19/93, pp. 18-22; in JPRS-TND-93-037, 12/8/93, pp. 6-7 (10770).*

**1/93**

U.S. President George Bush issues an arms control compliance report which concludes that before China joined the NPT, it "had assisted Pakistan in developing nuclear explosives," and asserts that the "United States

has continuing concern regarding such assistance since China's accession" to the NPT.

John Glenn, *Washington Post*, 12/3/93, p. A29 (10241).

### 7/93

The U.S. publicly voices its apprehension over continued Chinese nuclear assistance to Pakistan.

Leonard S. Spector and Evan Medeiros, *Washington Post*, 10/3/93; in *Executive News Service*, 10/3/93 (10766).

### 8/1/93

Pakistan Atomic Energy Commission President Ishfaq Ahmad and China's National Nuclear Corporation President Jian Xinxiong participate in ceremonies marking the pouring of the first concrete at Pakistan's 300 MW Chashma nuclear plant. The plant is a version of a Chinese plant located in Shanghai.

*Nuclear News*, 9/93, p. 69 (10158). *Nuclear Engineering International*, 11/93, p. 7 (10154).

### 9/93

It is announced that more than half of \$47 million in loans that the Industrial and Commercial Bank of China will give to eighteen nuclear power equipment companies in Shanghai will finance the production of essential equipment for the 300 MW nuclear plant under construction by the China National Nuclear Corporation in Pakistan.

*Xinhua* (Beijing), 9/15/93; in *JPRS-TND-93-030*, 9/27/93 (10244). *China Daily*; in *ENS NucNet*, 9/23/93 (10244).

## PAKISTAN WITH PRC AND INDIA

### 12/29/93

Pakistani Prime Minister Benazir Bhutto acknowledges that both Pakistan and China would agree to a nuclear nonproliferation pact as well as a nuclear-free zone in South Asia if India would also agree.

Jeffrey Parker, *Reuter*, 12/29/93; in *Executive News Service*, 12/29/93 (10524).

## PAKISTAN WITH UKRAINE

### 10/93

Ukraine denies accusations that it has sold

nuclear technology to Libya and Pakistan.

*Uniar* (Kiev), 10/6/93; in *JPRS-TND-93-034*, 10/27/93, p. 38 (10198).

## PAKISTAN WITH UNITED STATES

### 9/93

Pakistani Foreign Secretary Shaharyar Khan and U.S. Assistant Secretary of State for South Asian Affairs Robin Raphel, along with other U.S. and Pakistani officials, meet in Washington, D.C. to discuss regional security and nuclear nonproliferation in South Asia. Khan also meets with U.S. Secretary of State Warren Christopher and National Security Advisor Anthony Lake. Khan says the talks are "constructive and positive," and that he is pleased with the Clinton Administration's fair approach toward both India and Pakistan on nuclear issues.

*PTV Television Network* (Islamabad), 9/3/93; in *JPRS-TND-93-029*, 9/17/93, p. 29 (10265).

### 10/93

U.S. diplomatic sources in Vienna announce that the United States will implement comprehensive IAEA safeguards on future nuclear activities only if India, Pakistan, and Israel agree to do so as well. The U.S. proposal is designed to appease concerns from Germany, Japan, and the European Community about the United States' commitment to nonproliferation and to push India, Pakistan, and Israel to accept full-scope IAEA safeguards. Although U.S. intelligence believes that Pakistan has not produced highly enriched uranium (HEU) since 1990, U.S. law requires Pakistan "to destroy all" of its "small number" of HEU cores before the U.S. restores aid to Pakistan.

Mark Hibbs, *Nucleonics Week*, 10/14/93, pp. 12-13 (10409).

### 11/93

The Clinton Administration submits a proposal to Congress which would eliminate the 1985 Pressler Amendment, a law which cuts off U.S. military aid to Pakistan as long as the U.S. President is unable to confirm that Pakistan is not creating nuclear weapons. The new legislation, which prohibits aid to all non-nuclear weapon states with enrichment or reprocessing equipment that could

be used to produce weapons-grade materials, would allow the U.S. President to exempt any nation from the ban "if the furnishing of such assistance is important to the national interests of the United States" and "will further U.S. nonproliferation objectives."

R. Jeffrey Smith, *Washington Post*, 11/25/93, p. A59 (10263).

### 11/93

U.S. officials John Mallot and Robin Raphel urge Pakistan, "to cap, roll back, and eventually eliminate its alleged nuclear weapons capability." Due to the continued tension between Pakistan and India, Western nations are concerned about the possibility of nuclear strikes between the two nations.

Kamal Matinuddin, *The News* (Islamabad), 11/23/93, p. 7; in *JPRS-TND-93-038*, 12/29/93, pp. 33-35 (10714).

### 11/93

U.S. Assistant Secretary of State Robin Raphel meets with Pakistani Prime Minister Benazir Bhutto and Army Chief General Abdul Waheed in Islamabad to discuss Pakistan-U.S. relations and differences regarding Pakistan's nuclear program. Although Pakistani Foreign Secretary Shaharyar Mohammad Khan says that the meeting does not lead to any concrete agreement on the nuclear issue, he notes that "we have perceived from the Clinton Administration a new approach toward seeking a way out."

Jane Macartney, *Reuter*, 11/8/93; in *Executive News Service*, 11/8/93 (10301).

### 12/93

U.S. Senators Larry Pressler, Thad Cochran, and Hank Brown visit Pakistan and meet with Pakistani Prime Minister Benazir Bhutto and President Farooq Leghari. Pressler, author of U.S. legislation prohibiting aid to Pakistan unless the U.S. president certifies that Pakistan is not attempting to produce nuclear weapons, defends the amendment at a press conference in Islamabad, stating that "even if it is replaced by a new law, it will also impose similar restrictions against Pakistan because of its nuclear program."

*UPI*, 12/15/93; in *Executive News Service*, 12/15/93 (10520).

12/93

Pakistani Senate Chairman Wasim Sajjad says that the U.S. Pressler Amendment is unjustified and discriminatory. Sajjad states that the one-sided amendment, which has helped India gain military superiority, has failed to meet its objective of reducing nuclear proliferation on the subcontinent. *Frontier Post (Peshawar)*, 12/16/93, p. 1; in *JPRS-TND-94-002*, 1/18/94, p. 16 (10411).

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## PEOPLE'S REPUBLIC OF CHINA

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### INTERNAL DEVELOPMENTS

9/88

In the wake of a Chinese nuclear test, rumors spread that China is testing a neutron bomb. However, the Beijing newspaper *Guangming Ribao* states only that China is developing a "third-generation nuclear weapon."

*Novoye Vremya (Moscow)*, 10/19/93, pp. 18-22, by Aleksandr Chudodoyev; in *JPRS-TND-93-037*, 12/8/93, pp. 6-7 (10770).

8/93

Chinese officials tell U.S. Under-secretary of State Lynn Davis that they favor a comprehensive nuclear test ban beginning in 1996, according to U.S. officials. The U.S. takes this to mean that China would like to carry out at least a few more tests before then. Various sources have reported that scientists working on China's nuclear program have told visiting Westerners that additional tests are necessary for the design of new nuclear warheads that are less likely to detonate accidentally.

R. Jeffrey Smith, *Washington Post*, 9/17/93, pp. A1, A31 (10485).

9/93

It is announced that the Industrial and Commercial Bank of China will give loans totaling \$47 million to eighteen nuclear power

equipment companies in Shanghai in order to help China meet its growing demand for energy. About 41% of the loan will be used for technological renovation of Shanghai's nuclear power industry, which is working to master the production know-how for 600 MW nuclear power units by 1995. More than half of the loan will finance the production of essential equipment for the 300 MW nuclear plant under construction by the China National Nuclear Corporation in Pakistan.

*Xinhua (Beijing)*, 9/15/93; in *JPRS-TND-93-030*, 9/27/93 (10244). *China Daily*; in *ENS NucNet*, 9/23/93 (10244).

9/93

The U.S. intelligence community determines that a Chinese nuclear test is imminent. The conclusion is based on classified U.S. reconnaissance satellite photographs of China's nuclear weapons test site at Lop Nor. Senior U.S. officials say the photographs show that the Chinese have lowered a weapon down a deep shaft as a final preparation for a test. A senior U.S. official says that the U.S. has organized "a large number" of countries in Asia, Europe, and Scandinavia to privately express their objections to a resumption of testing to the Chinese government.

R. Jeffrey Smith, *Washington Post*, 9/17/93, pp. A1, A31 (10485).

9/8/93

Chinese President Jiang Zemin says that since China developed nuclear weapons in the 1960's, "we [China] are no longer afraid of the threats and bullying of the two hegemonists," the U.S. and Russia, according to a report in a Hong Kong journal with strong ties to Beijing. Jiang makes the comment in a meeting with eight senior generals led by Defense Minister Chi Haotian in response to protests from within the military against China's "soft stance" against U.S. "hegemonism" and "power politics." Patrick E. Tyler, *New York Times*, 11/16/93, p. A5 (10764).

9/22/93

Vertic, a London-based independent verification center, confirms U.S. intelligence findings that China is preparing for a nuclear

test. Vipin Gupta, a remote sensing specialist at Imperial College, London, has been able to create a detailed picture of the Lop Nor site using images from commercial satellites and seismic data. Intelligence services in France have also determined that a Chinese nuclear test is likely to occur soon.

Tom Wilkie, *The Independent*, 9/23/93 (10485). William Bown, *New Scientist*, 10/2/93 (10485).

9/27/93

The Chinese Ministry of Foreign Affairs rejects the U.S. claim that it is preparing for a nuclear test.

*Radio Moscow*, 9/27/93; in *JPRS-TND-93-031*, 10/8/93, p. 2 (10485).

9/27/93

Nuclear engineer Wang Yongqing says that China has begun "planning and design work" for a 200 MW urban heating nuclear reactor at the Daqing oilfield near Beijing, for which the China National Nuclear Corporation would be permitted to employ foreign technology and components produced abroad. Wang, who directs the Daqing project from the Beijing Institute of Nuclear Engineering at Qinghua University, says that the "project still has not been made public but it has been approved by the State Council." Construction is scheduled to begin in 1994.

Jeffrey Parker, *Reuter*, 9/27/93; in *Executive News Service*, 9/29/93 (10275).

9/29/93

In an address to the U.N. General Assembly, Chinese Vice-Premier and Foreign Minister Qian Qichen reiterates China's support for a comprehensive nuclear test ban in the context of "the complete prohibition and thorough destruction" of nuclear weapons, and says that China "will work in common with the other countries towards a comprehensive nuclear test ban at an early date." Qian notes that China has already vowed never to be the first to use nuclear weapons or to use them or threaten to use them against a non-nuclear-weapon state or nuclear-free zone, and he calls upon "all the other nuclear powers to make the same pledge and conclude an international convention to this effect as soon as possible." In his speech Qian emphasizes that China has always used great

restraint in nuclear testing and notes that "the number of our tests is the smallest among nuclear powers."

*Xinhua (Beijing), 9/29/93; in JPRS-TND-93-031, 10/8/93, p. 1 (10484).*

### 9/30/93

Chinese Foreign Minister Qian Qichen tells reporters that because "China has never undertaken...a nuclear moratorium, the question of resumption of nuclear testing does not exist." Qian adds that a Chinese nuclear test will not interfere with negotiations on a test ban treaty.

*Daniel Williams, Washington Post, 10/1/93, p. A33 (10486).*

### 10/5/93

At precisely 0200 GMT, China conducts an underground nuclear test, its 39th nuclear test overall, at the Lop Nor testing site. The test breaks a year-old informal global moratorium on nuclear tests. Various estimates place the yield of the blast, which registered 5.8 on the Richter scale, at between 10 and 100 kilotons, thus making it difficult to determine the purpose of the test. Analysts suggest that China may have carried out the test in order to develop smaller warheads so that multiple warheads could fit onto a single missile, to develop a warhead for tactical nuclear weapons, to validate the fission trigger component of a thermonuclear design, and/or to design a strategic weapon. The official New China News Agency issues a statement confirming that China conducted the test.

*Steven A. Holmes, New York Times, 10/6/93, p. A1 (10923). Lena Sun, Washington Post, 10/6/93, p. A1 (10923). New Scientist, 10/16/93 (10922). Vipin Gupta and Philip McNab, Bulletin of the Atomic Scientists, 12/93, pp. 44-47 (10921). Vipin Gupta, Jane's Intelligence Review, 1/94, pp. 31-35 (10924).*

### 11/93

Some U.S. businessmen report having sighted a factory in Sichuan province that was producing cobalt, which could be used in manufacturing "dirty" nuclear bombs, which produce longer-lasting radioactivity than regular bombs.

*Foreign Report, 11/4/93 (10273).*

### 11/23/93

A spokesman for the China National Nuclear

Corporation (CNNC) announces that experiments on China's first nuclear thermal fusion device, known to specialists as the "reverse-field pinch experiment device," has produced "satisfactory results." Although the spokesman does not provide details, he says that the device will allow China to attain the level of those countries "most developed in the nuclear sciences" in quest of "the source of energy after the 21st century."

*Xinhua (Beijing), 11/23/93; in JPRS-TND-93-038, 12/29/93, p. 2 (10320).*

### 12/28/93

The head of China National Nuclear Corporation (CNNC), Jiang Xinxiong, declaring that nuclear industry and technology are "a pillar for [China's] international standing," outlines China's plans to develop a world-class nuclear power industry by the year 2000. CNNC plans to train an elite task force of nuclear scientists with an eye toward designing 600, 900, and 1,200 MW nuclear reactors both for export and for use in China; firms are being developed to construct such stations. According to the Xinhua News Agency, Jiang says that China's strategy for the 1990s entails the construction of a network of nuclear power plants and nuclear fuel factories. Jiang notes that CNNC will continue to provide the Chinese nuclear weapons program with expertise and capital. Jiang declares that reforms will allow CNNC to become a "gigantic enterprise group with nuclear production and research as its main undertaking while combining nuclear and non-nuclear and civilian and military production." Jiang adds that an experimental fast neutron accelerator will be built and that funding will be provided for basic research in fusion and isotopic separation.

*Reuter, 12/28/93; in Executive News Service, 12/28/93 (10239). Xinhua (Beijing), 12/28/93; in JPRS-TND-93-003, 1/31/94, p. 1 (10239). Nuclear News, 2/94, p. 54 (10239).*

## PRC WITH ALGERIA

### 12/21/93

Algeria holds an inauguration ceremony for its newly-constructed As Salam reactor, a 15 MW multi-function heavy water research

reactor built with assistance from China in (Ain Wusela) Science Town. China trained Algerian scientists and technicians and provided technology and a "complete set of facilities" for the reactor.

*Wang Jingcheng, Xinhua (Beijing), 12/24/93; in JPRS-TND-94-003, 1/31/94, p. 45 (10487).*

## PRC WITH FRANCE

### 12/93

The Chairman of France's Framatome, Jean-Claude Leny, says in an interview that his company has offered to assist China in building its nuclear industry and "to create a joint venture with Chinese partners...to do in China what we have done in France." Leny adds that Framatome has recently signed a maintenance contract with China which would require 20 technicians from the French company to remain at Daya Bay.

*Elisabeth Rochard, La Tribune Des Fosses (Paris), 12/15/93, p. 10; in JPRS-TND-94-002, 1/18/94, pp. 30-31 (10772).*

## PRC WITH INDIA

### 10/93

China's nuclear test on 10/5/93 is cited as being another reason why India should not accede to the NPT, despite pressure from the U.S. to do so. It is believed that the Indian and Chinese positions concerning the elimination and destruction of nuclear weapons are "close...though the two may espouse varying ways of reaching that objective."

*Hindu (International Edition), 10/16/93, p. 3 (10819).*

## PRC WITH JAPAN

### 9/20/93

Japan's Kansai Electric Power Company announces that it has agreed to a "trial purchase contract" to buy uranium oxide, or yellowcake, from China Nuclear Energy Industry Corporation, a subsidiary of China National Nuclear Corporation. The contract calls for the purchase of 250 short tons of yellowcake (192 tons U) between 1994 and 1998. Fifty short tons will be sent annually to conversion plants in Europe and North



America over the five year period, and will then be used at the Japanese firm's nuclear plants.

*Kyodo (Tokyo), 9/20/93; in JPRS-TND-93-030, 9/27/93, p. 63 (10296). Atoms In Japan, 9/93, p. 23 (10276).*

### 10/15/93

It is reported that Tokyo Electric Power Company has transferred boiling water reactor (BWR) design information to China. Although China has no current plans for constructing BWRs, it is considering building them in the future. China is interested in the 600 MWe advanced BWR (ABWR), rather than the 1000 MWe ABWR.

*Nikkeisangyo Shimbun, 10/15/93 (10186).*

### 11/30/93

The Director General of Japan's Science and Technology Agency (STA), Satsuki Eda, and Chinese State Councillor, Song Jian, agree to sign a nuclear safety agreement by 3/94. The agreement will "allow cooperation and an exchange of information on the regulation of nuclear safety at nuclear power plants and experimental reactors, and on the handling of nuclear emergencies." Song is also the minister of the State Science and Technology Commission.

*Kyodo (Tokyo), 11/30/93; in JPRS-TND-94-001, 1/6/94, p. 35 (10353). Japan Atomic Industrial Forum; in ENS NucNet, 12/17/93 (10295).*

## PRC WITH KAZAKHSTAN

### 9/93

On 8/30/93, Kazakh President Nursultan Nazarbayev says that there is "a vast field for cooperation" between his country and China in cleaning up the effects of nuclear explosions at China's Lop-Nur test site. China dismisses the need for clean-up, asserting that the test site is downwind of Kazakhstan, and therefore poses no threat to the country.

*Reuter, 8/30/93; in Executive News Service, 9/1/93 (10298). Reuter, 9/2/93 (9997).*

## PRC WITH LIBYA

### 9/28/93

U.S. Senate Governmental Affairs Committee Chairman John Glen says that China has had "negotiations of one kind or another" to supply weapons of mass destruction to Libya.

*Reuter, 9/28/93; in Executive News Service, 9/28/93 (10319).*

## PRC WITH NORTH KOREA

### 1960s-1993

Several hundred DPRK experts have been trained in plutonium separation and other nuclear processes in China and the USSR since the 1960s.

*Mark Hibbs, Nucleonics Week, 1/6/94, pp. 8-9 (10783).*

### 10/1/93

China abstains from the vote on an IAEA General Conference resolution that calls on North Korea to "cooperate immediately with the Agency in the full implementation of the safeguards agreement." The resolution, which passes with a vote of 72 to 2 with 11 abstentions, notes the IAEA's "grave concern that the DPRK has failed to discharge its safeguards obligations and has recently widened the area of non-compliance by not accepting scheduled Agency ad hoc and routine inspections as required by its safeguards agreement."

*Mark Hibbs, Nucleonics Week, 10/7/93, pp. 1, 10-11 (10607). Steve Pagani, Reuter, 10/1/93; in Executive News Service, 10/1/93 (10607).*

### 11/9/93

Chinese Foreign Minister Qian Qichen says dialogue, rather than pressure, is more likely to break the nuclear stalemate in North Korea.

*Reuter, 11/9/93; in Executive News Service, 11/9/93 (10697).*

### 12/26/93

Chinese Premier Li Peng says that China opposes the use of sanctions against North Korea.

*Steven Mufson, Washington Post, 12/27/93, p. A9 (10886). David Schlesinger, Reuter, 12/27/93; in Executive News Service, 12/27/93 (10886).*

### 1/15/94

Following a two-day parliamentary conference in Manila, Chinese lawmakers join legislators from 17 other countries, including the U.S. and Japan, in issuing a joint communique urging North Korea to comply with IAEA safeguards and allow full inspections of its nuclear facilities.

*Reuter, 1/15/94 (10785).*

## PRC WITH PAKISTAN

### 1983

U.S. intelligence agencies determine that China has supplied Pakistan with the design of a nuclear weapon with a yield of about 20 kilotons.

*Aleksandr Chudodzeyev, Novoye Vremya (Moscow), 10/19/93, pp. 18-22; in JPRS-TND-93-037, 12/8/93, pp. 6-7 (10770).*

### 1/93

U.S. President George Bush issues an arms control compliance report which concludes that before China joined the NPT, it "had assisted Pakistan in developing nuclear explosives," and asserts that the "United States has continuing concern regarding such assistance since China's accession" to the NPT.

*John Glenn, Washington Post, 12/3/93, p. A29 (10241).*

### 7/93

The U.S. publicly voices its apprehension over continued Chinese nuclear assistance to Pakistan.

*Leonard S. Spector and Evan Medeiros, Washington Post, 10/3/93; in Executive News Service, 10/3/93 (10766).*

### 8/1/93

Pakistan Atomic Energy Commission President Ishfaq Ahmad and China's National Nuclear Corporation President Jian Xinxiong participate in ceremonies marking the pouring of the first concrete at Pakistan's 300 MW Chashma nuclear plant. The plant is a version of a Chinese plant located in Shanghai.

*Nuclear News, 9/93, p. 69 (10158). Nuclear Engineering International, 11/93, p. 7 (10154).*

9/93

It is announced that more than half of \$47 million in loans that the Industrial and Commercial Bank of China will give to eighteen nuclear power equipment companies in Shanghai will finance the production of essential equipment for the 300 MW nuclear plant under construction by the China National Nuclear Corporation in Pakistan.

*Xinhua* (Beijing), 9/15/93; in *JPRS-TND-93-030*, 9/27/93 (10244). *China Daily*; in *ENS NucNet*, 9/23/93 (10244).

#### PRC WITH PAKISTAN AND INDIA

12/29/93

Pakistani Prime Minister Benazir Bhutto acknowledges that both Pakistan and China would agree to a nuclear nonproliferation pact as well as a nuclear-free zone in South Asia if India would also agree.

*Jeffrey Parker*, *Reuter*, 12/29/93; in *Executive News Service*, 12/29/93 (10524).

#### PRC WITH RUSSIA

11/93

Russia issues a statement condemning China's underground test of a nuclear weapon on 10/5/93, and reiterates its support and observance of a moratorium on nuclear testing.

*ITAR-TASS* (Moscow), 10/21/93; in *JPRS-TND-93-035*, 11/10/93, p. 46 (10560).

#### PRC WITH RUSSIA AND UNITED STATES

10/93

The U.S. State Department voices concern over reports of China's success in importing strategic weapons technology and experts from Russia, which could "eventually enable Chinese nuclear forces to reach the United States."

*Reuter*, 10/14/93 (10562).

#### PRC WITH SOUTH AFRICA

11/8/93-11/9/93

Waldo Stumpf of South Africa's Atomic Energy Corporation acknowledges at a U.S.-

Russian sponsored nuclear seminar, held in New Delhi, that South Africa imported low enriched uranium from China for use in its nuclear weapons program.

*K. Subrahmanyam*, *Economic Times* (New Delhi), 11/12/93 (10762).

#### PRC WITH SOUTH KOREA

9/13/93

An informed source reveals that South Korea and China recently agreed to cooperate on nuclear power plant technology. The source said that by the end of 1993, Korean Electric Power Corp. (Kepco) is expected sign an \$8 million contract to overhaul China's Daya-1 and Daya-2 nuclear power plants in Guangdong province. Kepco may also provide technology to China for the construction of future nuclear power plants, including the planned 900 MW Daya-3 and Daya-4 reactors.

*Yonhap* (Seoul), 9/13/93; in *JPRS-TND-93-030*, 9/27/93, p. 28 (10701). *ENS NucNet*, 12/23/93 (10701).

9/16/93

Korean Electric Power Corp. (Kepco) announces that it plans to buy 110 tons of heavy water for use in the Wolsong-2 nuclear power plant from the China Nuclear Energy Industry Corp for an estimated \$25 million.

*Reuter*, 9/17/93; in *Executive News Service*, 9/16/93 (10238).

#### PRC WITH SYRIA

12/93

As Syria prepares to receive its first research reactor from China, it is constructing a reactor building and related facilities at a site about 30 km from Damascus. According to the Deputy Director General of Syria's Atomic Energy Commission, Asaad Loutfi, the 27 kWt reactor is a "tank in pool" design. The reactor, which will be installed by the end of 1994, will have fuel rods with aluminum cladding which will hold 985 g of approximately 90% enriched uranium. As China and Syria have both signed the NPT, the reactor will be subject to IAEA safeguards. Loutfi says that the reactor will be employed for scientific research, including the production of "very short-lived isotopes

for use in medicine, agriculture and geology" that were formerly imported by Syria. China will further assist Syria by training reactor operators and providing instruction to two staff members in neutron activation analysis techniques.

*Alan George*, *Nuclear Engineering International*, 12/93, pp. 46-47 (10355).

#### PRC WITH TAIWAN

11/9/93

The vice-chairman of the Taiwanese Cabinet's Atomic Energy Council, Liu Kuang-chi, announces that Taiwan is "seeking cooperation with Russia or mainland China to store our nuclear waste there." Taiwan has held no formal talks with either country, although informal discussions between Chinese and Taiwanese experts have taken place.

*Reuter*, 11/9/93; in *Executive News Service*, 11/9/93 (10427). *Asahi Evening News*, 11/10/93 (10406).

#### PRC WITH UKRAINE

9/93

Chinese Foreign Minister Qian Qichen says that China has sent a diplomatic note to Kiev offering Ukraine security guarantees in exchange for its promise to relinquish its nuclear weapons. He said that China could not offer financial assistance for Ukrainian disarmament.

*Reuter*, 9/7/93; in *Executive News Service*, 9/7/93 (10277).

#### PRC WITH UNITED STATES

3/93

U.S. President Bill Clinton sends China a list of 14 issues, including nonproliferation, which could affect China's most favored nation trading status. The action angers Chinese leaders, who view it as a "coercive ultimatum."

*Don Oberdorfer*, *Washington Post*, 11/7/93; in *Executive News Service*, 11/7/93 (10767).

**9/17/93**

U.S. President Bill Clinton urges China to "step away" from a resumption of nuclear testing.

*Eric Schmitt, New York Times, 9/18/93, p. 3 (10404).*

**11/93**

Some advisers to U.S. President Bill Clinton are advising that he permit the sale of a supercomputer to China for meteorological use, although Administration nonproliferation experts believe that it could be used for military purposes. Clinton approves the sale of a Cray supercomputer to China shortly before an 11/19/93 economic summit with Chinese President Jiang Zemin.

*Elaine Sciolino, New York Times, 11/17/93, p. A1 (10767).*

**11/2/93**

U.S. Assistant Secretary of Defense Charles Freeman, Jr. completes one and a half days of what he calls "very productive" talks with Chinese military leaders, including General Liu Huaqing, China's highest ranking military officer. Although Freeman says that he spoke "frankly and directly" with the Chinese leaders on the subject of weapons proliferation, he does not report any advances in this area.

*Lena Sun, Washington Post Foreign Service, 11/2/93; in Executive News Service, 11/3/93 (10354).*

**11/22/93**

The U.S. Commerce Department says that "equipment for nuclear power plants is under consideration for sale to China in the following categories: steam turbines, generators, heat exchangers, condensers, and control systems for the above categories. No final decision has been made. The matter is still under review." The previous week, the Commerce Department said that it would remove prohibitions on exports of such items.

*Gene Gibbons, Reuter, 11/19/93; in Executive News Service, 11/19/93 (10958). Wilson Dizard III and Richard Zuercher, Nucleonics Week, 11/25/93, pp. 3-4 (10958).*

**12/15/93**

Chinese Vice-Premier Zou Jihua meets in Beijing with U.S.-based General Atomics vice-chairman Linden Blue and his party, who arrived on 12/13/93 as guests of the

China Science and Technology Exchange Center under the State Science and Technology Commission. Blue's group, which is scheduled to visit Shanghai and Hangzhou, discusses new U.S. technology in nuclear-generated electricity and U.S.-Chinese cooperation in this area.

*Xinhua (Beijing), 12/15/93; in JPRS-TND-94-002, 1/18/94, p. 1 (10771).*

**1/27/94**

U.S. State Department spokesman Mike McCurry says that two days of talks between U.S. Undersecretary of State Lynn Davis and Chinese Vice Foreign Minister Liu Huaqiu on nuclear nonproliferation have made no progress and would likely produce "no concrete agreements." McCurry adds that the U.S. and China have not been able to agree on either the U.S. proposal to halt production of fissile material for nuclear arms or the Chinese proposal to sign a treaty on no first use of nuclear weapons with the other four nuclear powers. Discussions between U.S. and Chinese officials also covered a comprehensive nuclear test ban and the extension of the NPT.

*Carol Giacomo, Reuter, 1/31/94; in Executive News Service, 1/31/94 (10765).*

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## SOUTH AFRICA

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### INTERNAL DEVELOPMENTS

**1973**

South Africa launches a program to research separation of lithium isotopes, two years after it endorsed a research and development program for gun-type fission devices, according to a confidential report issued by the IAEA Department of Safeguards in late 1993. In 12/93, South Africa's Atomic Energy Corporation (AEC) said that it had produced "gram quantities" of Li-6 for advanced nuclear weapons by employing a mercury separation process. The IAEA report said that "the nuclear weapons program

thus established, also involved Li-6 separation for the production of tritium for possible use in boosted devices." The IAEA report concluded that "The AEC carried out theoretical tests and basic development work on the use of tritium for the boosting of gun-assembled devices."

*Mark Hibbs, Nucleonics Week, 1/20/94, pp. 5-6 (10956).*

**1979**

Armstrong assumes responsibility for nuclear weapons production and South Africa's Atomic Energy Corp. begins concentrating on "miniaturized neutron generators for potential use as initiators for the nuclear weapons," as well as Li-6 production, according to a confidential IAEA report.

*Mark Hibbs, Nucleonics Week, 1/20/94, pp. 5-6 (10956).*

**1981**

South Africa approves a reactor development program "for commercial PWR (pressurized water reactor) production and recovery of plutonium and tritium," according to a confidential document issued by the IAEA Department of Safeguards in late 1993. The AEC said on 1/4/94 that "grass-roots-level, preliminary design studies" and "rudimentary civil engineering preparations" were conducted for a 150 MW (thermal) uranium-fueled reactor, although construction never took place.

*Mark Hibbs, Nucleonics Week, 1/20/94, pp. 5-6 (10956).*

**5/93**

South Africa's parliament passes legislation forbidding citizens from taking part in any program associated with the production of nuclear weapons.

*J.W. de Villiers, Roger Jardine, and Mitchell Reiss, Washington Times, 11/4/93, p. A14 (10939).*

**7/93**

The chief executive of South Africa's Atomic Energy Corporation (AEC), Waldo Stumpf, assures African National Congress (ANC) officials that the AEC does not intend to sell the highly enriched uranium (HEU) retrieved from dismantled nuclear weapons during South Africa's period of transition to a multi-racial democracy. Stumpf says that the AEC wants to keep the

HEU to produce medical isotopes which could then be exported. Reports have alleged that the AEC has been trying to export the HEU before elections in 4/94.

*J.W. de Villiers, Roger Jardine, and Mitchell Reiss, Washington Times, 11/4/93, p. A14 (10939).*

### 11/8/93

Waldo Stumpf of South Africa's Atomic Energy Corporation (AEC) describes South Africa's nuclear weapons as having been of the crude gun-barrel type and not sophisticated enough to have caused the Indian Ocean double-flash on 9/22/79, which many believe was caused by a South African nuclear test. Stumpf also says that the South African nuclear weapons program cost a total of \$200 million and employed no more than 300 people. In addition, Stumpf says that after the nuclear program was dismantled, South Africa made gains in molecular laser isotope separation technology. Stumpf's comments are made in a seminar in New Delhi, India, sponsored by the U.S. Lawrence Livermore National Laboratory and the National Security Research Corporation of Russia.

*K. Subrahmanyam, Economic Times (New Delhi), 11/12/93 (10762).*

### 12/93

According to reports from South Africa's Armaments Corporation (ARMSCOR) Senior Manager Andre Buys, the commercialization of technologies from South Africa's nuclear program is well-advanced. ARMSCOR has plans to commercialize and market the following technologies: adclad, explosive cladding to join metals that cannot be welded; cone-pak, the use of specialized explosives to smash large boulders; rare-earth magnets; tungsten alloys; hot isostatic pressing; and pyrotechnics, specifically demolition and mining applications. South Africa is using the highly enriched uranium from its former nuclear weapons as fuel for the Safari-1 reactor.

*Andre Buys, International Security Digest, 12/93 (10763).*

### 1/94

The African National Congress (ANC) plans to hold a conference from 2/11/94 to 2/13/94 to debate its nuclear policy. Participants

from government, industry, and opposition political groups are invited to discuss the significance of the nuclear industry to South Africa. ANC members will formulate ANC nuclear policy during a closed session.

*Eskom, Generation Nuclear Group; in ENS NucNet, 1/17/94 (10676).*

## SOUTH AFRICA WITH COMMONWEALTH OF NATIONS

### 9/24/93

Canada and other countries of the (British) Commonwealth of Nations lift sanctions against the import of uranium, steel, iron, and coal from South Africa.

*Reuter, 9/20/93; in Executive News Service, 9/20/93 (10602).*

## SOUTH AFRICA WITH EUROPEAN COMMUNITY

### 10/5/93

European Community foreign ministers applaud recent political events in South Africa and announce that the question of lifting bans on nuclear collaboration and the export of "sensitive equipment for police and armed forces" will be placed on the agenda for their 11/93 meeting.

*Reuter, 10/5/93; in Executive News Service, 10/5/93 (10601).*

## SOUTH AFRICA WITH ISRAEL

### 1977-1978

An Israeli intelligence agent, representing Israel's Office of Special Tasks, reaches an agreement to supply South Africa with 30 grams of tritium in exchange for 500-600 metric tons of natural uranium for Israel's Dimona reactor. However, in 5/93, the Atomic Energy Corporation of South Africa Ltd. (AEC) says only that "South Africa has in the past, imported tritium from different sources for application in commercial programs such as luminescent safety signs."

*Mark Hibbs, Nucleonics Week, 1/20/94, pp. 5-6 (10956).*

### 11/8/93-11/9/93

Waldo Stumpf of South Africa's Atomic Energy Corporation tells a U.S.-Russian sponsored nuclear seminar, held in New Delhi, that there has been no South African nuclear collaboration with Israel.

*K. Subrahmanyam, Economic Times (New Delhi), 11/12/93 (10762).*

## SOUTH AFRICA WITH ISRAEL AND UNITED STATES

### 1/4/94

South Africa's Atomic Energy Corp. (AEC) rejects the allegation that Israel re-sold 324 U.S.-origin capacitors to South Africa. From 1980-1983, Milco International of the U.S. supplied 810 detonation capacitors to Israel. After a 1983 U.S. Customs raid stopped the transfer of 70 additional devices, Israel returned 486 of the capacitors to the U.S. U.S. agencies believe that Israel re-sold the remaining 324 capacitors, with potential applications for nuclear warheads, to South Africa to be used in an implosion weapons development program.

*Mark Hibbs, Nucleonics Week, 1/20/94, pp. 5-6 (10956).*

## SOUTH AFRICA WITH PRC

### 11/8/93-11/9/93

Waldo Stumpf of South Africa's Atomic Energy Corporation acknowledges at a U.S.-Russian sponsored nuclear seminar, held in New Delhi, that South Africa imported low enriched uranium from China for use in its nuclear weapons program.

*K. Subrahmanyam, Economic Times (New Delhi), 11/12/93 (10762).*

## SOUTH AFRICA WITH UNITED STATES

### 1975

International Signal Corp. (ISC) of the U.S. begins selling a wide range of dual-use equipment through its subsidiary, Gamma Systems Associates, to South Africa for its nuclear program, according to Russian intelligence sources.

*Mark Hibbs, Nucleonics Week, 1/20/94, pp. 5-6 (10956).*

**11/17/93**

Westinghouse applies for a license to export various components to South Africa for units 1 and 2 of its Koeberg nuclear power plant. *U.S. Nuclear Regulatory Commission Export License Report*, 11/93 (10914).

**11/20/93**

The U.S. Senate approves a bill that lifts economic sanctions against South Africa while maintaining the U.N.-mandated embargo on arms sales and nuclear cooperation.

*Reuter*, 11/20/93; in *Executive News Service*, 11/20/93 (10603).

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## SOUTH KOREA

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### INTERNAL DEVELOPMENTS

**10/93**

South Korean Science and Technology Minister Kim Si-Chung says that he will recommend changes to President Kim Yong-sam in the 1991 declaration of denuclearization on the Korean peninsula to allow South Korea to use reprocessing technology for peaceful purposes. The South Korean Foreign Ministry says that Kim's comments are not representative of the government, but a number of lawmakers in the South Korean National Assembly say that South Korea has given up its "nuclear sovereignty" and call for the declaration to be amended. South Korean lawmaker Kang Chang-song says that South Korea should have "the capability of producing nuclear weapons."

*Yonhap (Seoul)*, 10/9/93; in *JPRS-TND-93-034*, 10/27/93, p. 17 (10792). An Song-kyu, *Chungang Ilbo (Seoul)*, 10/12/93, p. 2; in *JPRS-TND-93-034*, 10/27/93, p. 16 (10799). C. Raja Mohan, *The Hindu (Madras)*, 9/9/93, p. 9; in *JPRS-TND-93-025*, 11/10/93, pp. 65-66 (10791).

**10/29/93**

South Korean Prime Minister Hwang In-song says that South Korea does not have

nuclear enrichment reprocessing facilities, but adds that "this does not mean that the South has given up nuclear-related technology development or the use of nuclear fuel." *Yonhap (Seoul)*, 10/29/93; in *JPRS-TND-93-036*, 11/17/93, p. 1 (10955).

**11/16/93**

The South Korean Foreign Ministry names Kim San-hun, special assistant to the foreign minister, nuclear ambassador in charge of negotiations with China, Japan, the U.S., the U.N., and others on the North Korean nuclear issue.

*Yonhap (Seoul)*, 11/16/93; in *JPRS-TND-93-037*, 12/8/93, p. 23 (10690).

**12/26/93**

A report by the National Broadcasting Corp. (NBC) of the U.S. says that South Korea is one of six countries striving to develop nuclear weapons. The NBC report also names Algeria, Iran, Iraq, Libya, and Taiwan.

*CNA (Taipei)*, 12/27/93; in *JPRS-TND-94-003*, 1/31/94, p. 6 (10299).

**1/25/94**

South Korea announces that it will establish a nuclear control center to facilitate nuclear inspections on the Korean peninsula.

*Yomuri Shimbum*, 1/26/94 (10779).

### SOUTH KOREA WITH CANADA

**Late 1992**

South Korea approaches Canada with a request for reprocessing technology. Due to U.S. pressure, Canada refuses to provide the technology, but agrees to provide heavy water reactors of Canadian design.

*Peter Hayes, SISA Journal*, 8/26/93; in *JPRS-TND-93-030*, 9/27/93, p. 8 (10704).

**8/11/93**

GEC Alstom Electromechanique of Canada ships the calandria ordered by Atomic Energy of Canada, Ltd. (AECL) for South Korea's Wolsong-2 nuclear power plant. AECL is helping Korea Heavy Industries and Construction Company to construct the Wolsong-2 plant for Korea Electric Power Corporation (Kepeco).

*Nuclear News*, 9/93, p. 21 (10691).

**10/93**

South Korea and Canada hold a three-day meeting of the Joint Nuclear Energy Coordination Committee in Seoul. The two countries agree on the training of South Koreans in Canada, nuclear fuel technology transfers, joint advancement of nuclear technology in other countries, revisions to the 1/76 Korea-Canada Atomic Energy Cooperation Accord, and cooperation in advancing the extension of the NPT and the peaceful uses of atomic energy. Cooperation between Canada and South Korea is expected, because South Korea plans on building two more Candu reactors and a multipurpose research reactor. It is also expected that South Korea will also continue to purchase Canadian uranium.

*Yonhap (Seoul)*, 10/30/93; in *JPRS-TND-93-036*, 11/17/93, p. 43 (10817).

**12/93**

South Korean Minister of Commerce, Industry, and Energy Kim Chul-su says that Canada is in a good position to receive contracts for planned reactors because of South Korea's satisfaction with reactors of Canadian design already purchased. It is reported that South Korea plans to build an advanced light water reactor (ALWR).

*Korea Atomic Industrial Forum*; in *ENS NucNet*, 12/23/93 (10789).

**12/13/93**

Korean Electric Power Corp. (Kepeco) announces that it will buy 1,190 MT of heavy water from Atomic Energy of Canada, Ltd. for use in the start-up of three 900 MW Candu reactors at Wolsong from 1997 to 1999. The \$270 million contract is the largest purchase of heavy water ever made.

*Nucleonics Week*, 12/26/93, pp. 1, 11-12 (10787). *Reuter*, 9/17/93; in *Executive News Service*, 9/16/93 (10238).

### SOUTH KOREA WITH CANADA AND INDONESIA

**10/30/93**

It is reported that Indonesia has asked South Korea and Canada for training in the areas of nuclear power plant bid specification, safety and licensing.

*Yonhap (Seoul)*, 10/30/93; in *JPRS-TND-93-035*, 11/10/93, p. 65 (10817).

**SOUTH KOREA WITH GERMANY**

**4/93**

A mobile high-force compactor for nuclear waste, the Hansa Superpack from Hansa Projekt Anlagentechnik of Germany, begins operation at the Kori-1 nuclear power plant in South Korea.

*Nuclear Engineering International*, 9/93, p. 45 (10702).

**SOUTH KOREA WITH NORTH KOREA**

**9/1/93**

North Korean spokesman for inter-Korean affairs An Byung-su calls for "urgent talks" with South Korea concerning the long-standing dispute over inspections of nuclear facilities.

*Lee Su-wan, Reuter*, 9/2/93; in *Executive News Service*, 9/3/93 (10235). *Lee Su-wan, Reuter*, 9/7/93; in *Executive News Service*, 9/7/93 (10235).

**9/2/93**

South Korean Prime Minister Hwang In-sung sends a letter to North Korean Prime Minister Kang Song-san, proposing a preliminary meeting on 9/7/93 at the border village of Panmunjom in order to discuss the exchange of special envoys. Hwang also confirms in his letter that three South Korean delegates will meet with North Korean delegates at Panmunjom on 9/10/93, as proposed by the North. However, Hwang warns that if the North is "genuinely interested in solving the nuclear issue and other pending issues between the South and North, no conditions should be attached to the South-North dialogue." Resuming talks with South Korea is a criteria the U.S. demands of North Korea in exchange for future talks and aid.

*Lee Su-wan, Reuter*, 9/2/93; in *Executive News Service*, 9/3/93 (10235). *Lee Su-wan, Reuter*, 9/7/93; in *Executive News Service*, 9/7/93 (10235).

**9/9/93**

North Korea says that it will not attend the talks scheduled for 9/10/93 because South Korea has not met its demand to halt the military exercises with the U.S. North Korea had also failed to appear at a meeting

scheduled for 9/8/93 to discuss the procedural matters for the 9/10 meeting.

*Reuter*, 9/9/93; in *Executive News Service*, 9/9/93 (10946). *Financial Times*, 9/9/93 (10946).

**10/5/93**

North and South Korean officials meet at Panmunjon to discuss the possibility of exchanging high-level special envoys. Little progress is made. North Korea uses the meeting to renew its demands that South Korea cancel the Team Spirit military exercises and pledge not to seek international support against the DPRK over the nuclear issue. These talks were the first held between North and South Korea since 1/93.

*International Herald Tribune*, 10/5/93 (10930). *Asahi Shimbun*, 10/5/93 (10930). *Washington Times*, 10/8/93, p. A12 (10930).

**10/15/93**

North and South Korean officials meet again at Panmunjon to discuss a possible exchange of envoys, but the talks are once again stalled. The chief South Korean negotiator, Song Young-dae, says that the discussions brought the two sides closer to an agreement on the exchange of envoys.

*UPI*, 10/15/93; in *Executive News Service*, 10/15/93 (10931).

**10/22/93**

An analyst for the North Korean daily Nodony Sinmun claims that the nuclear threat on the Korean peninsula lies in nuclear weapons that have been deployed to South Korea and from the "nuclear war exercises" held in South Korea. The analyst notes that in the view of the international community, the only solution to the Korean nuclear issue lies in talks between the DPRK and the U.S., and claims that South Korea is trying to block the talks.

*KCNA (Pyongyang)*, 10/22/93; in *JPRS-TND-93-035*, 11/10/93, pp. 63-64 (10890).

**10/25/93**

North and South Korean officials hold a third meeting at Panmunjon to discuss the possibility of exchanging envoys to discuss the nuclear issue, but no agreement is reached. Another meeting is scheduled for 11/4/93.

*Yonhap (Seoul)*, 10/25/93; in *JPRS-TND-93-035*, 11/10/93, p. 11 (10929).

**11/3/93**

North Korea cancels a meeting scheduled for 11/4/93 with South Korea to discuss exchanging presidential envoys to address the nuclear issue. The DPRK cancellation coincides with high-level discussions between U.S. Secretary of Defense Les Aspin and South Korean Defense Minister Kwon Young-hae to consider a response to North Korea's rejection of inspections. In a statement issued by North Korean Vice Defense Minister Kim Kwang-jin, the DPRK accuses the South of "[bringing] the Korean peninsula to the brink of war" and states that Kwon has "charged us [the DPRK] with...fictitious nuclear development." South Korean officials say North Korea's cancellation of the meeting could have been motivated, in part, by a desire to buy time to consider the outcome of the U.S.-ROK security meetings and as a reaction to the U.N. resolution calling on North Korea to fulfill its NPT obligations. *Asahi Evening News*, 11/4/93 (10478). *Reuter*, 11/4/93; in *Executive News Service*, 11/3/93 (10478).

**11/26/93**

A North Korean Foreign Ministry spokesperson warns Japan and South Korea against the development of nuclear weapons and accuses them of using the North Korean nuclear issue as a means to become nuclear weapon states. The spokesperson cites dailies in the U.S. the U.K. which have reported that South Korea has managed to stockpile 10 tons of plutonium, saying this proves South Korea is attempting to develop nuclear weapons.

*KCNA (Pyongyang)*, 11/26/93; in *JPRS-TND-93-038*, 12/29/93, pp. 6-7 (10892).

**1/10/94**

The vice-minister of the Unification Committee of South Korea's Parliament states that the DPRK will allow only one inspection of its 5 MW nuclear reactor and radiochemical lab by the IAEA, which is requesting continual inspections of the seven declared nuclear-related sites in North Korea. The vice-minister also says that the ROK would cancel the Team Spirit exercise, the DPRK would open talks on exchanging special envoys with the ROK, and the U.S. would initiate a third round of U.S.-DPRK talks as soon as the DPRK and the IAEA

reach an agreement and IAEA inspectors arrive in Pyongyang.

*Asahi Shimbun*, 1/11/94 (10867).

**SOUTH KOREA WITH NORTH KOREA,  
JAPAN, AND UNITED STATES**

**10/10/93**

South Korean government officials announce that South Korea, the U.S., and Japan have agreed in principle to form a consortium to help North Korea import a light water reactor (LWR), based on the condition that the North makes its nuclear program transparent. This agreement is the result of a series of working-level meetings between the three countries held since the U.S. talks with North Korea on 7/19/93. The consortium apparently "would arrange financing and technical support" to aid North Korea in importing an LWR. However, before any kind of aid can be received by North Korea, the U.S., South Korea, and Japan have asked that the North accept special inspections by the IAEA and mutual inspections with the South. In his speech on Liberation Day, South Korean President Kim Young-sam said that South Korea "is ready to cooperate in North Korea's peaceful use of nuclear energy" once the nuclear weapons issue has been solved.

*Yonhap (Seoul)*, 10/10/93; in *JPRS-TND-93-034*, 10/27/93, p. 53 (10606).

**SOUTH KOREA WITH PRC**

**9/13/93**

An informed source reveals that South Korea and China recently agreed to cooperate on nuclear power plant technology. The source said that by the end of 1993, Korean Electric Power Corp. (Kepco) is expected sign an \$8 million contract to overhaul China's Daya-1 and Daya-2 nuclear power plants in Guangdong province. Kepco may also provide technology to China for the construction of future nuclear power plants, including the planned 900 MW Daya-3 and Daya-4 reactors.

*Yonhap (Seoul)*, 9/13/93; in *JPRS-TND-93-030*, 9/27/93, p. 28 (10701). *ENS NucNet*, 12/23/93 (10701).

**9/16/93**

Korean Electric Power Corp. (Kepco) announces that it plans to buy 110 tons of heavy water for use in the Wolsong-2 nuclear power plant from the China Nuclear Energy Industry Corp for an estimated \$25 million.

*Reuter*, 9/17/93; in *Executive News Service*, 9/16/93 (10238).

**SOUTH KOREA WITH RUSSIA**

**10/93**

Russia is discussing a joint venture with South Korea to build a MOX fuel fabrication plant in Russia, which would produce MOX for the Korea Electric Power Company (Kepco).

*Mark Hibbs*, *Nuclear Fuel*, 10/11/93, pp. 2-3 (10494).

**SOUTH KOREA WITH UNITED KINGDOM**

**11/93**

British Nuclear Fuels Limited (BNFL) tries to sell a mixed oxide (MOX) fuel that includes reprocessed plutonium to South Korea. South Korea is on the U.K.'s "danger list" for exports which raise proliferation concerns and critics of the proposed sale say that South Korea could easily separate the plutonium out, but BNFL argues that the proliferation risk from the fuel it is trying to sell is low.

*Independent*, 11/14/93; in *International Security Digest*, 12/93, (10429).

**12/93**

British Nuclear Fuels Limited (BNFL) is helping South Korea in the development of methods to transport and store spent nuclear fuel. BNFL representative Bob Connop says that BNFL's work with South Korea does not violate nonproliferation agreements and is approved by the U.K. government.

*Derek Butterworth*, *BNFL News*, 12/93, p. 5 (10430).

**SOUTH KOREA WITH UNITED KINGDOM  
AND UNITED STATES**

**9/93**

Korea Electric Power Corp. (Kepco) selects Kitson's Insulation Contractors, Ltd. (KIC)

of the U.K., along with PIC of the U.S., to supply nuclear containment insulation for the Yonggwang-3 and -4 nuclear reactors that are under construction.

*Nuclear News*, 9/93, p. 80 (10661).

**SOUTH KOREA WITH UNITED STATES**

**Late 1992**

South Korea approaches the U.S. with a request for reprocessing technology. The U.S. refuses to provide the technology, but agrees to cooperate in developing liquid metal technology for cooling a breeder reactor. The U.S. also pressures Canada to refuse an identical request from South Korea at the end of 1992.

*Peter Hayes*, *SISA Journal*, 8/26/93; in *JPRS-TND-93-030*, 9/27/93, p. 8 (10704).

**10/93**

ABB-Combustion of the U.S. expects to be a supplier for Korea Electric Power Corp.'s (Kepco) planned construction of the 900 MW Yonggwang-5 and Yonggwang-6 reactors.

*Nuclear Engineering International*, 10/93, p. 7 (10703).

**11/1/93**

The U.S. and South Korea hold a working-level meeting of a committee for export controls on strategic materials to former communist countries.

*KBS-1 Radio Network (Seoul)*, 10/31/93; in *JPRS-TND-93-036*, 11/17/93, p. 34 (10800).

**11/23/93**

Glitsch, Inc. of the U.S. applies for a license to export a heavy water purification system to South Korea for its Wolsong-3 reactor.

*U.S. Nuclear Regulatory Commission Export License Report*, 11/93 (10914).

**1/94**

Conax Buffalo of the U.S. receives an \$8 million contract to supply advanced penetrations and sealing devices to Korea Electric Power Corp. (Kepco) for two nuclear power plants being constructed at Ulchin, South Korea.

*Nuclear Engineering International*, 1/94, p. 57 (10379).

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## SPAIN

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### SPAIN WITH ARGENTINA

10/93

The Argentine Ministry of Industry contracts the consulting engineers Empresarios Agrupados (E.A.) of Spain to prepare an analysis of nuclear power industry performance in countries where nuclear power is under private ownership. Argentina is paying E.A. \$850 million for the study, which is to be ready by the end of 1993.

*Nucleonics Week*, 10/14/93, p. 6 (10304).

### SPAIN WITH BELGIUM, FRANCE, GERMANY AND UNITED KINGDOM

7/29/93

Enusa of Spain signs an agreement with British Nuclear Fuels Limited (BNFL), Cogema of France, Belgonucleaire of Belgium, and GNS of Germany for the establishment of the European Fuel Cycle Consortium (EFCC). The objective of the EFCC is to offer new technologies "across the whole range of fuel cycle activities" for European Community assistance programs in Eastern Europe and the CIS. The consortium will focus especially on the management of spent fuel.

*Nuclear News*, 9/93, p. 22 (10592). *Nuclear Engineering International*, 9/93, p. 10 (9482).

### SPAIN WITH HUNGARY

7/93

Tecnatom of Spain partially inspects Hungary's Pak-3 reactor vessel and concludes that the vessel is in "highly satisfactory" condition in the areas inspected. The ultrasonic inspection uses a data acquisition and processing system that Tecnatom had previously supplied to Hungary's Paks management for external vessel inspection.

*Nucleonics Week*, 9/30/93, p. 16 (10176).

### SPAIN WITH SWITZERLAND AND UNITED STATES

11/93

Jeffrey Wyvill, vice president of commercial operations of the Swiss-U.S. company ABB Combustion Engineering Nuclear Fuel (ABB C-E), refers to his firm's history of providing Spain, Germany, and Sweden with 10x10 fuel bundles for BWRs to illustrate ABB C-E's broad experience, which helped it win its first contract for BWR fuel supply in the U.S.

*Wilson Dizard III*, *Nuclear Fuel*, 12/6/93, pp. 4-5 (10971).

### SPAIN WITH UNITED STATES

10/13/93

Westinghouse Electric wins an \$80 million contract with Asociacion Nuclear Asco of Spain for export and installation of power generation equipment. During the period 1994-97, Westinghouse will modernize the two 930 MW PWRs it has already sold to Spain by installing new turbine rotors, stationary equipment for high- and low-pressure steam turbines, modernized equipment for electrical generators, and control systems for the turbine generators.

*Nucleonics Week*, 10/21/93, pp. 19-20 (10910).

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## TAIWAN

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### INTERNAL DEVELOPMENTS

10/4/93

A spokesman for Taiwan Power Company values the contract to provide Taiwan with two reactors for its fourth nuclear plant at over U.S.\$1.9 billion. Taiwanese officials say that their country will, for the first time, require the foreign companies to include technology transfers as part of their bids. The deadline for submitting bids is the end of 1993, and the selection of a vendor will

be made in 3/94 or 4/94.

*Reuter*, 10/4/93; in *Executive News Service*, 10/4/93 (10917).

12/27/93

Taiwan's National Defense Minister, Sun Chen, dismisses as "groundless" a 12/26/93 news report by the National Broadcasting Corp. (NBC) that alleged that Taiwan was seeking to develop nuclear weapons. Sun says that Taiwan's three nuclear plants provide electricity and are exclusively for peaceful purposes. The NBC report also identifies Algeria, Iran, Iraq, Libya, and South Korea as countries seeking to develop nuclear weapons.

*CNA (Taipei)*, 12/27/93; in *JPRS-TND-94-003*, 1/31/94, p. 6 (10299).

### TAIWAN WITH AUSTRALIA AND UNITED STATES

4/93

Australian and U.S. officials meet to discuss the possibility of a deal whereby Australia would sell uranium to Taiwan through the U.S. The U.S. makes no commitments during the meeting.

*Radio Australia (Melbourne)*, 10/22/93; in *JPRS-TND-93-035*, 11/10/93, p. 11 (10660).

10/27/93

Australian Foreign Minister Gareth Evans tells the Australian Senate that the possibility of selling uranium to Taiwan through the U.S. is being investigated. Because of Australian nuclear safeguard guidelines, an agreement with the U.S. would be necessary since Taiwan does not have a full-scope safeguards agreement with the IAEA and there are no bilateral agreements between Australia and Taiwan. It is estimated that Taiwan might want 600,000 pounds of uranium per year, worth about U.S.\$13.4 million.

*AFP (Hong Kong)*, 10/27/93; in *JPRS-TND-93-035*, 11/10/93, p. 12 (10660).

### TAIWAN WITH FRANCE AND UNITED STATES

9/93

Taiwan Power Company places two orders with France's Framatome for new spent fuel racks and the necessary re-racking opera-



tions for its Maanshan-1 and -2 PWR units. Brand Companies, Inc., a subsidiary of Waste Management Corp. of the U.S., will perform some of the fuel rack replacement work.

*Nuclear Fuel*, 9/27/93, p. 10 (10378).

#### TAIWAN WITH MULTI-COUNTRY GROUP

1/7/94

ABB-Combustion Engineering, a joint venture of Switzerland, Sweden, and the U.S.; Westinghouse-Nuclear Electric, a joint venture of the U.S. and the U.K.; and Nuclear Power International, a joint venture of Germany's Siemens and France's Framatome, submit bids to supply two 950 to 1350 MW pressurized water reactors for Taiwan Power Co.'s (Taipower) Lungmen nuclear power plant.

*Ann MacLachlan and Pearl Marshall, Nucleonics Week*, 1/13/94, p. 10 (10919). *Taipower/Nuclear Electric*: in *ENS NucNet*, 1/10/94 (10919).

#### TAIWAN WITH PRC AND RUSSIA

11/9/93

The vice-chairman of the Taiwanese Cabinet's Atomic Energy Council, Liu Kuang-chi, announces that Taiwan is "seeking cooperation with Russia or mainland China to store our nuclear waste there." Taiwan has held no formal talks with either country, although informal discussions between Chinese and Taiwanese experts have taken place.

*Reuter*, 11/9/93; in *Executive News Service*, 11/9/93 (10427). *Asahi Evening News*, 11/10/93 (10406).

#### TAIWAN WITH UNITED STATES

11/3/93

Westinghouse of the U.S. applies for a license to export 188,000 kg of 5.00% LEU in the form of fuel assemblies to Taiwan for units 1 and 2 of its Lungmen nuclear power plant.

*U.S. Nuclear Regulatory Commission Export License Report*, 11/93 (10914).

11/23/93

B&W Fuel Company of the U.S. applies for a license to export 416,880 kg of 5% LEU in the form of fuel assemblies to Taiwan for the initial core and three reloads for its Lungmen-1 and -2 reactors.

*U.S. Nuclear Regulatory Commission Export License Report*, 12/93 (10915).

11/30/93

General Electric (G.E.) of the U.S., which has previously built two of Taiwan's three boiling water reactor nuclear stations, withdraws from the bidding to supply Taiwan with two reactors for its two-unit Lungmen plant. In announcing its decision, G.E. cites "the continuing high uncertainties and commercial risks associated with" the Lungmen project.

*Wilson Dizard III, David Airozo and Pearl Marshall, Nucleonics Week*, 12/9/93, pp. 1-2 (10918).