

BALLISTIC, CRUISE MISSILE, AND MISSILE DEFENSE SYSTEMS: TRADE AND SIGNIFICANT DEVELOPMENTS, FEBRUARY-JUNE 1996

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OVERVIEW

Iraq's continued evasion of United Nations Security Council Resolution 687 and **China's** missile exercises near **Taiwan** featured prominently between February and June 1996. **UNSCOM** (U.N. Special Commission in **Iraq**) Chief Rolf Ekeus revealed that Baghdad was concealing between six and 16 Scud missiles on trucks which traveled around the country between different military installations. Also, missile inspectors were denied access to several suspected weapon sites in **Iraq**. According to Ekeus, some of the institutions accused of hiding **Iraq's** proscribed weapons-related materials are also responsible for Saddam Hussein's security, and this explains why Baghdad was unwilling to give the commission access to certain sites. However, in late June, **Iraq** agreed to give **UNSCOM** "immediate, complete and unconditional access" to all of its suspected weapons sites and provided the commission with what it described as "final documents" on its missile and chemical and biological weapon programs. Ekeus said that although Baghdad continued to hide weapons, components, and documentation, he was confident the new agreement would work. In a related development, the **U.S.** State Department informed Congress there was "no indication" that the **Russian** government had "sanctioned" the transfer of missile gyroscopes and accelerometers to **Iraq** in 1995. A **U.S.** government investigation determined that the **Russian-made** components had been smuggled out of the country. If the investigation had implicated the **Russian** government, Moscow's commitment to fulfill its obligations as a new member of the Missile Technology Control Regime (**MTCR**) would have been cast into serious doubt.

In Asia, **China's** Second Artillery Corps test-launched four 600 km-range, nuclear-capable Dong Feng-15 (DF-15, M-9) ballistic missiles. Their trajectories took them from the mainland to the waters off **Taiwan's** two busiest ports, Keelung and Kaohsiung. The tests were perceived in Taipei as deliberate intimidation during the three-week run-up to **Taiwan's** first direct presidential election. However, polls taken in **Taiwan** just before the election showed that the test launches served only to bolster support for the elections among the **Taiwanese** electorate.

Theater missile defense (TMD) efforts progressed in **Israel** with the second successful test flight of an Arrow-2 anti-tactical ballistic missile (ATBM) from the Palmachim launch site near Tel Aviv. The program is funded jointly by the **United States** and **Israel**. Project heads said the first operational

Arrow system should be deployed by the end of 1998 and that **Israel** will have a “significant missile defense capability” by the end of the century. A **U.S.-Israeli** agreement on TMD will bolster **Israel’s** missile defenses. According to **U.S.** officials, the agreement focuses on supplying **Israel** with better early-warning information. Also, Washington has pledged to increase financial support for the **U.S.-Israeli** Nautilus program to develop a laser capable of shooting down rockets such as the Katyusha, which Hezbollah guerrillas have been firing into **Israel** from southern **Lebanon**.

India moved closer to acquiring anti-missile systems from **Russia** in order counter the threat posed by **Pakistan’s** Chinese-made M-11 missiles. Although Moscow has offered to sell **India** its S-300V air defense system, New Delhi wants to purchase **Russia’s** most advanced anti-missile system, the S-300PMU, because of its “unprecedented capabilities” in intercepting ballistic missiles. Additionally, **India** is developing an indigenous anti-missile system known as the Akash.

Finally, debate continued in the **United States** over the accuracy of the National Intelligence Estimate 95-19 (NIE 95-19). In November 1995, the estimate, subtitled *Emerg-*

ing Missile Threats to North America During the Next 15 Years, predicted that “no rogue nation will have the capability to threaten the **U.S.** with missiles before 2010.” Retiring director of the **U.S.** Ballistic Missile Defense Organization Lt. Gen. Malcolm O’Neill questioned this prediction. He argued that the NIE did not account for “wildcards” such as smuggling or gaps in **U.S.** capability, including the technology for conducting surveillance of underground facilities.

Wyn Bowen and Kimber Cramer

NOTE:

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

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

AFGHANISTAN

AFGHANISTAN WITH INDIA

3/23/96

The *Muslim* newspaper reported that India has provided Afghanistan's Rabbani-Mas'ud regime with assistance to make Scud missile systems operational.

Muslim (Islamabad), 3/23/96, p.12; in FBIS-NES-96-059, 3/23/96 (6065).

ARGENTINA

INTERNAL DEVELOPMENTS

5/1/96

The Argentine government declassified 24 secret arms export decrees. President Carlos Menem said this would allow Argentineans to see how officials from the previous administration sold weapons to warring nations. Two of the declassified decrees—2719/92 and 1903/93—referred to Argentina's dismantlement of the Condor-2 missile program. Menem said the Condor project was "a real aberration" that cost Argentina a great deal of money. The president said he had "issued instructions to carefully investigate the Condor project's impact on Argentina." Menem added that most of the weapons sold by the previous administration went to Iran.

Telam (Buenos Aires), 5/2/96; in FBIS-LAT-96-087, 5/2/96 (6086). Telam (Buenos Aires), 4/30/96; in FBIS-LAT-96-086, 4/30/96 (6086).

5/16/96

Argentine Economy Minister Domingo Cavallo announced that the Menem administration had issued a decree to privatize the defense firm Military Industries (FM) and will send a bill to Congress that would eliminate "the legal secrecy on arms imports and exports." The Finance Ministry will oversee the privatization process, which will begin within the next three months and is scheduled to "last no more than a year." In the fu-

ture the Customs Department will control all arms transfers. Cavallo said the previous system encouraged the "import of arms and dangerous technologies" through secret laws over the past 15 years and that privatization of FM will ensure that future arms production will focus on the Argentine military. He added that the bill corresponded with Argentina's decision to dismantle the Condor missile, a project that constituted "the most cold-blooded export of technology to countries that should have never received it, which was not even Argentine technology because it was developed by German companies in our territory." Cavallo said that after the 1990-91 Gulf War the U.N. discovered a facility in Iraq similar to one that manufactured the Condor missile in Cordoba.

Clarín (Buenos Aires), 5/2/96; in FBIS-LAT-96-089, 5/2/96 (6088). Noticias Argentinas (Buenos Aires), 5/17/96; in FBIS-LAT-96-097, 5/17/96 (6088).

ARGENTINA WITH BRAZIL

2/27/96

Argentine Defense Minister Oscar Camilion said it was a mistake for Argentina and Brazil not to have collaborated on space projects in the past. Camilion cited the importance of saving money as one of the principal reasons for cooperation. According to Maria Helena Tachinardi, a Sao Paulo-based journalist, government sources have indicated that the two countries plan to co-produce satellites, conduct research, and build an SLV in the future. Tachinardi said that a bilateral Argentine-Brazilian working group on space cooperation was created in 1989. At the fifth meeting of this group in 1/96, the delegates finalized the details of an agreement on the civilian use of outer space.

Telam (Buenos Aires), 4/5/96; in FBIS-LAT-96-068, 4/5/96 (6027). Maria Helena Tachinardi, *Gazeta Mercantil* (Sao Paulo), 2/28/96; in FBIS-LAT-96-060, 3/27/96 (6027). Jose Casado, *O Estado De Sao Paulo* (Sao Paulo), 2/24/96, p. A4; in FBIS-LAT-96-042, 2/24/96 (6027). *Aviation Week & Space Technology*, 3/4/96, p. 49 (6027).

4/5/96

An Argentine Foreign Ministry source said Brazil and Argentina would conclude "a cooperation agreement on space activities envisaging the use of missile-launch bases located in northern Brazil" during a two-day

meeting between President Menem and Brazilian President Fernando Henrique Cardoso scheduled to begin on 4/7/96. Argentina has been evaluating whether to design its own space rockets or to purchase them from abroad. According to Defense Minister Camilion, Argentina must decide how to "develop observation satellites and other space capabilities."

Telam (Buenos Aires), 4/5/96; in FBIS-LAT-96-068, 4/5/96 (6027). Maria Helena Tachinardi, *Gazeta Mercantil* (Sao Paulo), 2/28/96; in FBIS-LAT-96-060, 3/27/96 (6027). Jose Casado, *O Estado De Sao Paulo* (Sao Paulo), 2/24/96, p. A4; in FBIS-LAT-96-042, 2/24/96 (6027). *Aviation Week & Space Technology*, 3/4/96, p. 49 (6027).

ARGENTINA WITH UNITED STATES

2/29/96

NASA Administrator Daniel Goldin and Conrado Viroto, president of the Argentine Space Agency, extended a five-year space agreement initially signed by the U.S. and Argentina in 1991.

Space News, 3/4/96-3/10/96, p. 2 (6028).

AUSTRALIA

AUSTRALIA WITH BRAZIL, RUSSIA, AND UNITED STATES

3/25/96*

The Russian-U.S. venture International Launch Services (ILS) is exploring the possibility of establishing a new launch site for the Proton booster at Alcantara in Brazil, Darwin in Australia, or Cape Canaveral in the U.S. Russia's Khrunichev currently uses Kazakstan's Baikonur Cosmodrome to launch its Proton rockets. However, space launch locations in Australia and Brazil would be better suited for launching satellites because of their proximity to the equator. Australia's Space Transportation Systems Ltd (STS) is competing with a proposal to build the Asia Pacific Space Launch Center at Gunn Point on the Timor and Afarura Seas, in Australia's Northern Territory. According to STS spokesman Tony Ryan, the proposed \$850 million Australian

facility would include a launch pad, a control center, and a facility for mounting satellites on SLVs. STS Chairman Mike Ahern said "four major international organizations" are willing to take part in the project if it proceeds, "including companies from Asia, Australia, Europe and the United States." According to Charles H. Lloyd, president of ILS's Proton Division, a Proton M launched from Brazil would be able to launch two Hughes HS 601-class satellites simultaneously, in comparison to only one at Baikonur. The Brazilian Space Agency (AEB) is also developing a satellite launch center at Alcantara from which it intends to launch both domestic and foreign SLVs. The Proton could launch a 7.4 ton (6,300 pounds) payload into geosynchronous transfer orbit from Alcantara, in comparison to a 3.9 ton payload from Baikonur. Florida Governor Lawton Chiles has proposed that Cape Canaveral should be modified to accommodate foreign rockets such as the Proton SLV.

Michael K. French, *Space News*, 3/25/96-3/31/96, pp. 4, 25 (6089). Joseph C. Anselmo, *Aviation Week & Space Technology*, 4/15/96, pp. 22-23 (6163).

AUSTRALIA WITH ISRAEL AND UNITED STATES

4/29/96*

The AGM-142 version of Israel's Popeye standoff attack missile—manufactured by Rafael—was selected to upgrade the striking power of the Royal Australian Air Force's (RAAF) F-111C bomber aircraft. Australia is scheduled to sign the contract with Rafael and its marketing and co-production partner, Lockheed Martin Electronics & Missiles of the U.S., in 5/96. The contract will provide for the initial transfer of an undisclosed number of AGM-142 missiles, which are scheduled for deployment with the RAAF in early 1998.

Gregor Ferguson, *Defense News*, 4/29/96-5/5/96, p. 4 (6007).

AUSTRALIA WITH TAIWAN

4/96*

Taiwan is considering purchasing an Australian high-frequency, surface-wave radar for use in cueing the Sky Bow missile defense system. The radar, developed by Telstra

Applied Technologies, has an over-water search range of roughly 300 km and a bistatic linear array with a 50 m receive portion. The system uses a "frequency-modulated continuous-wave scheme", which, according to Telstra, is more effective than pulsed emissions. It can also track direct-wave emissions to pinpoint early trajectories of land-based tactical ballistic missiles. Australia's Defence Science and Technology Organization hired Telstra in 1996 to develop and market the radar.

International Defense Review, 4/96, p.5 (6343).

AUSTRALIA WITH THAILAND

3/20/96

An official from Thailand's Thai Satellite Telecommunications said the firm will finance 50 percent of the preparation work for the development of a commercial space launch facility in northern Australia. According to Tony Ryan, spokesman for Australia's Space Transportation Systems, the preparation work is scheduled for completion by 4/97. The work will include an "environmental impact study and consultations of technical, economic and political matters."

Michael K. French, *Space News*, 3/25/96-3/31/96, pp. 4, 25 (6089).

AUSTRIA

AUSTRIA WITH HUNGARY, INDIA, MOLDOVA, ROMANIA, AND SWITZERLAND

3/3/96

Customs officials in the Feldkirch area of Austria intercepted a truck carrying what were thought to be "guiding systems for torpedoes or missiles" from Moldova. The suspect items had been transported through Romania and Hungary and were destined to be flown from Zurich, Switzerland, to India. According to Austrian Security Director Elmar Marent, illicit arms shipments are often transported around Europe to conceal both the country of origin and the destination. The crates containing the "guiding sys-

tems" contained parachutes.

R. Stroehle, *Kurier* (Vienna), 3/5/96, p. 13; in FBIS-TAC-95-005, 3/5/96 (6017).

BAHRAIN

BAHRAIN WITH UNITED STATES

5/96

The U.S. Congress was informed that Bahrain is seeking to acquire "151 MLRS [multiple launch rocket system] extended-range pods and 51 reduced-range pods" from the U.S. The U.S. has provided Bahrain with nine MLRS launchers in recent years. Bahrain also wants the Army Tactical Missile System (ATACMS) to enhance the firepower of its MLRS launchers. ATACMS has yet to be cleared for sale to Bahrain.

Philip Finnegan, *Defense News*, 6/10/96-6/16/96, p. 16 (6198).

BELARUS

INTERNAL DEVELOPMENTS

2/96

Major General Oleg Kruglyakov, commander of the "25th missile arsenal" in Belarus, was arrested and charged with stealing precious metals extracted from missile components. According to Major General Anatoly Glyukov, the republic's military prosecutor, the case against Kruglyakov involves the theft of 7 kg of platinum from the arsenal and the disappearance of two high-ranking officers who worked there.

Larisa Sayenko, *Moscow News*, 2/22/96-2/28/96, p. 13 (6105).

BELARUS WITH CHINA

3/19/96-3/25/96

A 14-member delegation from China's PLA General Staff, led by General Van Zhun [as transliterated], observed Belarusian missile brigade combat exercises, including troop

training at a test range.

H. Markushyn, *Vo Slavu Rodiny* (Minsk), p. 1; in FBIS-SOV-96-062, 3/26/96 (6448).

**BELARUS WITH CZECH REPUBLIC,
HUNGARY, AND RUSSIA**

4/5/96

Belarusian First Deputy Foreign Minister Valeriy Tsyapkala suggested at a press conference in Minsk that Russia might discontinue the withdrawal of nuclear missiles from Belarus if the Czech Republic and Hungary joined NATO and accepted the deployment of nuclear missiles on their territories. Tsyapkala expressed surprise that certain countries would consider allowing the deployment of tactical nuclear missiles on their territory because such a move would make them vulnerable to a future nuclear attack by Russia.

Interfax (Moscow), 4/5/96; in FBIS-SOV-96-068, 4/5/96 (6103). Interfax (Moscow), 4/4/96; in FBIS-SOV-96-067, 4/4/96 (6103).

**BELARUS WITH CZECH REPUBLIC,
POLAND, AND RUSSIA**

4/4/96

Belarusian President Alyaksandr Lukashenka said that Belarus would react with "adequate measures" if NATO deployed tactical nuclear weapons in Poland or the Czech Republic. Lukashenka implied that such measures might include keeping the nuclear warheads currently located in Belarus, instead of returning them to Russia as planned. According to Lukashenka, 18 tactical nuclear missiles and three spare warheads currently remain in Belarus.

Interfax (Moscow), 4/4/96; in FBIS-SOV-96-067, 4/4/96 (6103).

BELARUS WITH RUSSIA

2/27/96

President Alyaksandr Lukashenka and Russian President Boris Yeltsin agreed that Moscow will waive Minsk's \$500 million bill for Russian natural gas in return for "the components of nuclear missiles which had been withdrawn to Russia and dismantled there."

Informatsionnoye Agentstvo Ekho Moskvyy (Moscow), 2/27/96; in FBIS-SOV-96-040, 2/27/96 (6106). Interfax (Moscow), 3/27/96; in FBIS-SOV-

96-061, 3/27/96 (6106). Chrystia Freeland and Matthew Kaminski, *Financial Times*, 2/28/96, p. 3 (6106).

3/27/96

President Alyaksandr Lukashenka pledged to remove the last 18 Russian missiles from Belarus by the end of 1996, but cautioned against rushing the withdrawal process. Lukashenka denied reports that plans exist to station Russian nuclear weapons "in Belarus and [the] Kaliningrad region."

Interfax (Moscow), 3/27/96; in FBIS-SOV-96-061, 3/27/96 (6106). Chrystia Freeland and Matthew Kaminski, *Financial Times*, 2/28/96, p. 3 (6106).

BRAZIL

INTERNAL DEVELOPMENTS

2/13/96*

Brazil's SCD-2A data collection satellite is scheduled to be launched on the Veiculo Lancador de Satellites (VLS) rocket's maiden flight in mid-1997. The VLS was originally scheduled to launch the SCD-2 satellite but was unable to do so because of delays caused by a lack of funds; the majority of the \$12 million allocated for development of the rocket in 1995 did not arrive until 12/95. Brazilian Air Force General Reginaldo dos Santos, director of the Aerospace Technical Center (CTA), said that the funds released in 12/95 will allow for the importation of electronic items "meeting military specifications" made possible by Brazil's accession to the MTCR. In 1996, the VLS program is scheduled to receive between eight and 10 million reais to complete development of the launcher.

Virginia Silveira, *Gazeta Mercantil* (Sao Paulo), 2/13/96, p. C3; in FBIS-LAT-96-062, 2/13/96 (6029).

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BRAZIL WITH FRANCE

6/96

Brazil concluded an \$8.2 million agreement

with France's Societe Europeenne de Propulsion (SEP) for the installation of equipment to test small rocket engines.

Flight International, 6/12/96-6/18/96, p. 26 (6178).

**BRAZIL WITH FRANCE AND
UNITED KINGDOM**

2/29/96

Air Force General Reginaldo dos Santos said Brazilian officials are negotiating with firms in the U.K. and France for the purchase of technology that could reduce development costs for the VLS. The CTA director said that negotiations with British Aerospace and France's Societe d'Applications Generales d'Electricite et de Mecanique have centered on Brazil's acquisition of an inertial navigation system, which the VLS needs to accurately deploy satellites into orbit. Brazil might also be interested in obtaining liquid propellants and thermal protection for the VLS's engines in the future. After the maiden flight of the VLS, scheduled for 1997, the rocket will be launched once every 12 months over the following four years to "perfect the design." Brazil will simultaneously develop an advanced version of the VLS to incorporate both liquid and solid fuels for carrying heavier payloads. According to Brazilian officials, a 30 percent reduction in VLS development costs could reduce the rocket's price to as little as \$7 million per launch. Joao Vaz, president of the Brasilia-based aerospace consulting firm Airways International, said procurement decisions and business ventures must be concluded soon if the VLS is to be operational by the end of the 1990s. Brazil intends to produce basic technology domestically, while importing advanced technologies.

Philip Finnegan, *Defense News*, 3/11/96-3/17/96, p. 26 (6026). Philip Finnegan, *Space News*, 3/11/96-3/17/96, pp. 3, 21 (6026).

BRAZIL WITH UNITED STATES

3/1/96

The U.S. and Brazil signed a bilateral agreement to cooperate in the areas of "commercial space" and nuclear energy. According to a Western diplomat in Brazil, Brasilia's accession to the MTCR and its enactment of legislation to control trade in military tech-

nology have helped reduce U.S. concerns over technology transfers.

Philip Finnegan, *Space News*, 3/11/96-3/17/96, pp. 3, 21 (6026).

BRUNEI

BRUNEI WITH UNITED STATES

6/11/96

The U.S. Department of Defense (DOD) informed Congress that Brunei is seeking to purchase 48 Harpoon anti-ship missiles (ASM) from McDonnell Douglas at a cost of \$57 million. The DOD said the proposed deal was consistent with the U.S. policy of helping friendly nations to "provide for their own defense." According to the Pentagon, Brunei wants to equip its patrol boats with the Harpoon missiles.

Reuter, 6/11/96; in Executive News Service, 6/11/96 (6172).

BULGARIA

BULGARIA WITH RUSSIA

5/28/96

Russian Deputy Minister for Defense Industry Gennadiy Voronin held talks with the heads of Bulgaria's Electron Consortium and Metalkhim Holding and visited the HEMUS-96 international defense technology exhibition in Plovdiv, Bulgaria. Russia's Rosvooruzhenie displayed 20 items of weapon technology at the exhibition, including the Tunguska air defense missile complex and the Buk-M1 air defense rocket complex.

Krasnaya Zvezda, 06/01/96, p. 3 (6369). *Trud* (Sofia), 5/30/96, p. 3; in FBIS-EEU-96-105, 5/30/96 (6180).

5/29/96

Russian Deputy Minister for Defense Industry Gennadiy Voronin and Bulgarian Deputy Prime Minister Doncho Konakchiev dis-

cussed the establishment of joint arms ventures and Bulgaria's "receipt of new licenses" from Russia. Voronin and Ivan Kolev, deputy chief of Bulgaria's Interdepartmental Arms Council, head a working group which is preparing for the 9/96 meeting of the Bulgarian-Russian Commission on Cooperation in Specialized Production. At the meeting, Bulgaria hopes to obtain new licenses and renew old licenses for its military enterprises. Russia and Bulgaria are considering "joint production and appearance on third markets" in the areas of optical electronics, artillery and missile ammunition, and "automatic systems of communications and fire control."

Trud (Sofia), 5/30/96, p. 3; in FBIS-EEU-96-105, 5/30/96 (6180).

CHINA

INTERNAL DEVELOPMENTS

2/8/96*

China's Northwest Industry University "successfully designed" a miniaturized turbo jet engine for use in unmanned jets and cruise missiles. The China Aviation Industry Corporation recently approved three prototypes of the engine.

Xinhua (Beijing), 2/8/96; in FBIS-CHI-96-028, 2/8/96 (5981).

2/8/96

The "VXI automatic missile testing system," jointly developed by the Second Artillery Corps and Harbin Polytechnic University of China, underwent a successful evaluation. This is the first such Chinese system to apply advanced VXI bus technology to automatic missile testing.

Jiefangjun Bao (Beijing), 2/10/96; in FBIS-CHI-96-032, 2/10/96 (5973).

2/14/96

China's Long March 3-B (LM3-B) rocket exploded two seconds after initial launch from Xichang. China Great Wall Industry says that telemetry data from the booster show that a failure in the inertial-guidance system caused the delivery vehicle to ex-

plode. The LM3-B was carrying the Intelsat 708 satellite.

Flight International, 3/6/96-3/12/96, p. 19 (6132).

3/96

A list of firms that contribute to China's missile programs was published to alert exporters to the risk of diversion by the end-user in China. The list comprises: Beijing Electron Tube Plant, which provides support technology, raw materials, and smelting equipment for high-temperature soldering of liquid-fuel rocket engine combustion chambers; Beijing Emulation Center, which performs simulated launch-vehicle experiments; Beijing Institute of Special Engineering Design, which is the nerve center for designing and building the Xichang Space and Launch Center (XSLC) and related special equipment; Beijing University of Aeronautics and Space Flight, which has produced simulated aerodynamic flight conditions for missiles using a numeric control system; Changchun Applied Chemistry Institute, which develops fuel binders and propellants for solid rockets used on strategic missiles and tactical rockets; Dalian Institute of Chemical Physics, part of the Chinese Academy of Sciences, which studies combustion of rocket propellant and laser devices; Harbin Industrial University, which produces aluminum alloy plates used on rocket casings; Southwest Aluminum Processing Plant, which manufactures Long March-2E (LM-2E) large-forged rings; and the United Study Center for Liquid Fuel Rocket Propellant Technology, which studies liquid-fuel rocket engines for the Science and Technology University of National Defense.

Risk Report, 3/96, p. 7 (6446).

3/27/96*

China's air force science personnel recently developed unmanned supersonic target drones. These can be used to test live-fire missiles and air armaments and can fly at high, medium, low and "extremely low" altitudes. They are China's first supersonic drones and will fill a long-standing gap in China's missile testing program.

Xinhua (Beijing), 3/27/96; in FBIS-CHI-96-061, 3/27/96 (6438).

5/23/96*

Over the last several years, China's Second Artillery Corps has taken steps to increase its "rapid mobile combat" [rapid deployment force] capabilities, including the successful completion of a number of important test launches. In order to enhance effectiveness, the corps has focused on employing modern technology. Better, more modern training of missile crews has been a key element of research and has resulted in the development of a large, all purpose strategic missile simulator and a complete simulator system for combat training of the strategic missile unit. Scientists and experts have also developed an "automatic missile testing machine" (see 2/8/96 entry) which allows China "to rank among the world powers" in strategic missile monitoring and tracking technology. With respect to enhancing Chinese combat capabilities and developing an automated missile combat command-and-control system, Second Artillery Corps experts have accomplished a great deal, including development of the missile brigade control system, the electronic command system, and "the commonly-used message processing system." Other achievements include increasing combat effectiveness through better technical reconnaissance, weather forecasting, geographical surveying, anti chemical warfare and logistics support. Corps logistics personnel worked with research organizations and the strategic missile troops themselves on a number of key areas, including the replenishing of oxygen under closed conditions, the elimination of hazardous gases and germs, health protection, the treatment of battlefield emergencies, and the purification and treatment of drinking water and sewage.

Xinhua (Beijing), 5/23/96; in FBIS-CHI-96-105, 5/23/96 (6450).

**CHINA WITH:
Belarus, 150**

CHINA WITH IRAN AND NORTH KOREA

5/12/96

The *Iranian News* reported that Iran had launched ASMs and a new long-range missile called Tondar during naval maneuvers in the northern Persian Gulf, in proximity to

Iran's oil terminal on Kharg Island. The report said that the Tondar is an ASM designed to be launched by coastal batteries. Iran had previously claimed it was developing a ballistic missile called the Tondar-68, which had a reported range of approximately 700 km. The Tondar-68 program was to have benefited from Chinese and North Korean missile technology and assistance. It appears the new Tondar missile might be a derivative of the Chinese-made C-801 ASM or the more advanced C-802. The C-801 has a maximum range of 80 km, which Iran has been attempting to extend for some time.

James Bruce, *Jane's Defence Weekly*, 5/22/96, p. 17 (6195).

CHINA WITH ISRAEL

4/10/96*

An electronics joint venture between two Israeli firms and China National Aero-Technology Import and Export Company has provided China with its first company capable of producing global positioning system (GPS) navigational equipment. The venture is known as Beijing Catic-Azimuth Electronics.

Flight International, 4/10/96-4/16/96, p. 18 (5968).

CHINA WITH RUSSIA

5/96*

China has been purchasing Russian-produced wire-guided torpedoes and submarine-launched wake-homing systems. China may also want to buy submarine-launched cruise missiles in the future, and has modified its 'Romeo' class SSG submarines to carry the C-801 ASM.

John Downing, *Jane's Intelligence Review & Jane's Pointer*, 5/96, p. 6 (6425).

CHINA WITH TAIWAN

3/8/96

Shortly after midnight (local time), China launched three M-9 (DF-15) missiles from bases on its southern coast into waters near Taiwan's two busiest ports, the southern port of Kaosiung and the northern port of Keelung. Two of the missiles were launched into the target square 22 km east of Keelung, and the third into the zone 52 km west of

Kaosiung. The launches were part of planned PLA exercises from 3/8-3/23. The exercises included land and naval maneuvers, and the missile launches were part of live-fire demonstrations. The exercises, particularly the missile launches, directly preceded Taiwan's first presidential election, held 3/23, and were intended to intimidate Taiwan's government.

Edward A. Gargan, *New York Times*, 3/8/96, p. A1 (6140). UPI in; Executive News Service, 3/8/96 (6124). Reuter, 3/8/96; in Executive News Service, 3/8/96 (6140).

3/13/96

In a continuation of its military exercises, China launched a fourth M-9 missile into the waters off Kaosiung. For both the 3/8 and 3/13 launches, China equipped the M-9s with telemetric warheads. These are non-explosive and use navigational survey instruments to collect and transmit missile-flight data.

Markus Eliason, *Washington Times*, 3/13/96, p. A13 (6127).

6/17/96

Taiwanese Army army chief arms procurement officer, Kuo Chuan-sheng, revealed that the phased-array radar for the Tien Kung (Sky Bow) air-defense system was able to detect China's M-9 missile launches into waters near Taiwan in 3/96.

Benjamin Yeh, *Taiwan Central News Agency WWW*, 6/17/96; in FBIS-CHI-96-118, 6/17/96 (6386).

CHINA WITH UKRAINE

5/96

The National Space Agency of Ukraine (NSAU) has signed a \$1 million contract with the China National Space Administration for the purchase of an "Imitator" research station. According to Konstantyn Yartsev, head of NSAU's International Issues Department, the Imitator can simulate gravity, infrared emissions, and temperature, as well as three additional factors. Yartsev said Harbin Polytechnic Institute in China ordered the Imitator, which is produced by the Kharkov Institute of Low Temperatures. Ukraine will use the money from the deal to advance its own space and rocket industries. According to Yartsev, espionage allegations made against Chinese space experts working at Pivdenmach in Dnipropetrovsk in 2/96 will not strain relations between the China

National Space Administration and NSAU. Unian (Kiev), 5/6/96; in FBIS-TAC-96-006, 5/6/96 (6411).

CHINA WITH UNITED STATES

3/96*

The U.S. Bureau of Export Administration's *Export Administration 1994 and 1995 Report on Foreign Policy Controls* stated that the U.S. sold China several missile-related items during those two years. Under Department of Commerce category 7A23, "Inertial Or Other Equipment Using Accelerometers," the U.S. sold seven units for a total of \$1,507,235; under category 3A51, "Mass Spectrometers," one item for \$349,429; under category 2E40, "Technology For The Use Of Hot Isostatic Presses," one item for \$80,000; and under category 3A52, "Cathode Ray Oscilloscopes and Components," 22 units for a total of \$1,137,550.

U.S. Department of Commerce, Bureau of Export Administration, *Export Administration Annual Report, 1994 and 1995 Report on Foreign Policy Controls*, 3/96, p. II-85 (5999).

COLOMBIA

COLOMBIA WITH VENEZUELA

Mid-6/96

Venezuela's foreign ministry denied that Colombia was transporting missiles to its border with Venezuela.

Pedro Prado, *Televan Canal 10* (Caracas), 6/13/96; in FBIS-LAT-96-118, 6/13/96 (6177).

COMMONWEALTH OF INDEPENDENT STATES (CIS)

INTERNAL DEVELOPMENTS

Late 3/96

The Council of CIS Defense Ministers agreed in Moscow to establish a unified air-

defense system for the CIS countries.

Current Digest of the Post-Soviet Press, 4/24/96, p. 21 (6116).

4/1/96

Russia and Belarus established "joint alert duty" to provide protection for the "western foreign air borders of the CIS member states within the boundaries of the state borders of Russia and Belarus." Russia has been eager to maintain a unified air-defense system because the majority of the FSU's missile-attack warning stations are located in other CIS countries. Azerbaijan and Moldova are the only CIS states not to have been included in the system. Moscow will contribute up to 50 percent of the funds needed for the system, and Russian firms will receive a majority of the military contracts associated with it. Russia hopes the establishment of a unified air defense system will remedy the financial difficulties that have resulted in a lack of resources to replace worn-out equipment over the past two years.

Current Digest of the Post-Soviet Press, 4/24/96, p. 21 (6116).

5/96

"Informed military sources" said Russia intends to station a Buk-M1 anti-aircraft complex in Armenia. Following the conclusion of military agreements between Russia and Armenia, experts specializing in anti-aircraft defense and officers from the Russian general headquarters are formulating a plan to defend the CIS' southern air space. The CIS' southern air defense system has been linked with the Gabala radio-locator station in eastern Azerbaijan. The station is designed to monitor incoming ICBMs and is considered to be the most important element of Russia's southern air defense system.

Turan (Baku), 5/14/96; in FBIS-SOV-96-095, 5/14/96 (6099).

CZECH REPUBLIC

CZECH REPUBLIC WITH:

Belarus, Hungary, and Russia, 151
Belarus, Poland, and Russia, 151

EGYPT

EGYPT WITH NORTH KOREA

3/96-4/96

North Korea delivered at least seven shipments of Scud-C missile materials to Egypt, according to a Central Intelligence Agency (CIA) report acquired by *The Washington Times*. The shipments included steel sheets and support equipment, giving Egypt everything that it would need to produce Scud-C missiles. The shipment was part of a 1980's licensing agreement between Egypt and North Korea.

Bill Gertz, *Washington Times*, 6/21/96, p. A1 (6400).

EGYPT WITH RUSSIA

6/10/96*

Egypt has contracted with Russian companies to upgrade its aging SA-2, SA-3, and SA-6 SAMs, according to an unnamed Western diplomat.

Philip Finnegan, *Defense News*, 6/10/96-6/16/96, p. 12 (6197).

ETHIOPIA

INTERNAL DEVELOPMENTS

5/29/96*

The Ethiopian Navy offered to sell 16 naval vessels equipped with SS-N-2 'Styx' ASMs to the highest bidder. Ethiopia also offered to sell Swedish-manufactured "fast armed launches" and a Natya-class minesweeper. According to Captain Gabre Yohanes Tsegaye, the Ethiopian Navy's representative in Djibouti, the Navy wants to take the best offer on the vessels and would rather sell them "as a package." Although the operational status of the vessels is not known, observers in Djibouti say that they have been well maintained. Ethiopia became a land-locked country in 1993 after Eritrea gained

independence following its victory in a 25-year guerrilla war against Ethiopia.

James Bruce, *Jane's Defence Weekly*, 5/29/96, p. 15 (6192).

FINLAND

FINLAND WITH RUSSIA

5/5/96

Russian Prime Minister Viktor Chernomyrdin and Finnish Prime Minister Paavo Lipponen concluded a deal for Finland's acquisition of advanced medium-range Buk M-1 (SA-11) air defense systems from Russia. On 5/7/96, General Gustav Hagglund, commander-in-chief of Finnish defense forces, announced that Finland will overlook Russian debt in exchange for Buk M-1 systems worth an estimated 850 million Finnish marks (\$177.1 million). Hagglund said the deal includes "radars, fire-control systems and spare parts." The Buk M-1 will replace the SA-3 missiles that Finland currently deploys to defend Helsinki against air attacks. Finland considered acquiring the S-300 extended-range air-defense system, but rejected it in favor of the SA-11, which is better suited to its defense needs.

Giovanni de Briganti, *Defense News*, 5/13/96-5/19/96, p. 30 (6120).

FRANCE

FRANCE WITH:

Brazil, 151

Brazil and United Kingdom, 151

FRANCE WITH GERMANY, ITALY, AND UNITED STATES

4/22/96

Germany, Italy, and the U.S. signed a statement of intent to develop and produce the Medium Extended Air-Defense System (MEADS); France reserved the option to

participate at a later date. Designed for use by NATO, MEADS is a mobile theater missile defense (TMD) system designed to provide forward and maneuvering forces with 360-degree coverage against aircraft and ballistic and cruise missile attacks. MEADS will be transportable in a C-130 Hercules aircraft. If it does become involved in the program, France would be responsible for 20 percent of the program's costs, Germany 20 percent, Italy 10 percent, and the U.S. the remaining 50 percent. Because of the French decision not to participate at this time, the U.S. and Italy may find it difficult to meet their increased obligations. The U.S. may now have to pay 60 percent, Germany 25 percent, and Italy 15 percent. According to the French defense ministry, France is not in a position to commit fully to the MEADS program because the future defense budget remains unclear and major weapon choices have yet to be made. U.S. Secretary of Defense William Perry described MEADS as one of the "most challenging tests of transatlantic cooperation."

Olivier Provost, *La Tribune Desfosses* (Paris), 5/20/96, p. 11; in FBIS-TAC-96-007, 5/20/96 (6318). *Arms Control Today*, 4/96, p. 26 (6318). AFP (Paris), 3/26/96; in FBIS-TAC-95-005, 3/26/96 (6022). Graham Warwick and Gilbert Sedbon, *Flight International*, 4/24/96-4/30/96, p. 17 (6022).

5/96

French Defense Minister Charles Millon announced France's withdrawal from the MEADS project. Millon cited strategic requirements and financial concerns as reasons for the decision.

Olivier Provost, *La Tribune Desfosses* (Paris), 5/20/96, p. 11; in FBIS-TAC-96-007, 5/20/96 (6318). *Arms Control Today*, 4/96, p. 26 (6318).

FRANCE WITH IRAN AND QATAR

6/3/96*

France agreed to sell Iran "a small number" of Exocet ASMs, according to anonymous Iranian sources. The sources said France will deliver the Exocets to Iran in 7/96 and 8/96 through a private company in Qatar. The ASMs will reportedly be deployed on missile boats with the regular Iranian Navy and the Revolutionary Guards Navy in the Oman Sea and the Persian Gulf. Although France previously supplied Iran with 10

Combattante-II missile boats, only four of them are currently operational. The remaining vessels are described as "seaworthy," although they lack "essential equipment."

Iran Brief, 6/3/96, p. 8 (6234).

FRANCE WITH ISRAEL AND UNITED KINGDOM

3/27/96*

Israel's Rafael has chosen the French-made Micro-turbo TRI-60 engine to power the version of the Popeye air-to-surface missile it is offering to fulfill the U.K. Royal Air Force's conventional stand-off missile (CASOM) requirement.

Flight International, 3/27/96-4/2/96, p. 19 (6129).

FRANCE WITH ITALY AND UNITED KINGDOM

3/96

Defense ministers from the U.K., France, and Italy agreed to jointly develop a frigate designed to provide civilian cargo convoys or naval battlegroups with a "defensive bubble" against aircraft and ASMs such as the Exocet. The program will cost seven billion pounds (\$10.7 billion) and a total of 22 ships will be produced: 12 for the U.K., four for France, and six for Italy. Development of the ship's Principal Anti-Air Missile System (PAAMS) will be led from Paris. The PAAMS office will build on a series of missiles Italy and France have been developing since the late 1980s. The U.K. will pay Italy and France approximately 100 million pounds for the work already completed on these missiles. The Project Horizon ship and its command and control and secondary weapon systems will be designed at an office in London.

Bernard Gray, *Financial Times*, 3/23/96-3/24/96, p. 2 (6019). Bernard Gray, *Financial Times*, 3/23/96-3/24/96, p. 1 (6019).

FRANCE WITH KUWAIT

3/18/96

French Economy and Finance Minister Jean Arthuis visited Kuwait to emphasize "France's keenness to conclude a certain number of contracts," including Aerospatiale's offer to provide MM-15 sea-to-sea missiles for the eight P-37 fast patrol

boats the Gulf emirate purchased from France's Constructions Mecaniques de Normandie in 3/95. The patrol boats cost Kuwait roughly 2.5 billion French francs. In an effort to sweeten the MM-15 offer, France has "raised the possibility" of giving Kuwait intelligence information gathered from its Helios-1 observation satellite. A similar proposal previously helped France secure a "major security deal" with Qatar. Following the 1990-91 Gulf War, Kuwait's Amir Jabir al-Ahmad al-Sabah informed France that it might be awarded "a relatively exclusive right" to supply the emirate with naval equipment and weapons. In 10/93, France and Kuwait subsequently signed a 10-year defense pact. Kuwait is in the process of concluding contracts to fulfill two other defense requirements. First, Kuwait is considering the procurement of six seaborne helicopters equipped with air-to-sea missiles. France is offering Kuwait Panther helicopters armed with AS 15TT missiles. Second, Kuwait may also purchase four 2,000 ton corvettes armed with anti-aircraft missiles, "anti-surface missiles," and anti-submarine missiles. France is bidding for the corvette contract "with products designed by 12 foreign shipyards." France sold Ffr3.8 billion worth of arms to Kuwait in 1995.

Jacques Isnard, *Le Monde* (Paris), 3/27/96, p. 6; in FBIS-TAC-95-005, 3/27/96 (6291).

4/29/96*

Three French firms set aside \$157 million (808 Ffr) in offset commitments for selling radar, missiles, and missile boats to Kuwait.

Philip Finnegan, *Defense News*, 4/29/96-5/5/96, p. 10 (6261).

FRANCE WITH KUWAIT AND UNITED KINGDOM

6/4/96

A Kuwaiti newspaper reported that Kuwait's defense minister, Sheikh Ahmad al-Hamoud al-Sabah, said a contract had been awarded to British Aerospace (BAe) for the purchase of Sea Skua ASMs. BAe was competing with France's Aerospatiale, which wanted to provide Kuwait with MM-15 ASMs. According to a BAe official, although the company was informed that Kuwait's Ministry of Defense had chosen the Sea Skua to equip its

Combattante-I patrol boats, the company was not aware of an official decision. According to Jean Claude Ranvier, a spokesman for Aerospatiale, his firm has yet to be informed of the competition's outcome.

Reuter, 6/4/96; in Executive News Service, 6/5/96 (6191). *Defense News*, 6/10/96-6/16/96, p. 2 (6191). Bernard Gray, *Financial Times*, 6/5/96, p. 8 (6191).

FRANCE WITH PAKISTAN

4/10/96

France announced that it will deliver three modernized Agosta submarines to the Pakistani Navy over the next few years. Rear Admiral Alain Bereau, commander of French naval forces in the Indian Ocean, said the submarines will have the capability to launch SM-39 ASMs.

Muslim (Islamabad), 4/11/96, pp.1, 11; in FBIS-NES-96-072, 4/11/96 (6062).

FRANCE WITH RUSSIA

Late 5/96

The impending Russian elections caused a week's delay in the founding of Starsem, a joint Franco-Russian company designed to market European Ariane and Russian Soyuz rockets. The launch of Starsem was scheduled instead for early 6/96. Yuri N. Koptev, director-general of the Russian Space Agency (RKA), sent a telegram to notify French officials of the change. According to officials, France's Aerospatiale and Arianespace will own 35 percent and 15 percent of Starsem, respectively. RKA and Russia's Central Specialized Design Bureau of Samara—which produces the Soyuz—will share the other 50 percent. According to Arianespace spokesman Claude Sanchez, "nothing could be considered definitive" until the papers establishing Starsem as a private company "under French law" had been signed by the parties involved. Michel Delaye, director of Arianespace's space and defense division, said the firm plans to eventually design a new upper stage for the Soyuz rocket in order to place "groups of small satellites into low Earth orbit." In the short term, Arianespace and Aerospatiale will be responsible for marketing the Soyuz outside former Soviet territory.

Peter B. de Selding, *Space News*, 5/27/96-6/2/96, pp. 1, 29 (6215).

6/96

Russian defense companies displayed S-300V and S-300PMU1 air defense systems and the Smerch rocket system at the Eurosatory '96 defense exhibition in Paris. Russia's Rosvoorouzhnie and the State Scientific Production Enterprise Splav, and the French firm Selerg announced the completion of a joint project to develop an improved 122 mm rocket for the Russian PN-21 Grad rocket system. The improved version incorporates a new motor which has increased the rocket's range to 36 km. Accuracy has also been improved significantly. The Russian and French companies intend to sell the new rocket to countries that already possess Grad rocket systems.

Valentin Rudenko, *Krasnaya Zvezda*, 7/2/96, p. 3 (6377).

FRANCE WITH SAUDI ARABIA

Mid-5/96

A Saudi Arabian F-2000 frigate began a 12-month refit at France's Toulon Naval Dockyard. The *Mahdina* is the first of four Royal Saudi Navy (RSN) F-2000 frigates scheduled to be refitted in France under the four-year Project Mouette contract concluded in 1/94. According to Direction des Constructions Navales (DCN) officials at the dockyard, the refit includes "missiles, sonars, and the helicopter handling system." Missile enhancements will focus on giving the ships' OTOBreda/Matra Otomat anti-ship weapon systems added capabilities "both inside the missiles and in the ship-based control system," including "enhanced search patterns to re-attack missed targets." According to DCN officials, the first-generation Thomson-CSF Airsys Crotale self-defense missiles will not be upgraded. The frigates' nuclear, biological, and chemical weapon (NBC) detection and protection systems will also be improved. This will involve enhancing the air-tight gas citadel by fitting more sophisticated pressurization systems, and "retrofitting new, high performance detection sensors."

Jane's Defence Weekly, 6/26/96, p. 26 (6284).

FRANCE WITH SOUTH KOREA

5/8/96

The special products division of South Korea's Daewoo Heavy Industries has produced an indigenous surface-to-air missile (SAM) system, known as either the Chonma or Pegasus. The turret, sensors, and internal parts of the Pegasus were developed with technology provided by the French firm Thomson-CSF and are identical to the Crotale New Generation SAM. The Pegasus has eight launch tubes mounted on a tracked chassis. The missile itself is said to have a 12 kg warhead, "command-to-line-of-sight" guidance, and an effective range of 10 km. Full-scale production of the SAM is expected to begin in 1998.

Christopher F. Foss, *Jane's Defence Weekly*, 5/8/96, p. 16 (6036).

FRANCE WITH UAE AND UNITED KINGDOM

4/3/96*

A proposal by Matra Defense to sell the Black Shahine variant of its Apache air-launched stand-off weapon to the United Arab Emirates may violate the MTCR's Category One guidelines. According to sources close to the signatories, the proposal is causing concern because it threatens to violate, "at least in spirit," the guidelines that restrict the transfer of missiles capable of delivering 500 kg or greater payloads over a distance of 300 km or more. If the Black Shahine is deemed to exceed MTCR guidelines, France will either have to ask for a "one-off approval for the missile" transfer or seek permission "to modify the design to meet the guidelines." Matra Defense has made no comment to date. A proposal by the U.K.'s GEC-Marconi to sell a stand-off weapon to the UAE has already been turned down by the British Ministry of Defence (MOD) on the grounds that it would be relatively easy to increase the missile's range. The MOD has since approved a revised design proposal from GEC-Marconi. Matra Defense and GEC-Marconi are competing against each other to fulfill the UAE's stand-off missile requirement.

Douglas Barrie, *Flight International*, 4/3/96-4/9/96, p. 22 (6121).

GERMANY

GERMANY WITH:

France, Italy, and United States, 155

GERMANY WITH UKRAINE AND UNITED STATES

3/18/96

Colonel Oleksandr Serdyuk, head of the Administrative Management of Strategic Nuclear Forces Troops at the Ukrainian Defense Ministry, said the 3.5 million marks promised by the German government for the "soft" destruction of five ICBM launch silos located near populated areas will not be enough. Ukraine is seeking financial assistance from the U.S. to help pay for the destruction of these five silos.

Ukrinform (Kiev), 3/19/96; in FBIS-TAC-95-005, 3/19/96 (6102). Unian (Kiev), 3/18/96; in FBIS-TAC-95-005, 3/18/96 (6102).

HUNGARY

HUNGARY WITH:

Austria, India, Moldova, Romania, and Switzerland, 150

Belarus, Czech Republic, and Russia, 151

HUNGARY WITH ISRAEL AND SWEDEN

2/28/96*

Sweden's Saab conducted preliminary talks with Rafael and other Israeli companies regarding a potential Israeli weapons package to be offered as part of Saab's proposal to supply the Hungarian Air Force with JAS39 Gripen aircraft. Air force officials in Hungary are reported to be interested in acquiring Israeli-made air-to-surface and air-to-air weapons. Saab refused to comment on its talks with the Israeli firms.

Andrzej Jeziorski and Arie Egozi, *Flight International*, 2/28/96-3/5/96, p. 18 (6253).

INDIA

INTERNAL DEVELOPMENTS

2/4/96

Indian Foreign Minister Pranab Mukherjee said there was no chance the Prithvi-1 SSM program would be abandoned, despite technical and training problems that threaten to delay the missile's deployment—originally scheduled for mid-1996—by at least 12 months. The Indian Army plans to station initially approximately 25 Prithvi missiles along the border with Pakistan. The army's long-term aim is to acquire 100 Prithvi missiles, extra mobile launchers, and support equipment. Meanwhile, an official from India's Defence Research and Development Organisation (DRDO) said Bharat Dynamics Ltd. (BDL) of Hyderabad was having difficulties with the Prithvi-1 SSM's guidance system and "handling" the missile's liquid fuel. The official added that the first 15 Prithvi-1 SSMs were in production, but could not be delivered for at least another year. According to Indian defense sources, army personnel lack experience in handling liquid fuel, which must be loaded immediately prior to launch and removed if the launch is aborted. Indian defense sources said safety and efficiency concerns had dictated the delay.

Vivek Raghuvanshi, *Defense News*, 2/12/96-2/18/96, p. 32 (6068).

2/16/96

Officials from the Indian Defence Ministry said the state-owned Ordnance Factory Board (OFB), which produces projectiles, rockets, and other military equipment, is scheduled to undergo major restructuring. The changes will involve the closure of approximately a third of the company's production lines, and the transfer of employees to more defense-oriented positions. OFB employs 173,000 workers and maintains 39 factories.

Defense News, 2/26/96-3/3/96, p. 24 (6060).

3/8/96

India's parliamentary standing committee on defense released a report on defense policy planning and management, recommending serial production of the Agni IRBM and its introduction into the armed forces. According to the report, the demand was made due to a change in the security environment, including "developments of military significance in the neighborhood." Prior to postponement of the Agni project, India test-fired three Agni IRBMs (without warheads), two of which were successful. The Indian government had declared previously that the project ended with the launch of the Agni-03 reentry vehicle.

Radio Pakistan Network (Islamabad), 2/7/96; in FBIS-NES-96-026, 2/7/96 (6110). *Times of India* (Bombay), 3/11/96, p. 1; in FBIS-NES-96-049, 3/11/96 (6110).

3/21/96

India's third Polar Satellite Launch Vehicle (PSLV-D3) launched the 922 kg IRS P3 remote sensing satellite into an 817 km near-polar Sun-synchronous orbit from the Sriharikota Satellite Launching Range. The launch of the PSLV-D3 was the third in a series of developmental flights. More than 150 private and public industries were involved in manufacturing the PSLV's components, which include "tight alloy structures, motor cases, electronic packages, heat-shield and radars." Dr. Kasturirangan, chairman of the Indian Space Research Organisation (ISRO), was confident the organization could begin commercial launches of the PSLV with its next flight. ISRO plans to offer commercial launches of satellites weighing up to 1,000 kg into 900 km orbits at a cost of between \$10 and \$12 million.

Flight International, 2/7/96-2/13/96, p. 24 (6167). Vivek Raghuvanshi, *Space News*, 3/25/96-3/31/96, pp. 3, 26 (6167). V.R. Mani, *Times of India* (Bombay), 3/22/96, p. 1; in FBIS-NES-96-061, 3/22/96 (6167). All India Radio Network (Delhi), 3/21/96; in FBIS-NES-96-056, 3/21/96 (6167).

3/23/96

Prime Minister Narasimha Rao said the Indian space program "will not be allowed to suffer because of a lack of funds."

All India Radio Network (Delhi), 3/23/96; in FBIS-NES-96-058, 3/23/96 (6167). All India Radio Network (Delhi), 3/21/96; in FBIS-NES-96-056, 3/21/96 (6167).

3/31/96

Dr. Kasturirangan said that the PSLV will soon be in demand to conduct launches for the world's satellite manufacturers. He added that there were not many rockets in the PSLV's class that can launch satellites into low earth or intermediate orbits. According to Kasturirangan, initial evaluations of the PSLV's 3/96 launch indicate that India's SLVs "can be safely used to launch Indian remote sensing satellites." Bhuvanesh Chaturvedi, India's minister of state for science and technology, said the launch had demonstrated India's substantial capability in both satellite technology and rocketry. ISRO can now prepare for the maiden launch of its next generation SLV, the Geostationary Satellite Launch Vehicle (GSLV), now scheduled for late 1998.

Vivek Raghuvanshi, *Space News*, 3/25/96-3/31/96, pp. 3, 26 (6167). V.R. Mani, *Times of India* (Bombay), 3/22/96, p. 1; in FBIS-NES-96-061, 3/22/96 (6167). All India Radio Network (Delhi), 3/31/96; in FBIS-NES-96-065, 3/31/96 (6167). All India Radio Network (Delhi), 3/21/96; in FBIS-NES-96-057, 3/21/96 (6167). *Strategic Digest*, 2/96, p. 276 (6167). Vijay Menon, *India Today*, 4/15/96, p. 99 (6167). All India Radio Network (Delhi), 3/21/96; in FBIS-NES-96-056, 3/21/96 (6167).

4/96

India's Bharatiya Janata Party (BJP) outlined its national security priorities, which include serial production of the Prithvi SSM, operationalization of the Agni SSM, and acceleration of the development of the Agni-2 SSM. The "BJP manifesto's external security blueprint" emphasized the importance of expanding India's missile program and of boosting military preparedness in general. The BJP also stressed its opposition to the MTCR.

Doordarshan Television Network (Delhi), 4/20/96; in FBIS-NES-96-079, 4/20/96 (6059). *Indian Express* (Delhi), 4/10/96, p. 9; in FBIS-NES-96-072, 4/10/96 (6059).

4/1/96*

The Indian Navy is set to acquire three new indigenously produced missile systems as part of a "shift in strategic thinking which advocates technology inputs to maintain the competitive edge of the cash-strapped Navy." The three missile systems include: a new long-range ASM; a naval version of the Akash SAM; and a large submarine-launched

ballistic missile (SLBM) called "Sagarika." The ASM will have a range of approximately 20 km when launched from the air and more than 10 km when fired from a ship. The naval version of the Akash SAM has been designed specifically to be fired from naval platforms and will be used to target incoming enemy aircraft and missiles. The new ASM and the naval Akash SAM are scheduled for deployment by 1999. The Sagarika SLBM project began in 1994 and is scheduled for completion by 2005. Defense sources describe the Sagarika as the most advanced missile on DRDO's agenda. The Sagarika project is in the final stages of scale-model testing and the propulsion system is under development. According to unnamed sources, the Indian Navy's shift in emphasis toward missile technology has been driven by monetary restrictions and a recognition of the important role missiles will play in the next century. The budget for developing these naval missiles and their related systems is rumored to be more than Rs 100 crore.

M. Ahmed, *Business Standard* (Delhi), 4/1/96, p. 5; in FBIS-NES-96-065, 4/1/96 (6064).

4/4/96

K. Madhavan Nair, director of India's Liquid Propulsion Systems Centre (LPSC), said ISRO had completed the design of the cryogenic engine for the GSLV's upper stage. Nair also said that work on fabricating the engine was well under way at Machine Tool Aids and Reconditioning (MTAR) and Godrej. Since the completion of designs for the 7.5 MT cryogenic engine, LPSC has begun designing larger and more powerful engines at its Valiamala complex near Thiruvananthapuram. The new 12 MT and 16 MT engines will be used to launch 3,500 kg and 4,000 kg communications satellites into geostationary orbit, respectively.

Asian Recorder, 5/6/96-5/12/96, p. 25603 (6326).

6/2/96

An explosion damaged India's Defence Research and Development Laboratory (DRDL) in Hyderabad, where India's medium- and long-range missiles are developed. DRDL denied reports that as many as 20 people were injured by the explosion. According to DRDL head A.J.P. Kalam, the blast was isolated to the High Energy Mate-

rials Building, where chemical additives for propellants are developed. Kalam said the blast would not affect the program because the facility's principal laboratory was left unscathed. The results of an official investigation into the explosion have yet to be released. Kalam said DRDL would increase safety measures at the laboratory regardless of the results from this investigation. A faulty air-conditioning system is thought to have triggered the blast, although India did not rule out sabotage because of recent terrorist bomb attacks in New Delhi and Rajasthan.

K.S. Jayaraman, *New Scientist*, 6/8/96, "India's Missile Centre Shaken By Blast." *India Today*, 6/30/96, p. 13 (6271). Electronic Telegraph, 6/3/96, <http://www.telegraph.com> (6168).

6/3/96

Indian Defence Minister Mulayam Singh Yadav said India's new BJP government would "uphold the broad national consensus on security issues," although he did not specifically comment on India's missile program. Yadav took office just as India's Plan-2005 called for 70 percent of India's weapon requirements to be met through indigenous production within 10 years.

Times of India (Bombay), 6/4/96, p. 7; in FBIS-NES-96-109, 6/4/96 (6218). Atul Aneja, *Hindu* (Madras), 6/3/96, p. 11; in FBIS-NES-96-109, 6/3/96 (6218).

6/12/96

Unnamed senior government sources in New Delhi said the Indian Ministry of Defence had suspended all civilian use of the IRS-1C satellite to "monitor without distraction nuclear and ballistic missiles deployed by China and possibly Pakistan near India's border." The IRS-1C can perform "sensitive military satellite operations" using its panchromatic camera, which can "return a resolution of 5.8 m and can facilitate more accurate aerial photographs in detail." According to the anonymous Indian sources, the IRS-1C has "a tilt of 30 degrees on either side," which permits it to "record imagery deep inside neighboring countries."

Vivek Raghuvanshi, *Defense News*, 6/17/97-6/23/96, p. 10 (6235).

6/24/96*

India's \$285.7 million program to develop a nuclear-powered submarine has suffered a setback following failed tests of its "compressed enriched uranium water reactor with

plate type fuel." According to sources from the DRDO, the advanced technology vessel (ATV) will be fitted with 1,000 km-range cruise missiles and an advanced sonar system. The ATV is being developed by the Department of Atomic Energy, the DRDO, and the Indian Navy.

Vivek Raghuvanshi, *Defense News*, 6/24/96-6/30/96, p. 40 (6233).

INDIA WITH:

Afghanistan, 149

Austria, Hungary, Moldova, Romania, and Switzerland, 150

INDIA WITH PAKISTAN AND RUSSIA

6/19/96

India's Kerala Cabinet decided to re-open the investigation into the ISRO spy scandal. The scandal involved documents related to Vikas engines and the PSLV, which were allegedly delivered to Pakistani agents in 1994. Chief Minister E.K. Nayanar said the central government's Research and Analysis Wing (RAW) and the Intelligence Bureau (IB) would be asked to participate in the investigation. The case began in 11/94 with the arrest of Mariam Rasheeda, a Maldivian, who was accused of staying in India after her visa had expired. Other people arrested included: Rasheeda's associate, Fauziya Hassan; S. Nambinarayanan, deputy director of the LPSC; D. Sasikumaran, general manager of fabrications at LPSC; K. Chandrasekharan, a trade representative from the Russian Space Agency Glavkosmos; and Chandrasekharan's friend, S.K. Sharma. Police Inspector General Ramon Srivastava was also accused of involvement in the scandal. When India's Central Bureau of Investigation (CBI) originally investigated the case, it reported that allegations by the State Police and IB were unfounded. The CBI also concluded the accused had been forced by their interrogators to make statements and recommended to the Ernakulam chief judicial magistrate that the case be closed. The six defendants were subsequently released on the basis of CBI's report. The suspended Indian scientists were reinstated to their positions.

Hindu (Madras), 6/20/96, p. 11; in FBIS-NES-96-121, 6/20/96 (6220).

INDIA WITH PAKISTAN AND UNITED STATES

Early 2/96

U.S. government officials expressed their disapproval of the 1/27/96 Prithvi-2 SSM test because of concern this type of action would raise tensions on the subcontinent. After the test, U.S. Deputy National Security Advisor Sandy Berger was sent to Pakistan in an attempt to ease regional tensions.

Theresa Hitchens and Vivek Raghuvanshi, *Defense News*, 2/12/96-2/18/96, pp. 3, 36 (6323). Tim Zimmerman, Brahma Chellaney, and Phillippe B. Moulrier, *U.S. News & World Report*, 2/12/96, pp. 42-44, 46 (6323). Raj Chengappa, *India Today*, 2/29/96, pp. 98-99 (6323).

2/3/96

Indian Foreign Minister Pranab Mukherjee dismissed U.S. State Department claims that the Prithvi-2 test was destabilizing. Mukherjee said that because of Pakistan's recent "buying spree" of weapons, including submarines, missiles, and Mirage fighter aircraft, the test was not a mistake. He added that there was no chance India would abandon the Prithvi program. One Indian defense official dismissed Pakistani objections to the test as an overreaction, claiming the new missile would not be fitted with nuclear warheads. The official said that nobody would put a nuclear warhead on a 250 km-range missile because "the risk of damage to the area of origin is too much."

Reuter, 2/4/96; in Executive News Service, 2/4/96 (6274). Farhan Bokhari and Vivek Raghuvanshi, *DefenseNews*, 2/5/96-2/11/96, p.18 (6274). Radio Pakistan Network (Islamabad), 2/3/96; in FBIS-NES-96-024, 2/3/96 (6274).

INDIA WITH RUSSIA

2/12/96

Indian defense sources said Russia's S-300 air-defense system would have to be tested in India before a final decision on its purchase could be made. India is considering purchase of the S-300PMU to counter Pakistan's acquisition of Chinese-manufactured M-11 SSMS. Russia has already offered to sell India the S-300V anti-missile system but Indian defense officials want the S-300PMU because of its "unprecedented capability." Indian defense sources estimate the system could cost New Delhi approximately

Rs 800 crore (U.S. \$230 million), and they believe that India could initially afford to purchase only three or four systems to protect New Delhi and Bombay from M-11 attacks.

Ranjit Kumar, *Navbharat Times* (Delhi), 2/18/96, p. 1; in FBIS-TAC-96-004, 2/18/96 (6249). Vivek Raghuvanshi, *Defense News*, 2/26/96-3/3/96, p. 8 (6061).

2/22/96

Russian diplomats said that India's previous shortage of spare parts for its Russian-made weapon systems had been resolved and "the supply fluctuation" had been "stabilized."

Vivek Raghuvanshi, *Defense News*, 2/26/96-3/3/96, p. 8 (6061).

3/96*

By the end of 1996, the first of seven cryogenic booster engines will be delivered to ISRO by Russia's Glavkosmos. According to a Glavkosmos spokesman, the remaining six engines will be delivered at six-month intervals.

Strategic Digest, 3/96, pp. 423-424 (6066).

3/96

A delegation from Russia's Rosvoorouzhnie led by Oleg Sidorenko, the company's deputy director general, visited India to display Russian weaponry at the second India International Civil and Defence Equipment and System Exhibition and Conference (IICDES '96) in New Delhi. Russian exhibits at IICDES '96 included modern Sukhoi combat aircraft, 155 mm guns, submarines, helicopters, and missile and anti-aircraft systems. Russia's Splyav State Scientific Production Enterprise displayed Grad, Uragan, and Smerch multiple launch rocket systems at the exhibition. These systems and other Russian military equipment drew the attention of Indian specialists, who reportedly agreed with their Russian counterparts to continue developing bilateral military cooperation between their two countries. Splyav is providing the Indian Army with assistance to upgrade its BM-21 Grad multiple rocket launchers.

Hindustan Times (Delhi), 4/2/96, p. 9; in FBIS-NES-96-066, 4/2/96 (6111). Viktor Sergeev, *Segodnya* (Moscow), 3/13/96, p. 4; in FBIS-UMA-96-080-S, 3/13/96 (6111). Yuriy Golotiuk, *Segodnya*, 3/27/96, p. 2 (6376). Viktor Litovkin, *Finansoviye Izvestiya*, 3/5/96, p. 2 (6376).

3/15/96

Russia and India were scheduled to sign a "package of military documents on technical cooperation, including five contracts worth \$3.5 billion." Russia's Rosvoorouzhnie has been working on the five contracts with India for approximately two years under the auspices of the "Program of Military-Technical Cooperation for the Period Up to 2003." Under the terms of the contracts, India's ground forces are scheduled to acquire Russian-made Urugan and Smerch multiple rocket launchers, S-300V anti-aircraft missiles, and Tunguska mobile anti-aircraft guns.

Flight International, 3/13/96-3/19/96, p. 14 (6063). Stephen Blank, *Jane's Intelligence Review*, 4/96, pp. 167-169 (6063). Viktor Sergeev, *Segodnya* (Moscow), 3/13/96, p. 4; in FBIS-UMA-96-080-S, 3/13/96 (6111). Viktor Litovkin, *Finansoviye Izvestiya*, 3/5/96, p. 2 (6376).

INDIA WITH RUSSIA AND UNITED STATES

6/18/96

The espionage trial of Aluru J. Prasad began in a U.S. federal court. Prasad, an Indian businessman accused of selling U.S. military secrets to the Soviet Union and Russia, is charged with attempting to obtain classified information about infrared missile detectors, radar systems, and the stealth bomber's special paint that makes the aircraft invisible to radar. A graduate of MIT, Prasad is president of India-based Hyderabad Batteries Ltd. Subrahmanyam Kota, the prosecution's chief witness, reportedly sold Prasad unclassified information regarding the stealth bomber's paint for \$20,000 and drawings of a Sikorsky helicopter rotor for \$15,000. Although Kota was indicted with Prasad and a third man, espionage charges against him were dropped as part of a plea bargain. Kota reportedly sold U.S. military software to the Soviet Union during the Cold War and has sold biotechnology secrets to Russia since the end of the Cold War. The Indian-born Kota is an American citizen and president of the Boston Group, a computer consulting company. The trial is expected to provide some insight into how espionage has changed since the end of the Cold War.

Washington Times, 6/19/96, p. A6 (6248).

INDIA WITH UKRAINE

4/16/96*

Ukraine has reportedly offered missiles to India, but negotiations between the two countries have so far been unproductive.

Aleksandr Sychev, *Izvestiya*, 4/16/96, p. 3 (6187).

INDONESIA

INDONESIA WITH MALAYSIA, PHILIPPINES, SINGAPORE, SOUTH AFRICA, TAIWAN, AND VIETNAM

4/24/96

South African Defense Minister Joe Modise identified Malaysia as an important market for Pretoria. Malaysia could also become a gateway for South African defense manufacturers to access expanding markets in Indonesia, the Philippines, Singapore, Taiwan, and Vietnam, where "defense budgets will be big." South Africa has already signed three joint-production agreements with Malaysian firms, including ventures to produce electro-optics and electronic-countermeasure systems and equipment. The three Malaysian companies are: Malaysian Optics Systems, SME Industries Group, and Mara Holdings. According to Modise, the defense systems produced by South Africa's Denel Group are "much sought after in the Far East" because of their "reliability and value for money."

New Straits Times (Kuala Lumpur), 4/25/96, p. 7; in FBIS-EAS-96-083, 4/25/96 (6012).

INDONESIA WITH RUSSIA

6/96

Russia's Reutov defense plant and Vympel missile design bureau displayed missiles and rockets at the Indonesia Air Show 1996 (IAS-96) in Jakarta.

Valentin Rudenko, *Krasnaya Zvezda*, 7/2/96, p. 3 (6377).

INDONESIA WITH UNITED KINGDOM

2/21/96*

The U.K.'s Lucas Industries is establishing

a joint "precision-machining" venture with Indonesia's PT Metinca Dirgantara and PT Pindad. The venture will support Indonesia's aerospace sector. Lucas will have a 51 percent stake in the venture, while PT Pindad and PT Metinca Dirgantara will have a 34 and 15 percent stake, respectively.

Flight International, 2/21/96-2/27/96, p. 12 (6004).

IRAN

INTERNAL DEVELOPMENTS

Early 2/96

Vice Admiral Scott Redd, commander of naval forces for the U.S. Central Command (CENTCOM), said Iran's test-launch of a Chinese-manufactured C-802 ASM in the North Arabian Sea in early 1/96 "renewed concerns" about Tehran's naval potential. The C-802 has a range of 95 km. Redd said that since 1994, Iran has been increasing its "fixed manned launch sites" for SSMs and SAMs. Redd estimated that Iran has at least nine long-range SAM sites located on the mainland and islands in the Persian Gulf, compared to three HAWK missile sites in the early 1990s. Iran has HAWK, SA-5, and SA-6 SAMs located at these sites. Tehran also has up to four SSM sites.

Iran Brief, 3/4/96, p. 6 (6265). Voice of the Islamic Republic Of Iran First Program Network (Tehran), 5/2/96; in FBIS-NES-96-087, 5/2/96 (6265). Barbara Starr, *Jane's Defence Weekly*, 2/7/96, p. 14 (6265).

Mid-4/96

Iran conducted the five-day "Salman-1 of 75" naval exercise between Jazireh-e Khark and Bushehr in the Persian Gulf, during which missile-launching frigates and "anti-surface air-to-sea air units" were mobilized.

Voice of the Islamic Republic of Iran First Program (Tehran), 4/13/96; in FBIS-NES-96-074, 4/13/96 (6077).

5/1/96*

Iran has been constructing tunnels capable of housing long-range ballistic missiles along its Persian Gulf coastline. According to CENTCOM Commander General Binford

Peay, Iran is "doing a lot of tunneling near their littorals." CENTCOM spokesman Navy Captain Mark D. Neuhart confirmed Peay's statement and said that the tunnels appeared to have been constructed to store, rather than launch, missiles. Neuhart said that the tunnel project was part of Iran's defense modernization program. CENTCOM asserted that Iran's tunnels would "not have an immediate effect on U.S. activity in the Persian Gulf," but Washington intends to continue monitoring the situation. U.S. Defense Secretary William Perry said that he did not think the tunnels would fundamentally alter Iran's ability to wage war. Some U.S. defense officials have asserted that the combination of Iran's tunnels with its deployment of Chinese-made anti-ship missiles and Soviet-made submarines was "noteworthy." The tunnels are thought to be designed to protect storage and potential launch sites for North Korean manufactured No-dong-1 SSMs, as well as to house Scud SSMs.

New York Times, 4/30/96, p. A7 (6263). Barbara Starr, *Jane's Defence Weekly*, 5/8/96, p. 4 (6263). *Financial Times*, 5/3/96, p. 6 (6263). *Washington Post*, 5/3/96, p. A24 (6263). *Jane's Defence Weekly*, 5/1/96, p. 3 (6263).

5/12/96-5/15/96

Maritime units of Iran's Revolutionary Guards fired ASMs during maneuvers in the Persian Gulf. According to Revolutionary Guards Marine Colonel Parviz Qowski, the event marked the first time marine units had launched land-to-sea and sea-to-sea missiles during military exercises in the northern Gulf. According to the Iranian news agency IRNA, the "four-day war games" took place between Kharg Island and the port of Bushehr.

Reuter, 5/14/96; in Executive News Service, 5/15/96 (6078).

5/13/96

Iran announced that it had tested a new missile called Tondar, which it claims to have produced indigenously. The Tondar is thought to be a land-based ASM. According to Brigadier General Ahmad Dadbin, commander of Iran's land forces, Iran has "achieved the technology of missile production."

James Bruce, *Jane's Defence Weekly*, 6/12/96, p. 27 (6196). *Jane's Defence Weekly*, 6/5/96, p. 15 (6196).

5/23/96-5/24/96

Iran conducted the Velayat (Guardianship) military exercise involving 200,000 troops and hundreds of tanks in the Koush-e Nosrat desert south of Tehran. According to the commander of the exercise, General Hadi Golestaneh, missile, artillery, engineering, and communications units took part in the maneuvers. Ten armored and infantry divisions, 100 helicopters from the Iranian army's Havanirouz air wing, and six independent brigades also participated. The maneuvers involved approximately half of Iran's regular armed forces and were the largest ever to be conducted in the Middle East. The exercise coincided with a warning by CENTCOM Commander General Binford Peay that Iran is expected to increase the range of its SSMs to make them capable of reaching targets in Europe.

Jane's Defence Weekly, 6/5/96, p. 15 (6196).

6/10/96

The Second International Machine-tool, Construction Equipment, and Heavy Machinery Fair began in Tehran. Iranian officials described the exhibition as a triumph in the face of U.S. sanctions. During the opening ceremony, Iranian Commerce Minister Yahya Al-e Ishaq said that despite U.S. sanctions, Iranian firms were currently exporting industrial technology and equipment, and "were able to secure" overseas markets in Africa and Central Asia. According to Ishaq, Iran had earned millions of dollars recently by providing engineering services to other countries. A total of 80 European and 250 Iranian firms participated in the exhibition.

Iran Brief, 7/1/96, p. 1 (6273).

6/25/96

President Hashemi Rafsanjani chaired a meeting of the Supreme Economic Council at which it was decided that Iran will purchase 7.3 billion rials worth of navigation-control units, equipment for ground-based flight-control radar stations, and laboratory equipment. The council also directed the Central Bank of the Islamic Republic of Iran to provide the Nasr electronics research-and-development center with a loan to enable it to conclude its current projects.

IRIB Television First Program Network (Tehran), 6/25/96; in FBIS-NES-96-125, 6/25/96 (6239).

6/30/96

Naval forces from the Iranian Army and the Islamic Revolutionary Guards Corps (IRGC) initiated the Falaqh-5 missile maneuvers in the Persian Gulf. The exercise involved "missile sites of the Khatam ul-Anbia headquarters as well as missile units of the naval forces of the army and IRGC." The public relations department of the navy said the four-day exercise was designed to improve the combat readiness of Iran's naval forces. Iranian naval forces tested their missile, communication, defense, and transport equipment during the first phase of the exercise.

IRNA (Tehran), 7/3/96; in FBIS-NES-96-129, 7/3/96 (6287). IRNA (Tehran), 6/30/96; in FBIS-NES-96-129, 6/30/96 (6287).

IRAN WITH:

China and North Korea, 153
France and Qatar, 155

IRAN WITH JAPAN

6/20/96

Tokyo's District Court ordered a former executive from Japan Avionics Electronics Industry Ltd. to pay damages of approximately 1.25 billion yen for making illegal shipments of missile components to Iran in 1991. The lawsuit was brought against the former executive by shareholders wanting to protect their firm against financial losses stemming from the management decision to allow the illegal exports. The shipments resulted in the firm being fined by the U.S. The court's decision, based on a 5 billion yen lawsuit brought against the former president and two former executives by a shareholder from Fukuoka, ordered the three men to jointly pay 40 million yen of the total 1.25 billion yen in damages. Japan Avionics Electronics Industry Ltd. manufactures "internal [inertial] navigation equipment" for aeronautical applications. NEC has 50.1 percent equity in the firm.

Kyodo (Tokyo), 6/20/96; in FBIS-EAS-96-121, 6/20/96 (6193).

IRAN WITH UKRAINE

2/27/96*

In an interview conducted on an unspecified date at an undisclosed location, Yevhen

Mykytenko, chief of the Ukrainian Foreign Ministry's Middle East Department, said that Ukraine does "not supply arms to Iran" and that Kiev "has repeatedly stated so." Mykytenko emphasized that Ukraine adheres to all nonproliferation agreements regarding missile technology, nuclear technology, and offensive arms.

Halia Pavlia, Intelnews (Kiev), 2/27/96; in FBIS-SOV-96-039, 2/27/96 (6095).

5/22/96

Morteza Muhammad-Khan, Iran's minister of economic affairs and finance, and Ukrainian Deputy Prime Minister Anatoly Kinakh signed an agreement pledging economic cooperation between the two countries. Muhammad-Khan and Kinakh are co-chairs of the Iranian-Ukrainian Trade and Economic Committee. Ukraine has supplied Iran with assistance in the fields of electronics, satellite technology, rocket manufacture, transportation, metallurgy, and mineral extraction.

Current Digest of the Post-Soviet Press, 6/19/96, p. 26 (6278).

IRAQ

INTERNAL DEVELOPMENTS

2/14/96

UNSCOM Chief Rolf Ekeus answered questions about Iraq's potential development of a long-range missile "during a closed-door session" with the U.N. Security Council. U.N. inspectors suspect that Iraq is attempting to develop a longer range version of the Al-Hussein missile that would have a range in excess of 2,000 miles. According to a senior U.N. official, such a missile could reach London, Paris, or Moscow. Although U.S. and U.N. officials are concerned that Iraq's missile program may be more advanced than previously thought, one U.S. intelligence source said that any program involving missiles capable of reaching European capitals is in its "rudimentary stages."

Stewart Stogel, *Washington Times*, 2/16/96, pp. A1, A19 (6081).

3/10/96

UNSCOM Deputy Chairman Charles Duelfer said that Baghdad was still in possession of prohibited "documents and items," and he doubted whether Iraq had accounted for all the long-range missiles it was banned from possessing under the terms of the 1990-91 Gulf War cease-fire.

Reuter, 3/11/96; in Executive News Service, 3/11/96 (6130).

3/11/96

After a four-day visit to Iraq, UNSCOM Deputy Chairman Charles Duelfer said Iraq had pledged to cooperate with U.N. weapons inspectors following an 18-hour stand-off outside the Irrigation Ministry in Baghdad on 3/9/96. According to Duelfer, no documents were found at the ministry. UNSCOM wanted to search the building for documents related to Iraq's long-range missile programs. Since the 3/9/96 stand-off, Duelfer said Iraq had presented final reports to the U.N. on its ballistic missile program, as well as its chemical, biological, and nuclear weapons programs. Although Iraq has said that these declarations are "full, final and complete," Duelfer believes UNSCOM needs to review and assess them before presenting its 4/96 report to the U.N. Security Council. According to Duelfer, a team of 43 ballistic missile experts will remain in the country, and UNSCOM Chief Ekeus may travel to Baghdad in late 3/96.

Reuter, 3/11/96; in Executive News Service, 3/11/96 (6130). John M. Goshko, *Washington Post*, 3/12/96, p. A9 (6290). Leon Barkho, Reuter, 3/9/96; in Executive News Service, 3/11/96 (6290).

3/11/96

UNSCOM was involved in another stand-off in Iraq outside an underground training facility and barracks of the Republican Guard at Salabati, 30 miles southeast of Baghdad. According to a U.S. official, the facility was suspected of concealing "banned launchers for Scud medium-range missiles" of the type used by Iraq during the Gulf War. U.N. officials say that if Baghdad continues to defy UNSCOM inspection efforts, there is little chance that sanctions on Iraq will be relaxed.

John M. Goshko, *Washington Post*, 3/12/96, p. A9 (6290). AFP (Paris), 3/11/96; in FBIS-NES-96-048, 3/11/96 (6290).

3/18/96

In a briefing to the Security Council, UNSCOM Chief Rolf Ekeus said UNSCOM had been obstructed by Iraqi authorities on five occasions since 3/8/96. He accused Iraq of implementing "a pattern" of violations of the cease-fire resolutions. Iraqi Deputy Prime Minister Tariq Aziz responded by writing a letter to the Security Council in which he described the accusations as "wrong and baseless."

Evelyn Leopold, *Reuter*, 3/18/96; in *Executive News Service*, 3/18/96 (6290). AFP (Paris), 3/11/96; in FBIS-NES-96-048, 3/11/96 (6290).

3/20/96

UNSCOM Chief Rolf Ekeus told a U.S. Senate subcommittee that UNSCOM suspected Iraq was hiding between six and 16 Scud SSMs on trucks that move between military installations. According to U.N. sources, the missiles were 650 km-range al-Hussein SSMs which can carry 300 kg warheads. According to Ekeus, UNSCOM's five confrontations with Iraqi authorities over gaining access to certain facilities in 3/96 can be explained by Baghdad's desire to keep the missiles concealed. Ekeus said that although senior Iraqi officials had informed him that all of Iraq's missiles and warheads had been destroyed, no documents existed to prove this, and U.N. inspectors had not been allowed to verify the remains.

Christopher Bellamy, *Independent*, 3/23/96 (6266). *Arms Control Today*, 3/96, p. 28 (6266). R. Jeffrey Smith, *Washington Post*, 3/21/96, pp. A1, A28 (6266). *Washington Times*, 3/21/96, p. A15 (6258).

4/1/96*

According to senior U.N. sources, Baghdad has denied UNSCOM the opportunity to question Lieutenant General Amir al-Sa'di, an official well-acquainted with Iraq's weapons programs. The sources reported that Sa'di had been introduced previously as a specialist in the Iraqi missile program. UNSCOM now believes Sa'di is the "most important person concerned with the biological programs, as well as the chemical and missile issues." Iraqi authorities have told UNSCOM that Sa'di will not be able to talk to the commission until 4/5/96.

Khalil Matar, *Al-Sharq Al-Awsat* (London), 4/1/96, p. 2; in FBIS-NES-96-064, 4/1/96 (6256).

4/11/96

UNSCOM released a report which asserts that Iraq continues to conceal illegal missiles and equipment. The report says that Iraq presented the commission with incomplete information and that Baghdad must "provide evidence to show that it no longer possessed forbidden weapons and related materials." Iraq denied UNSCOM's allegations, arguing that it had complied with the U.N.'s demands.

Leon Barkho, *Reuter*, 4/22/96; in *Executive News Service*, 4/22/96 (6294).

4/22/96

An UNSCOM team of 15 ballistic missile specialists arrived in Baghdad to identify and tag Iraqi missiles which have ranges of less than 93 miles. According to John Larrabee, the American leader of the inspection team, the mission's objective was to ensure that Iraq does not modify the ranges of these missiles "beyond what is permitted" under the terms of the 1991 Gulf War cease-fire. According to U.N. sources, Larrabee's team will remain in Baghdad for more than one week, and will perform spot checks in pursuit of "banned materials."

Leon Barkho, *Reuter*, 4/22/96; in *Executive News Service*, 4/22/96 (6294).

5/5/96*

During an interview in Jordan, Wafiq al-Samarrai, former chief of Iraq's Security Services, said that Iraq still possessed 40 Scud missiles that could be fitted with chemical, biological or conventional warheads. Al-Samarrai also said Iraq still had 15 biological warheads and once stockpiled over 1,000 missiles.

Valerio Pellizzari, *Il Messaggero* (Rome), 5/5/96, p. 12; in FBIS-NES-96-089, 5/5/96 (6079).

6/11/96

A group of 30 UNSCOM missile inspectors were prevented from entering a Republican Guard base located west of Baghdad. The subsequent standoff between the U.N. inspectors and Iraqi officials lasted eight hours at the site, which was reported to be "near a prison in a Baghdad suburb."

New York Times, 6/12/96, p. A8 (6337). *Executive News Service*, 6/10/96 (6337).

6/12/96

UNSCOM missile inspectors were prevented from entering a Republican Guard installation in the Al-Qadissiyah district of Baghdad. Team leader Nikita Smidovich, a Russian long-range missile expert, said the UNSCOM inspectors would remain at the site "as long as it takes."

New York Times, 6/14/96 (6337).

6/12/96

The U.N. Security Council passed a unanimous resolution demanding that Iraq provide "unrestricted access" for UNSCOM to all suspected weapon sites. UNSCOM Chief Rolf Ekeus said there was "a high probability" that Baghdad was concealing items the commission is "convinced still exist" in Iraq.

Barbara Crossette, *New York Times*, 6/13/96, p. A8 (6337).

6/13/96

Iraq prevented UNSCOM inspectors from entering two more sites near Baghdad. Although UNSCOM Chief Rolf Ekeus said one of the sites belonged to the Republican Guard, he did not provide details about the second location. Ekeus said his inspectors were seeking materials, documents, and equipment related to Iraq's ballistic missiles. According to Ekeus, all the locations inspectors wanted to gain access to "belonged to government bodies guilty of concealing documents or weapons" from UNSCOM.

Financial Times, 6/14/96, p. 6 (6337).

6/14/96

Iraq prevented UNSCOM from accessing two additional sites thought to house materials relating to its proscribed weapons. According to Iraqi eyewitnesses, "scores" of UNSCOM inspectors guarded the entrances to several Republican Guard facilities on 6/14/96. Iraqi Deputy Prime Minister Tariq Aziz said the inspectors were denied access for national security reasons, but added that Baghdad would permit them to enter the sites if he and UNSCOM Chief Rolf Ekeus were allowed to accompany them.

New York Times, 6/15/96 (6337). Leon Barkho, *Reuter*, 6/14/96; in *Executive News Service*, 6/17/96 (6337).

6/19/96

UNSCOM Chief Rolf Ekeus arrived in Baghdad to persuade Iraq to allow inspectors to enter Republican Guard sites suspected of concealing prohibited weapons materials.

S.V. Venkatraman, AFP (Paris), 6/24/96; in FBIS-NES-96-123, 6/25/96 (6337).

6/20/96

Wafiq al-Samarrai told the *Al-Sharq Al-Awsat* newspaper's bureau in Amman, Jordan, that Baghdad still possessed "scores of surface-to-surface missiles in the prohibited range." Samarrai cited "reliable information" that Iraq still possessed 40 Al-Hussein SSMS, 25 of which were "in a disassembled form." The former head of Iraqi military intelligence said that Iraq was hiding "very important" documents related to its weapons programs in the Republican Palace and in camps of the Special Guard and the Republican Guard. Samarrai said he had "reliable information" regarding houses in which documents were kept, and added that some documentation was stored in armored personnel carriers and tanks.

'Imad al-Furayh, *Al-Sharq Al-Awsat* (London), 6/21/96, p. 6; in FBIS-NES-96-122, 6/21/96 (6237).

6/22/96

After four days of talks with Iraqi Deputy Prime Minister Tariq Aziz and other Iraqi officials, UNSCOM Chief Rolf Ekeus told reporters in Bahrain that a "major breakthrough" had been made in Baghdad; this resulted in Iraq's surrender of "new files on its illegal arms programs" and its pledge "to grant total access to military bases." According to Ekeus, Baghdad agreed to give UNSCOM "immediate, complete and unconditional access" to all of its suspected weapon sites, and provided what Iraq described as "final documents" on its missile, and chemical and biological weapons programs. Ekeus said that Iraq offered to submit a report to the U.N. by the end of 6/96 with a "full, complete and final declaration on all its weapons programs." Under the agreement, Ekeus and Aziz will also start reviewing developments on a monthly basis.

S.V. Venkatraman, AFP (Paris), 6/24/96; in FBIS-NES-96-123, 6/25/96 (6337). *Washington Times*, 6/25/96, p. A 15 (6337).

6/24/96

UNSCOM Chief Rolf Ekeus said that Iraq continues to hide weapons, components and documentation, but added that he was confident the new agreement would work. According to Ekeus, some of the Iraqi institutions charged with concealing weapons-related materials are also responsible for President Saddam Hussein's security, and this was why Baghdad was sometimes unwilling to give UNSCOM access to certain sites. Ekeus said that Baghdad was hiding items by "static means" as well as on trucks that could travel around Iraq.

Washington Times, 6/25/96, p. A 15 (6337).

IRAQ WITH RUSSIA AND UNITED STATES

6/96

Robert Einhorn, U.S. deputy assistant secretary of state for politico-military affairs, told the House National Security Committee there was "no indication" the Russian government "sanctioned" the transfer to Iraq of Russian-made ICBM gyroscopes and accelerometers in 1995. A U.S. investigation of the transfer determined that the missile components were smuggled out of Russia. According to Einhorn, the U.S. is waiting for a final report on the incident from the Russian government, although it is not known when this will be received.

Jane's Defence Weekly, 6/26/96, p. 6 (6272).

IRAQ WITH UNITED KINGDOM

2/15/96

The results of a three-year investigation into Britain's role in supplying Iraq with military-related equipment were made public. The report, written by high court judge Sir Richard Scott, determined that cabinet ministers, including two men currently in the cabinet, had deliberately misled Parliament about the government's policy towards the sale of equipment to Iraq. The report did not, however, find the ministers' actions to be "duplicitous in the sense of a cover-up." The investigation also determined that former Ministry of Defence and Department of Trade and Industry representatives knew they were allowing the transfer to Iraq of equipment that was being used to develop and produce sophisticated weaponry. The report

concluded that Parliament and the public were "designedly led to believe that a stricter policy toward non-lethal defense exports" to Baghdad had remained in force, when in reality it had been changed. Prime Minister John Major initiated the investigation in 1993 following the trial of executives from Matrix Churchill, a U.K.-based industrial firm. The executives had been charged with violating British regulations that prohibited the sale to Iraq of equipment that could be used in the manufacture of sophisticated weapon systems. The trial collapsed after the government was forced to release documents revealing that it had actually encouraged the sale of sophisticated lathes to Iraq, in hope of gaining intelligence about Baghdad's weapons programs.

Stephanie Strom, *New York Times*, 2/27/96, p. A3 (6021). Stephanie Strom, *New York Times*, 2/16/96, pp. A1, A4 (6021).

ISRAEL

INTERNAL DEVELOPMENTS

4/96*

The Malat division of Israel Aircraft Industries (IAI) successfully tested a new design of its Eye View close-range unmanned aerial vehicle (UAV). The 50 km-range Eye View can carry a payload of 15 kg for up to four hours and is equipped with a Tamam plug-in optronic payload (POP), which consists of daylight and infrared sensors. Malat is also developing the Eye View II UAV, a 130 kg version designed to carry a heavier payload.

Defense News, 2/19/96, p. 16 (6251). *International Defense Review*, 4/96, p. 22 (6251).

ISRAEL WITH:

Australia and United States, 150
China, 153
France and United Kingdom, 155
Hungary and Sweden, 157

ISRAEL WITH SINGAPORE

4/22/96

Tony Tan, Singapore's deputy prime minis-

ter and defense minister, announced at the Tuas Naval Base that the Royal Singapore Navy (RSN) has acquired Israeli-manufactured Barak anti-missile defense systems for six of its missile corvettes. Tan did not discuss the price. In early 1996, the RSS *Valour* was Singapore's first corvette to be equipped with the new missile; Tan said the remaining five corvettes will be fitted with fully operational Barak missile systems within the next 12 months. IAI is prime contractor for the Barak system. Each of Singapore's missile corvettes is already equipped with eight Harpoon ASMs, a 76 mm gun, and six Whitehead anti-submarine torpedoes.

Reuter, 4/22/96; in Executive News Service, 4/22/96 (6009). *Straits Times* (Singapore), 4/23/96, p. 1; in FBIS-EAS-96-083, 4/23/96 (6009).

ISRAEL WITH SWITZERLAND

2/21/96*

Tadiran signed a \$35 million contract with Switzerland's Oerlikon Contraves to provide ground-control systems and digital datalinks for the Israeli-developed Ranger UAVs ordered by the Swiss Army. Tadiran will supply "digital datalinks for control and guidance and video channels for image transmission and telemetry." Oerlikon Contraves leads the consortium that will provide the Swiss Army with its Ranger UAVs. Tadiran will deliver the system through 2000.

Bruce D. Nordwall, *Aviation Week and Space Technology*, 3/18/96, p. 48 (6074). *Flight International*, 2/21/96-2/27/96, p. 22 (6074).

ISRAEL WITH TURKEY

3/96

Rafael concluded a \$50 million contract to provide the Turkish Air Force with television-guided Popeye air-to-surface missiles for Ankara's proposed \$600 million F-4 Phantom aircraft upgrade project. The upgrade is scheduled to begin in mid-1996 and will be done by prime contractor Israel Aircraft Industries..

Flight International, 3/27/96-4/2/96, p. 19 (6129).

5/12/96*

Turkey will finance over 80 percent of a project to produce medium-to-long-range missiles with Israel, according to a report in the *Al-Kifah Al-'Arabi* weekly magazine.

The secret venture will provide Israel and Turkey with missiles, and allows for the export of some missiles to NATO and other countries. According to the report, Israeli specialists have complained that Israel's limited geographic size, in comparison to countries like Turkey, limits its ability to conduct accurate missile tests.

Syrian Arab Republic Radio Network (Damascus), 5/12/96; in FBIS-NES-96-093, 5/12/96 (6073).

ISRAEL WITH UNITED KINGDOM

4/1/96*

Rafael offered its turbojet-powered Popeye Turbo missile to fulfill the U.K.'s conventionally armed stand-off missile (CASOM) requirement. The 16 ft-long Popeye is a slightly larger version of the USAF AGM-142 Have Nap missile. Popeye, which has the same 20 inch diameter as the AGM-142, can carry an imaging infrared warhead. Political concerns may thwart Rafael's attempt to supply Popeye, because the U.K. intends to export CASOM to its Tornado aircraft customers in the Middle East, such as Saudi Arabia. Officials at Rafael contend that the export issue is "solvable."

John D. Morrocco, *Aviation Week & Space Technology*, 4/1/96, pp. 52-54 (6264).

4/10/96*

Schlomo Milo, new president and chief executive of Israel Military Industries (IMI), said that British Aerospace was considering acquisition of a variant of IMI's Delilah decoy vehicle.

Arie Egozi, *Flight International*, 4/10/96-4/16/96, p. 23 (6259).

ISRAEL WITH UNITED STATES

2/96

A U.S. Congressional report accused Israeli agents of stealing secret information about "missile chemistry" from the U.S. Uri Dromi, head of the Israeli government's Jerusalem press office, refused to comment on the accusations until the Israeli embassy in Washington had reviewed the report. The report follows similar accusations made by an official from the U.S. Department of Defense (DOD) some months earlier and recommended that the DOD increase its monitor-

ing of foreign-controlled companies in the U.S.

Ross Dunn, *Times*, 2/24/96 (6072).

2/6/96

The joint U.S.-Israeli Nautilus laser gun was successfully test fired in New Mexico at the White Sands Missile Range. The laser was situated at the High Energy Laser Systems Test Facility (HELSTF). Nautilus destroyed an unarmed Russian 122 mm BM-21 rocket 15 seconds after lock-on. Shi'ite guerrillas in southern Lebanon regularly launch rockets of this type into northern Israel from southern Lebanon from truck-mounted, 40 round BM-21 launchers. According to Israeli defense officials, Israel became involved in the Nautilus project in 1995. Plans for the Nautilus Tactical High-Energy Laser (THEL) include deploying the system in batteries of four-to-six vehicles capable of destroying a "high volume of incoming rockets" fired from multiple rocket launchers. Multiple Nautilus units could be used to protect troop concentrations and towns near front lines, or individually in an anti-terrorist role to defend military bases and cities against single rockets launched from "primitive launchers." By 1999, Israel and the U.S. plan to deploy two prototypes of the Nautilus THEL air-defense system. On 2/9/96, Avi Benayahu, Israeli Ministry of Defense media advisor, said the Nautilus project was still in the "initial stages and a very long way from completion."

International Defense Review, 4/96, p. 13 (6292). David A. Fulgham, *Aviation Week and Space Technology*, 3/5/96, pp. 58-59 (6292). Steve Rodan, *Jerusalem Post* (Jerusalem), 2/12/96, p. 2; in FBIS-NES-96-029, 2/12/96 (6292). *Flight International*, 2/21/96-2/27/96, p. 14 (6292). Reuter, 2/9/96; in Executive News Service, 2/9/96 (6292).

2/11/96

According to David Ivri, director of Israel's Ministry of Defense, Israel intends to deploy the Arrow-2 ATBM by 1998, by which time it is expected to have attained a "minimum operational capability." According to Joseph Butler, acting director of the U.S. Army's Arrow program office, the U.S. will not finance production or purchase the system. Pentagon officials have said the Arrow system is not portable enough to meet U.S. requirements. U.S. Secretary of Defense

William Perry recently committed \$200 million for the Arrow deployment phase. Although the total cost of the Arrow program has been estimated at \$10 billion, Lt. General Malcolm O'Neill, director of the U.S. Ballistic Missile Defense Organization (BMDO), has told Congress it will cost less than that.

UPI, 2/11/96; in Executive News Service, 2/11/96 (6293). Rowan Scarborough, *Washington Times*, 3/9/96, pp. A1, A5 (6293). Alan Ben-Ami, Qol Yisra'el (Jerusalem), 2/20/96; in FBIS-NES-96-035, 2/20/96 (6293).

2/14/96*

The U.S. Department of Defense (DOD) has decided to halt production of the Hunter Joint Tactical Unmanned Aerial Vehicle (JTUAV), which was developed by TRW and IAI. Paul Kaminski, the DOD's acquisition chief, said that Hunter "failed to meet U.S. military requirements."

Flight International, 2/14/96-2/20/96, p. 27 (6255).

2/20/96

Israel conducted the second test flight of its two-stage Arrow-2 ATBM at the Palmahim launch site near Tel Aviv. The test was deemed to have been a complete success by IAI head Moshe Qeret. Although the Arrow-2 deviated slightly during the initial stages of the launch, this was within test limits, and the missile stabilized during the latter portion of its flight. According to IAI representatives, the launch tested several of the missile's systems. The Arrow-2 was not aimed at a target, but the test provided "tactical focal plane array data." This was the first test of its type for the Arrow's fire-control radar. Future tests will involve the interception of targets. Three additional launches are scheduled for 1996.

Sharon Sade, *Ha'Aretz* (Tel Aviv), 2/22/96, p. A1; in FBIS-NES-96-037, 2/22/96 (6293). *Jane's Defence Weekly*, 2/28/96, p. 17 (6293). F Alan Ben-Ami, Qol Yisra'el (Jerusalem), 2/20/96; in FBIS-NES-96-035, 2/20/96 (6293).

3/96

U.S. Army Chief of Staff General Dennis Reimer requested \$20 million a year from Congress to fund the Nautilus project between 1997 and 2001.

Jeff Erlich, *Defense News*, 4/29/96-5/5/96, pp. 4, 36 (6314).

4/10/96*

The U.S. corporation McDonnell Douglas (MDD) opened a project office to assess a "special version" of Israel Military Industries' (IMI) Delilah decoy missile. IMI believes the missile could be utilized to develop stand-off weapon systems. Although the U.S. Air Force is the most likely customer for the Delilah variant known as the "Light Defender," MDD would probably seek foreign markets for the missile.

Arie Egozi, *Flight International*, 4/10/96-4/16/96, p. 23 (6259).

4/24/96

An unnamed Pentagon official said it was "not a foregone conclusion that the Nautilus will be funded." The U.S. is scheduled to contribute \$50 million of the \$70 million program costs through 1998, starting with \$25 million in 1997. Israel will pay \$20 million in 1997. Gerald Wilson, manager of the Nautilus program, said the U.S. Army Space and Strategic Defense Command would require approximately 15 months to produce a workable prototype.

Jeff Erlich, *Defense News*, 4/29/96-5/5/96, pp. 4, 36 (6314). *Washington Times*, 4/29/96, pp. A1, A10 (6314). Government Press Release (Jerusalem), 5/1/96; in FBIS-NES-96-086, 5/1/96 (6314).

4/28/96

Prime Minister Shimon Peres and U.S. Secretary of Defense William Perry signed a joint declaration on theater missile defense (TMD). The agreement focuses on providing Israel with better warning of ballistic missile attacks through satellite data from the U.S. Defense Support Program. The U.S. will provide \$25 million in the first year of the Nautilus program and Israel will invest \$20 million. The U.S. could end up paying \$50 million of an estimated total of \$70 million during the initial three years of the program. In FY 1996, the U.S. provided \$5 million to the Nautilus program, while Israel contributed \$800,000. Pentagon officials said the U.S. will probably provide Israel with the Mk 15 Phalanx close-in weapon system as an interim anti-rocket capability until Nautilus is ready for deployment. Supporters of Nautilus want to promote the system as a complement to the more expensive THAAD system which is designed to provide missile defense over a wider range.

David A. Fulghum and Bruce D. Nordwall, *Aviation Week & Space Technology*, 5/6/96, p. 23 (6262). John Mintz, *Washington Post*, 4/25/96, p. A12 (6262). *Jane's Defence Weekly*, 5/8/96, p. 19 (6262). Jeff Erlich, *Defense News*, 4/29/96-5/5/96, pp. 4, 36 (6314). Government Press Release (Jerusalem), 5/1/96; in FBIS-NES-96-086, 5/1/96 (6314).

4/30/96

Prime Minister Shimon Peres said he would keep pushing for the U.S. to install a ground station in Israel to receive early warning information of ballistic missile attacks directly from American satellites.

Jeff Erlich, *Defense News*, 5/6/96-5/12/96, p. 24 (6314).

5/14/96

Uzi Rubin, director of the Israeli Missile Defense Organization, said the complete development and production of the Arrow ATBM system will cost \$1.59 billion. According to Rubin, \$700 million has already been spent on "the Arrow-2 missile and launcher, launcher control center, search and fire-control radar, fire-control center and costs to integrate the system into the Israel Air Force." Rubin said that Arrow development was fully funded until 2005, and he did not foresee the need for further U.S. support beyond the \$200 million earmarked by Washington over the next five years. The U.S. will eventually have contributed a total of \$565 million toward the Arrow project. Israeli defense and industry officials have estimated that the Arrow system will be ready for "initial deployment" by 1998 and will be fully operational by 2000.

Carmella Menashe, *Defense News*, 5/20/96-5/26/96, p. 33 (6250). Arie O'Sullivan, *Jerusalem Post* (Jerusalem), 5/15/96, p. 12; in FBIS-NES-96-095, 5/15/96 (6289).

ITALY

ITALY WITH:

**France and United Kingdom, 155
France, Germany, and United
States, 146**

JAPAN

JAPAN WITH:
Iran, 162

JAPAN WITH UNITED STATES

2/23/96

The U.S. and Japan signed a memorandum of understanding to study the potential of an anti-ballistic missile system, known as Theater Missile Defense (TMD). According to officials, the U.S. agreed to provide Tokyo with TMD information; Japanese defense contractors are obliged to keep this information secret. The Japanese Defense Agency (JDA) plans to make a final decision on whether Japan should participate in the TMD project in FY 1997. The JDA allocated 440 million yen for TMD research and development in the FY 1996 state budget.

Kyodo (Tokyo), 2/23/96; in FBIS-EAS-96-037, 2/23/96 (6092).

3/26/96

The U.S. and Japan met at the bilateral working group level to discuss possible collaboration on TMD issues for the fifth time since 12/93. During the meeting, the U.S. representatives briefed their Japanese counterparts on America's "ballistic missile-related budget, progress in a review of its ballistic missile project and its cooperation with third countries over this type of missile."

Kyodo (Tokyo), 3/26/96; in FBIS-EAS-96-059, 3/26/96 (6092). Kyodo (Tokyo), 2/23/96; in FBIS-EAS-96-037, 2/23/96 (6092).

5/21/96

JDA Director General Hideo Usui told the "House of Councilors' Committee on the Cabinet" that a decision on whether Japan will participate in the TMD project will be taken "as early as the summer of 1997." Usui said he told the relevant officials to complete their research and to make a decision on Japan's participation in the TMD project as soon as possible.

Yomiuri Shimbun (Tokyo), 5/22/96, p. 3; in FBIS-EAS-96-103, 5/22/96 (6176).

KUWAIT

KUWAIT WITH:
France, 155
France and United Kingdom, 156

KUWAIT WITH RUSSIA

4/29/96*

A total of \$228 million worth of offsets are included in the Russian sale of Smerch multiple launch rocket systems and other defense-related equipment to Kuwait. Offsets are sometimes requested by a country as a form of compensation in return for purchasing defense-related items. Kuwait's offset program was initiated in 1992 to "encourage diversification and private enterprise in the Kuwaiti economy."

Philip Finnegan, *Defense News*, 4/29/96-5/5/96, p. 10 (6261).

KUWAIT WITH UNITED STATES

4/29/96*

Four U.S. contractors committed themselves to \$438 million worth of offsets for selling defense items such as Patriot ATBMs to Kuwait.

Philip Finnegan, *Defense News*, 4/29/96-5/5/96, p. 10 (6261).

LIBYA

LIBYA WITH NETHERLANDS

6/7/96*

The Dutch Domestic Security Service's (BVD) annual report said Libya has covertly attempted to buy expertise and equipment in the Netherlands for its indigenous missile development program. The report did not say specifically whether Libya had successfully purchased such items in the Netherlands.

Algemeen Dagblad (Rotterdam), 6/7/96, p. 7; in FBIS-TOT-96-018-L, 6/7/96 (6315).

LIBYA WITH UKRAINE

6/13/96*

Ukraine and Libya established a joint committee on technological cooperation, according to U.S. intelligence sources. The committee is reported to include 13 senior officials and has arranged for several Libyan delegations to visit Kharkov to become acquainted with Ukrainian technological development. Libyan specialists have visited several research centers and industrial enterprises in Kharkov, where they met scientists and representatives from Ukraine's military industrial complex. Yuri Shcherbak, Ukraine's ambassador to the U.S., claimed that accusations of a "strategic alliance" between Ukraine and Libya are "absolutely groundless." According to Shcherbak, Ukraine has acted in accordance with U.N. sanctions against Libya, despite the loss of commercial opportunities. Shcherbak cited Ukraine's export control system, founded with considerable help from the U.S., as proof of Kiev's commitment to international nonproliferation and technology transfer regimes. According to Shcherbak, this system intercepted a "sensitive solid rocket fuel component" before it could be smuggled through Ukraine to Libya several years ago. Shcherbak asserted that Ukraine is just as interested as the U.S. in maintaining a strong export control system. The ambassador described allegations that Ukraine has supplied Libya with weapons of mass destruction technology under the guise of constructing a railroad in Libya as "groundless and illogical." He also pointed out that the U.S. has never "cited or officially warned" Ukraine regarding its adherence to the sanctions against Libya. Some U.S. officials expressed concern over this cooperation because of the possible transfer of ballistic missile technology and assistance from Ukraine to Libya, which could be used to improve Tripoli's medium-range missiles.

Nikolai Zimin, *Segodnya*, 6/13/96, p. 8 (6373). Yuri Shcherbak, *Ukrainian Weekly*, 6/23/96, pp. 2, 19 (6277).

LIBYA WITH UNITED STATES

5/19/96

Libyan leader Muammar Qaddafi announced that his country is exploring ways to develop an anti-missile system in response to U.S. threats to attack what Washington suspects to be a chemical weapons plant located 60 km south east of Tripoli, in the Tarhunah mountain range. The U.S. announced in 4/96 that it had not ruled out using conventional weapons to stop Libya from completing the plant.

Reuter, 5/20/96; in Executive News Service, 5/20/96 (6169). James Bruce, *Jane's Defence Weekly*, 6/26/96, p. 18 (6285).

MALAYSIA

INTERNAL DEVELOPMENTS

4/23/96

The biennial Defense Services Asia exhibition opened in Kuala Lumpur, Malaysia, with 626 companies displaying "a lethal array of missiles, guns, and armor-piercing shells." Malaysian Defense Minister Syed Hamid Albar opened the exhibition by announcing that Malaysia, while considering new defense purchases, wanted to establish itself as a "major arms exporter."

Ian Stewart, *Washington Times*, 4/26/96, p. A14 (6090).

MALAYSIA WITH:

Indonesia, Philippines, Singapore, South Africa, Taiwan, and Vietnam, 160

MOLDOVA

MOLDOVA WITH:

Austria, Hungary, India, Romania, and Switzerland, 150

NETHERLANDS

**NETHERLANDS WITH:
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NORTH KOREA

INTERNAL DEVELOPMENTS

4/17/96*

The current status of the No-dong intermediate-range ballistic missile program is unclear, with some reports indicating that it is delayed by financial and technical problems, and others stating that production is under way and some 60 operational missiles have been manufactured. North Korea continues to develop its Taepo-dong-1 and -2 missiles, with the first test flight of the Taepo-dong-1 (also known as the No-dong-3) expected in 1997. If it chooses to test to the Taepo-dong's full 2,000 km range, North Korea would be required to launch the missile over Japan or off the coast of China and Taiwan.

Duncan Lennox, *Jane's Defence Weekly*, 4/17/96, pp. 40, 43-44 (5996).

**NORTH KOREA WITH:
China and Iran, 153
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**NORTH KOREA WITH PAKISTAN AND
TAIWAN**

3/7/96

Taiwanese authorities at the port of Kaohsiung discovered a 15 MT shipment of ammonium perchlorate, which is used in missile rocket motors, on the *Chongsung-ho*, a ship that originated in Nampo, North Korea, and was destined for "an institute for space and atmospheric research" in Karachi, Pakistan. The *Chongsung-ho* was to deliver the ammonium perchlorate to Hong Kong, where the Maersk Shipping Company (coun-

try of origin unknown) was to complete delivery to Pakistan. The ammonium perchlorate, which was mislabeled as "resin," was not supposed to be offloaded in Taiwan, but the Taiwanese authorities had received a tip as to the nature of the chemicals. However, because the cargo was largely Taiwanese, they were able to offload the entire shipment. However, since Taiwan was not the final destination of the ammonium perchlorate, port authorities could not confiscate the cargo. Instead, they fined the vessel's agent for making a false declaration, and then alerted Taiwanese police, who seized the ammonium perchlorate on the grounds that bomb-making chemicals were being smuggled.

DPA-Yonhap (Taipei); in FBIS-EAS-96-062-A, 3/13/96 (5991).

NORTH KOREA WITH UNITED STATES

4/21/96

U.S. and North Korean negotiators met in Berlin for talks on missile proliferation issues, focusing specifically on North Korean development and sales of its long-range missile. Leading the delegations were Robert Einhorn, U.S. assistant secretary of state for politico-military affairs, and Yi Hyong-choe, of the North Korean Foreign Ministry. This was the first talk in a series; the next round has not yet been scheduled.

Reuter, 4/21/96; in Executive News Service, 4/23/96 (5998).

PAKISTAN

INTERNAL DEVELOPMENTS

Early 1996

Saleem Mahmood, chief scientist at Pakistan's Defense Science and Technology Organisation (DESTO), said Pakistan had developed an "interceptor" missile capable of countering India's Prithvi SSM. The missile will use "highly sensitive radar" to detect SSM launches before neutralizing them in the air. Mahmood also said Pakistan was "fully capable of retaliating against any [missile] attack." Mahmood was formerly head

of Pakistan's Space and Upper Atmosphere Research Commission (SUPARCO).

Jang (Rawalpindi), 2/8/96, pp. 1, 5; in FBIS-TAC-95-005, 2/8/96 (6112).

PAKISTAN WITH:

France, 156

India and Russia, 159

India and United States, 159

North Korea and Taiwan, 168

PAKISTAN WITH SOUTH AFRICA

2/96

South Africa's Kentron was expected to win a 600 million rand (\$164 million) contract to supply Pakistan with missiles. According to news reports, a representative from Kentron's parent company, Denel, said discussions with Pakistan had reached "a fairly advanced stage." Kentron manufactures surface-to-air missiles, air-to-air missiles, pilotless drones, and other advanced defense equipment. Kentron and Denel officials were not available to comment on the proposed sale.

Reuter, 2/13/96; in Executive News Service, 2/13/96 (6011).

PAKISTAN WITH UKRAINE

4/16/96*

Ukraine reportedly offered Tochka tactical missiles to Pakistan.

Aleksandr Sychev, *Izvestiya*, 4/16/96, p. 3 (6187).

PAKISTAN WITH UNITED STATES

4/18/96

Pakistani Foreign Secretary Najmuddin Sheikh said that the U.S. intends to begin shipping \$368 million worth of military equipment to Pakistan within the next six to eight weeks. The shipment includes 28 Harpoon ASMs, P3-C Orion aircraft, Sidewinder AAMs, rockets, and rocket launchers. The equipment has been embargoed in the U.S. since 10/90 under the Pressler Amendment.

Flight International, 5/1/96-5/7/96, p. 18 (6113).
Muslim (Islamabad), 4/19/96, pp. 1, 5; in FBIS-NES-96-079, 4/19/96 (6113).

PHILIPPINES

INTERNAL DEVELOPMENTS

5/21/96

Commodore Luis Ordonio, chief of the Philippines naval staff, said his country plans to acquire six corvettes equipped with SSMs, SAMs, and anti-submarine weapons. The acquisition will be part of a 15-year naval modernization program, and will include 12 new patrol vessels, 52 patrol craft, and three frigates. The Philippines Navy does not currently possess any missile systems.

Executive News Service, 5/22/96 (6175).

PHILIPPINES WITH:

Indonesia, Malaysia, Singapore, South Africa, Taiwan, and Vietnam, 160

POLAND

POLAND WITH:

Belarus, Czech Republic, and Russia, 151

QATAR

QATAR WITH:

France and Iran, 155

QATAR WITH UNITED KINGDOM

5/8/96

Qatar received the *Barzan*, a fast strike craft, from the U.K.'s Vosper Thornycroft, following contractor's sea and weapon trials. Although this ship is designed on the hullform of the Province-class fast attack craft, which Vosper Thornycroft built for Oman in the 1980s, the new design features a fully distributed sensor, weapon, and command suite.

Qatar's new craft is equipped with eight Aerospatiale Exocet ASMs, a Matra Defense Sadral SAM system, an OTOBreda 76 mm Super Rapid Gun, and a Signaal Goalkeeper close-in weapon system.

Richard Scott, *Jane's Defence Weekly*, 6/26/96, p. 28 (6286).

ROMANIA

ROMANIA WITH:

Austria, Hungary, India, Moldova, and Switzerland, 169

RUSSIA

INTERNAL DEVELOPMENTS

Early 1996

Russia conducted a series of test firings of its new OTR short-to-medium-range tactical ballistic missile. The mobile, solid-fuel missile has a range of 400 km.

Flight International, 3/13/96-3/19/96, p. 17 (6119).

2/96

Russian President Boris Yeltsin approved the use of Svobodny-18—a former military garrison near the Chinese-Russian border—as Russia's newest operational space launch center. The new site is officially the "State Second Experimental Cosmodrome," and it will be built in Amur Oblast near the city of Svobodny. The site's "low geographical latitude" should make rockets launched from Svobodny between 20 and 25 percent more powerful than similar rockets launched from Plesetsk. The Russian Strategic Rocket Forces (SRT) division that was previously stationed at Svobodny left behind infrastructure valued at 1.5 trillion rubles. According to Aleksandr Vinidiktov, head of the Svobodny Cosmodrome, 70 percent of "what is needed to launch a satellite is already in place." Decommissioned SS-11 ICBM silos may be used to launch Rokot SLVs by the

end of 1996.

Flight International, 2/14/96-2/20/96, p. 33 (6216). Russian Public Television First Channel Network (Moscow), 4/7/96; in FBIS-SOV-96-071, 4/7/96 (6216). Tim Furniss, *Flight International*, 3/13/96-3/19/96, p. 19 (6216).

2/7/96

President Boris Yeltsin chaired a meeting of the Russian Federation Security Council to discuss methods to guarantee technological security. Among others, the meeting was attended by Prime Minister Viktor Chernomyrdin, Defense Minister Pavel Grachev, and Security Council Secretary Oleg Lobov. According to Lobov, the Security Council was concerned that Russian aviation, missile, space, and shipbuilding industries were overly dependent on companies based in other CIS countries, such as Ukraine.

Grigoriy Nekhoroshev and Nikolay Ulyanov, *Nezavisimaya Gazeta* (Moscow), 2/8/96, p. 1; in FBIS-SOV-9-076-S, 2/8/96 (6117).

2/22/96

Two intruders were apprehended at a military base in the Primorsky region of Russia where ballistic missiles are stored. The two individuals had tools which could have been used to extract precious metals from the missiles.

Interfax (Moscow), 2/23/96; in FBIS-SOV-96-038, 2/23/96 (6105). Larisa Sayenko, *Moscow News*, 2/22/96-2/28/96, p. 13 (6105). *Segodnya*, 2/24/96, p. 5 (6357).

3/14/96

News agency Itar-Tass reported that seven privatized Russian arms manufacturers have been given the authority to export weapons, a privilege previously enjoyed only by MAPO-MiG, which produces Russia's MiG family of aircraft. The seven companies include: Izhmash; Metrovagonmash; Gidromash; Rosvertol; the Antei Concern; the Ufa Engine Building Amalgamation; and the Tula Instrument Building Bureau. According to Valery Pogrebekov, spokesperson for Russia's official state arms-export organization Rosvoorouzhnie, shipments must still be approved by the defense ministry, foreign ministry, and intelligence services. President Boris Yeltsin, First Deputy Prime Minister Oleg Soskovets, and the Chief Commission for Military Technical

Policies, must also give their approval.

Ron Laurenzo, UPI, 3/14/96; in Executive News Service, 3/14/96 (6115).

4/96

Fifteen directors representing the Russian defense industry presented a letter to President Yeltsin in which they generally supported his policy towards the Russian defense sector. Among the signatories were Igor Velichko, general designer at the Miass State Missile and Rocket Center, and Boris Katorgin, general director of the Glushkov Machinery Production company. Glushkov is the principal manufacturer of engines for Russia's strategic missiles and space rockets. The directors supported the creation of financial and industrial groups within the Russian defense industry, such as the Antey industrial group, the Aviation Consortium, and Kompomash. They also issued certain demands, including: increasing state protection of Russia's defense producers in both domestic and international markets; federal funding for the most competitive defense projects; focused state financial support; guaranteed international contracts and financial credits for developing high technology and weapon systems; and the government's compliance with the terms of state contracts concluded with the principal Russian defense manufacturers.

Viktor Litovkin, *Izvestiya*, 4/16/96, p. 1 (6356).

4/96

Andrey Kokoshin, first deputy to the Russian defense minister, Yakov Urinson, first deputy minister of economics, and Yuriy Starodub of the State Committee on the Defense Industry, met in Dubna to discuss the development of highly accurate, long-range weapons. Along with military representatives, they discussed the work of the Raduga design and engineering center and the joint stock company "Dubnensky Mashinostroitelnyy Zavod." They also discussed the possible merger of the two companies. Both companies are famous producers of missiles, missile equipment, and other highly accurate long-range weapons. The participants discussed a final draft of the development program for highly accurate, long-range weapons as part of Russia's defense modernization plans.

Aleksandr Yegorov, *Krasnaya Zvezda*, 4/9/96, p. 1 (6360).

4/17/96

Russia conducted the first "1996 combat launching" of the RS-12M Topol (SS-25 'Sickle') ICBM at the Plesetsk state test range. According to SRT spokesman Ilshat Baychurin, the ICBM successfully hit a training target in the Kamchatka area. Although the Topol ICBM has been deployed for the past 12 years, this most recent launch will enable Russia to extend the lifetime of these rockets. Russia's strategic nuclear forces development program foresees the use of Topol ICBMs as a base unit of the SRT through 2005.

Boris Kipkeyev, *Itar-Tass* (Moscow), 4/17/96; in FBIS-SOV-96-076, 4/17/96 (6118).

5/8/96

Konstantin Morev, spokesman for Russia's Krasnoyarsk security department, announced that a scientist arrested for producing and exporting over one kilogram of radioactive material was not selling "plutonium or any other fissionable material," but rather a dual-use substance that could be applied "as a coating for ballistic missiles." The "very solid and highly heat-proof" dual-use substance was developed and patented by the Krasnoyarsk Technical University. According to Morev, those responsible for developing the material were not involved in its illicit sale. Although Morev would not divulge which nations purchased the substance, he noted that between one and ten kilos of the substance could have been exported. In 4/96, the Krasnoyarsk Prosecutor's Office charged a local resident with illegally exporting dual-use goods.

Itar-Tass (Moscow), 5/8/96; in FBIS-SOV-96-091, 5/8/96 (6094).

5/20/96*

Russia's Makeyev State Rocket Center is scheduled to conduct the world's first orbital launch of a satellite using a converted ballistic missile from a submarine. According to Vyacheslav Danilkin, deputy head of foreign economic relations at Makeyev, a submarine in the Barents Sea will use a Shtil-2 rocket to launch a 100 kg Earth observation satellite for Russia's Institute of the Physics of Earth Magnetism. Makeyev launched a

105 kg re-entry capsule in 6/95 using a converted SS-N-23 missile (Volna) from a submarine in the Barents Sea. Makeyev has also been working on the Rikshaw-1, a rocket designed specifically for orbital missions and free of the technical problems involved in converting missiles. The two-stage Rikshaw-1 is designed to launch small commercial satellites from land or sea.

Peter B. de Selding, *Space News*, 5/20/96-5/26/96, p. 6 (6165).

6/6/96

A combat crew from the SRT's "experimental directorate" conducted a successful test launch of an RS-18 SS-19 ICBM from "the vicinity" of the Baikonur Cosmodrome in Kazakstan. The ICBM's six warheads hit their targets in Kamchatka with great precision, according to the Russian strategic rocket forces's press center. The launch was designed to validate "the storage and performance characteristics" of SS-19 ICBMs, with an eye to extending their operational lifetime. Colonel General Viktor Yesin, chief of the main staff of Russia's SRT, said 25 similar launches have been conducted successfully since the SRT was established in 1992.

Anatoliy Yurkin, Itar-Tass, 6/6/96; in FBIS-SOV-96-111, 6/6/96 (6174).

6/24/96*

Valery Pogrebenkov, spokesman for Russia's official arms export agency Rosvoorouzhnie, said Russia is promoting its Smerch advanced multiple launch rocket system in the Persian Gulf as part of an extensive marketing campaign intended to make it "as well-known on the world market as the Russian-made MiG and Sukhoi combat aircraft and the T-72 tank." Pogrebenkov said a number of unspecified Persian Gulf countries are engaged in negotiations to buy the Smerch system from Russia, and Rosvoorouzhnie intends to make the system one of its most profitable weapons in its future arms exports. According to Pogrebenkov, sales of the Smerch system will account for the greatest portion of Russia's 1996 arms export profits. Pogrebenkov also said the Splay factory in Tula plans to modernize the second-generation Grad rocket launcher. The modernized Grad has had its

range doubled to 30 km.

Pytor Yudin, *Defense News*, 6/24/96-6/30/96, p. 72 (6268).

RUSSIA WITH:

- Australia, Brazil, and United States, 149**
- Belarus, 151**
- Belarus, Czech Republic, and Hungary, 151**
- Belarus, Czech Republic, and Poland, 151**
- Bulgaria, 152**
- China, 153**
- Egypt, 154**
- Finland, 155**
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- India, 159**
- India and Pakistan, 159**
- India and United States, 160**
- Indonesia, 160**
- Iraq and United States, 164**
- Kuwait, 167**

RUSSIA WITH SOUTH AFRICA

4/23/96-4/27/96

South Africa hosted the Africa Aviation '96 exhibition. Russia's "Aviation Technological Complex imini Tupolev" displayed target drones at the exhibition, while the Fakel Design Bureau displayed missiles designed for the S-300PMU-1 air-defense system.

Nikolay Novichkov and Lyubov Milovanova, *Finansovyye Izvestiya* (Moscow), 4/23/96, p. 2; in FBIS-SOV-96-093-S, 4/23/96 (6084).

RUSSIA WITH UKRAINE

3/29/96

Russian Defense Minister Pavel Grachev announced plans for the transfer of 25 strategic bombers from Ukraine to Russia. According to Petr Deynekin, commander-in-chief of the Russian Air Force, the transfer will include 10 Tu-160 and 15 Tu-95 MS aircraft currently stationed in Uzin and Priluki, Ukraine. Approximately 300 air-to-ground guided missiles will be included in the transfer, which was negotiated during talks between Grachev and Ukrainian Defense Minister Valeriy Shmarov in Tysovets, Ukraine. Agreement was also reached on Ukraine's exchange of 32 SS-19

missiles in return for Russian supplies of military-technical equipment.

Ilya Bulavinov, *Kommersant-Daily* (Moscow), 3/28/96, pp. 1, 3; in FBIS-SOV-96-063, 3/28/96 (6114). Galina Nekrasova, Itar-Tass (Moscow), 3/21/96; in FBIS-SOV-96-057, 3/21/96 (6141). Interfax (Moscow), 2/29/96; in FBIS-SOV-96-042, 2/29/96 (6141). Interfax (Moscow), 3/29/96; in FBIS-SOV-96-063, 3/29/96 (6114).

4/1/96

Ten SS-19 ICBMs from a combined missile unit near Khmelnytsky were scheduled to be taken off alert status, but Russian and Ukrainian missile specialists did not have sufficient funds to complete the job.

Viktor Litovkin, *Finansovyye Izvestiya* (Moscow), 5/14/96, p. 2; in FBIS-TAC-96-006, 5/14/96 (6279).

4/12/96

Prime Minister Viktor Chernomyrdin signed Russian Federation Government Decree No. 419 "On the Conclusion of the Agreement between the Russian Federation Government and the Ukrainian Government on the Transfer to the Russian Federation for Further Use of the Arms and Military Hardware of the Strategic Missile Complexes Stored in the Ukraine's Arsenals."

Rossiyskaya Gazeta (Moscow), 5/13/96, p. 9; in FBIS-TAC-96-006, 5/13/96 (6269). Viktor Litovkin, *Finansovyye Izvestiya* (Moscow), 5/14/96, p. 2; in FBIS-TAC-96-006, 5/14/96 (6279).

6/1/96

Ukrainian President Leonid Kuchma said the withdrawal of all nuclear warheads from Ukraine to Russia had been completed. Ukrainian observers will be present to confirm the destruction of these warheads in Russia.

Ustina Markus, OMRI Daily Digest, 6/3/96 (6210). Interfax (Moscow), 6/1/96; in FBIS-TAC-96-007, 6/1/96 (6210).

6/24/96*

Leaders of the Russian and Ukrainian space agencies were expected to sign a space cooperation agreement to iron out differences between the two nations. The agreement was to ensure Ukrainian access to both of Russia's launch sites, but not to permit Ukraine's Zenit rocket to be used for the international space station project.

Space News, 6/24/96-6/30/96, p. 2 (6321).

**RUSSIA WITH UKRAINE AND
UNITED STATES**

3/15/96

Two U.S. employees of Electroline Systems of New Jersey were arrested and charged with the unauthorized transfer of secret plans for radar systems, missile guidance systems, and flight monitoring systems to defense industry plants in Russia and Ukraine. Since the late 1980s, the Pentagon has awarded Electroline Systems approximately 100 contracts on the condition that all production would take place in the U.S. However, Electroline secretly subcontracted some of the work to unspecified plants in Russia and Ukraine and illegally brought the products into the U.S. The two employees, Dennis Latan, of Iranian origin, and Viktor Lander, originally from the former Soviet Union, have not been charged officially with espionage or intent to harm U.S. interests.

Vseukrainskiye Vedomosti (Kiev), 3/14/96, p. 1; in FBIS-SOV-96-054, 3/14/96 (6104). *Intelnews* (Kiev), 3/16/96; in FBIS-SOV-96-053, 3/16/96 (6104).

RUSSIA WITH UNITED ARAB EMIRATES

6/24/96*

The UAE expressed an interest in purchasing Grad rocket launchers from Russia to "cool the ardor" of Iraq and other potential foes, according to an unnamed senior diplomat from the Persian Gulf.

Pytor Yudin, *Defense News*, 6/24/96-6/30/96, p. 72 (6268).

**RUSSIA WITH UNITED ARAB EMIRATES
AND UNITED STATES**

2/15/96

U.S. Army officials met with Raytheon Co. executives in an effort to foil Russia's attempts to sell the SA-12 air-defense system to the UAE at approximately half the price of the Raytheon-produced Patriot air-defense system. U.S. Army and Raytheon representatives have been discussing the possible sale of Patriot systems with UAE officials for the past two years. U.S. Army officials are concerned the SA-12 does not complement the U.S. systems maintained by other members of the coalition to which both the U.S. and

the UAE belong.

Philip Finnegan and Frank Olivieri, *Defense News*, 2/19/96-2/25/96, pp. 1, 29 (6228).

RUSSIA WITH UNITED NATIONS

2/96

On a trip to Moscow, UNSCOM Chief Rolf Ekeus met Russian First Deputy Minister Igor Ivanov, Deputy Minister Viktor Posuvalyuk, and Vladimir Lukin, chairman of the State Duma Committee for International Affairs, to discuss issues related to Iraq. Ekeus said that despite increased Iraqi cooperation with the U.N., it was not clear whether Baghdad was being totally forthright in exposing its WMD development programs.

Elmar Guseynov, *Izvestiya* (Moscow), 2/7/96, p. 3; in FBIS-SOV-96-026, 2/7/96 (6080).

RUSSIA WITH UNITED STATES

3/21/96

Valentin Smirnov, chief designer at the Novator Experimental Design Bureau and former general designer at the Kalinin Plant (ZIK), which manufactures the S-300 air defense system, was assassinated at the entrance of his apartment block in Yekaterinburg. According to experts, the murder was well-prepared and professionally carried out. Smirnov was well-known in Russian military-industrial circles and had access to state secrets as one of the principal designers of the 9M82 Giant and 9M83 Gladiator missiles for the S-300 system. Smirnov was also involved in designing the Galosh missile used in Moscow's anti-missile system, and the Krug anti-aircraft missile system. Smirnov was also responsible for developing ship-launched land-attack missiles, the Vodopad and Alfa ASMs, and other classified missile systems.

Sergey Avdeyev, *Komsomolskaya Pravda*, 3/22/96/-3/29/96, p. 2; in FBIS-SOV-96-058, 3/25/96 (6353). Aleksandr Pashkov and Viktor Litovkin, *Izvestiya*, 3/22/96, p. 1 (6353).

4/5/96*

The U.S. firm Pratt & Whitney received official approval from the Russian government to import the RD-180 rocket engine for use in Lockheed-Martin's upgraded Atlas-II SLV. The RD-180 is based on the RD-170

engine, and was developed jointly by Pratt & Whitney and Russia's NPO-Energomash. The Russian military originally considered the RD-180 too sensitive to export (for national security reasons). Lockheed-Martin chose the RD-180 over Russia's NK-33 engine in 1/96 for its upgraded Atlas-II booster. Russia reportedly did not want to export the NK-33 engine because the price was considered too low.

Post-Soviet Nuclear & Defense Monitor, 4/5/96, p. 15 (6297).

5/3/96

The U.S. State Department announced in the Federal Register that it was no longer U.S. policy to automatically deny license requests to export defense-related goods and services to Russia. All license requests submitted by U.S. firms to export defense-related goods and services to Russia will in the future be examined on a "case-by-case basis with a presumption of approval." Russia will also be taken off the list of proscribed export destinations in section 126.1 of the International Traffic in Arms Regulations.

Export Practitioner, 6/96, p. 21 (6226).

6/4/96

Itar-Tass reported that the U.S. and Russia had initiated their first joint tactical anti-missile defense exercises at the Falcon military base in Colorado. During the exercises, 20 U.S. experts and 18 Russian anti-missile specialists practiced "coordinated anti-missile defense operations that could be used during future joint peacekeeping missions." The Russian group of experts was led by General Viktor Niruk.

Constantine Dmitriev, *OMRI Daily Digest*, 6/5/96 (6179).

RUSSIA AND YUGOSLAVIA

2/96

Russian Defense Minister Pavel Grachev signed a protocol on military cooperation between Russia and the Federal Republic of Yugoslavia. Under the protocol, Russia will settle its Serbian wheat debt by providing Yugoslavia with an unspecified number of ballistic missiles, a squadron of Mi-24 helicopters, and a squadron of MiG-29 jets. S-300 missiles are also believed to be part of

the Russian transfer, as well as "surface-to-surface ballistic missiles, whose range can be increased by making modifications and using different rocket fuels." The warheads for these missiles can reportedly be "filled with military poisons." Although Serbia has the technological capability to modify Russian-supplied missiles, particularly at the Krusik factory in Valjevo and the Merima factory in Krusevac, military experts from Russia could be brought in to assist "existing teams" at the Zarkov Aircraft-Technical Institute.

Vladimir Jovanovic, *Monitor* (Podgorica), 3/15/96, pp. 15-16; in FBIS-EEU-96-061, 3/15/96 (6101).

SAUDI ARABIA

SAUDI ARABIA WITH:
France, 156

SINGAPORE

SINGAPORE WITH:
Indonesia, Malaysia, Philippines,
South Africa, Taiwan, and
Vietnam, 160
Israel, 164

SOUTH AFRICA

INTERNAL DEVELOPMENTS

3/96*

The South African Army (SAA) is developing long-range air defense radars and the AS-2000 artillery target engagement system, while the South African Air Force (SAAF) is developing the modular precision stand-off weapon (MUPSOW), in addition to upgrading the Cactus SAM system. The SAA is also developing the SAHV-3 SAM as a

replacement for the Cactus SAM in conjunction with the South African Navy (SAN) and the SAAF. South Africa's technology demonstrator programs include a ramjet-powered missile.

Helmoed Roemer-Heitman, *International Defense Review*, 3/96, pp. 23-26 (6013).

SOUTH AFRICA WITH:
Indonesia, Malaysia, Philippines,
Singapore, Taiwan, and Vietnam, 160
Pakistan, 169
Russia, 171

SOUTH KOREA

INTERNAL DEVELOPMENTS

6/29/96*

South Korea will increase defense spending beyond the 4.1-7.4 percent limit imposed since 1989. Purchases will include, 27 multiple launch rocket systems, the U.S. Army's 165-km surface-to-surface ATACMS missiles (including 950 bomblets in each canister), AIM-9 Sidewinder air-to-air missiles, and unmanned reconnaissance aircraft.

Digital Chosun Ilbo WWW (Internet); in FBIS-EAS-96-131, 6/29/96 (6401).

SOUTH KOREA WITH:
France, 157

SOUTH KOREA WITH UNITED STATES

2/5/96*

The South Korean firm Samsung is hiring scientists and engineers from the U.S. who have knowledge about stealth technologies. Samsung is telling prospective employees that South Korea seeks to expand its defense exports, including aircraft and missiles.

James R. Asker, *Aviation Week & Space Technology*, 2/5/96, p. 25 (5989).

2/15/96

Chairman of the Joint Chiefs of Staff General John Shalikashvili turned down a 12/11/95 request by the Commander of U.S. Forces in South Korea, General Gary Luck, to ex-

pedite delivery of two Theater High Altitude Area Defense (THAAD) systems to South Korea. Shalikashvili explained that, though Luck was correct to be concerned about obtaining the best possible protection against North Korean missiles, current budget constraints required him to channel funding towards the acquisition of aircraft, tanks, trucks, and tents. While expressing regret that lack of funding is slowing down the THAAD program, Shalikashvili defended his decision on the grounds that the U.S. response matches the present threat from North Korea. Until THAAD is ready, the U.S. will deploy the Patriot Advanced Capability (PAC-3) missile-defense system and the navy lower-tier system.

Bill Gertz, *Washington Times*, 2/16/96, p. A8 (5986).

6/10/96

Officials from South Korea and the U.S. met in Seoul for a two-day series of talks concerning nonproliferation of weapons of mass destruction, particularly missile technology. ROK Foreign Ministry Director-General for American Affairs Yu Myung-hwan headed the South Korean delegation, while U.S. Deputy Assistant Secretary of State for Politico-Military Affairs Robert Einhorn led the U.S. delegation. On 6/11/96, the two delegations agreed that South Korea should enter into the Missile Technology Control Regime (MTCR). Although the sides have not agreed on all of the terms of the ROK's entry into the MTCR, the U.S. has agreed to extend South Korea's allowable maximum missile range to 300 km, if South Korea joins the MTCR. Currently, under a U.S.-ROK memorandum of understanding, South Korea is limited to developing missiles with a maximum range of 180 km, and South Korea is interested in developing longer-range missiles. In 1995, the ROK announced that, in response to North Korea's deployment of the No-dong-1 and the Taepo-dong-2, it intended to abrogate the MoU. The two sides are expected to meet again in 9/96.

Seoul Simmun, p. 2; in FBIS-EAS-96-048, 3/8/96 (5993). *Korea Herald* (Internet), 6/12/96 (6402).

SWEDEN

SWEDEN WITH:

Hungary and Israel, 157

SWITZERLAND

SWITZERLAND WITH:

**Austria, Hungary, India, Moldova, and Romania, 150
Israel, 165**

TAIWAN

INTERNAL DEVELOPMENTS

4/22/96*

Over the next five years, Taiwan will allocate \$144 million toward the development of the Sky Bow anti-missile system. The Taiwanese defense ministry would like to complete Sky Bow missile testing by 2000. According to the *China Times Express*, the ministry's General Staff Department (GSD) recently canceled plans to develop the Sky Bow II air defense missile into a short-range surface-to-surface missile (SSM). The GSD's reasons for cancellation were financial limitations and technological problems with the missile, including a "limited destructive power" due to the lack of a precision guidance system. In addition, *Lien-Ho Pao* reported that the military "has no intention of resuming research and development" of its medium-range SSM program. (No further explanation was reported)

Reuter; in Executive News Service, 4/22/96. *Lien-Ho Pao* (Taipei) p. 1; in FBIS-TAC-96-007, 4/22/96. (6344.)

5/6/96

Taiwan has allocated \$94.5 million to the Chungshan Institute of Science and Technology toward the development of an early-warning radar system. The planned system would grant Taiwan a warning time of five minutes against the 600 km-range Dong Feng-15 (M-9). The proposed radar system would have higher operating frequencies, a high degree of analytical capability, and a small mass. If deployed at a high altitude overlooking the sea, it will also be capable of detecting low-flying cruise missiles.

Lien-Ho Pao (Taipei) p. 3; in FBIS-CHI-96-095, 5/6/96 (6423).

TAIWAN WITH:

**Australia, 150
China, 153
Indonesia, Malaysia, Philippines,
Singapore, South Africa, Taiwan, and Vietnam, 160**

THAILAND

INTERNAL DEVELOPMENTS

3/31/96*

The Defense Ministry released a white paper detailing the functions, duties, and missions of the country's *Defense Forces of the Future*. According to the paper, the Royal Thai Army will consider employing "multi-barrel rocket launchers" and developing and improving battlefield surveillance equipment for night operations. The army will also develop "artillery range and fire-control systems" and its anti-aircraft weapons will be upgraded to include missiles. The white paper stated that Thailand's naval forces will be enhanced by the development of "surveillance, electronic warfare, command and control, and intelligence gathering equipment," as well as "modern long-range all-weather weapons." The Royal Thai Air Force will develop and improve early warning systems, anti-aircraft weapons, and fighter/interceptor aircraft.

Sunday Post (Bangkok), 3/31/96, p. 17; in FBIS-EAS-96-064, 3/31/96 (6008).

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TURKEY

INTERNAL DEVELOPMENTS

2/96*

Turkey's Ministry of National Defense requested "proposals from potential suppliers" of Russian-made Antey 9K33 Osa 'Gecko' (SA-8) SAMs.

International Defense Review, 2/96, p. 9 (6016).

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2/96

Ukrainian President Leonid Kuchma and U.S. Vice President Al Gore signed an inter-governmental agreement on "international trade in the area of commercial services concerning space launches." According to Volodymyr Gorbunin, secretary of the Ukrainian National Security Council and former head of the Ukrainian National Space Agency, the agreement provided Ukraine with access to the commercial space launch market. The agreement permits Ukraine to offer the commercial launch services of its Zenit and Tsyklon rockets.

Ukrainian Weekly, 5/26/96, pp. 3, 13 (6227). Dmytro Lykhoviy, *Ukrayina Moloda* (Kiev), 2/27/96, pp. 1, 3; in FBIS-SOV-96-042, 2/27/96 (6093).

2/96

U.S. officials said Ukraine will probably be accepted into the MTCR in 1996 if Kiev improves its export control regime. Talks between the U.S. and Ukraine are currently underway regarding the latter's membership in the regime.

Richard C. Barnard, *Defense News*, 2/19/96-2/25/96, p. 2 (6173).

6/4/96

U.S. Defense Secretary William Perry and Ukrainian Minister of Defense Valeriy Shmarov visited a former missile silo in Pervomaysk, which was destroyed earlier in 1996 and is now being converted for civilian uses. Perry and Shmarov signed an agreement to provide Ukraine with an additional \$29.7 million to finance the clean-up of former silos and the dismantlement of missiles, among other items. The base at Pervomaysk was once home to over 80 underground missile silos that contained SS-19 ICBMs targeted against the U.S.

Unian (Kiev), 6/4/96; in FBIS-SOV-96-108, 6/4/96 (6210). Jane Perlez, *New York Times*, 6/5/96, p. A6 (6210). Interfax (Moscow), 6/1/96; in FBIS-TAC-96-007, 6/1/96 (6210).

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4/1/96*

The U.K.'s GEC-Marconi offered its Centaur stand-off missile to the UAE. GEC-Marconi believes that if it wins the competition to fulfill the U.K.'s conventionally armed stand-off missile (CASOM) requirement with its the Pegasus missile, the UAE will select Centaur because of its simi-

larity to that missile. Both the Centaur and the Pegasus are members of GEC-Marconi's precision guided munitions family.

Douglas Barrie, *Flight International*, 2/21/96-2/27/96, p. 17 (6264). John D. Morrocco, *Aviation Week & Space Technology*, 3/4/96, pp. 42-43 (6264). *Financial Times*, 4/3/96, p. 9 (6264). John D. Morrocco, *Aviation Week & Space Technology*, 4/1/96, pp. 52-54 (6264).

**UNITED ARAB EMIRATES WITH
UNITED STATES**

2/13/6-2/14/96

During a conference of the Association of the U.S. Army, Frank Besson, director of security assistance in the office of the U.S. Army's deputy chief of staff for logistics, said that UAE officials would like to purchase the Patriot Advanced Capability-3 (PAC-3) system from the U.S. PAC-3 is designed to have an anti-tactical ballistic missile (ATBM) capability and is still under development. Besson said the PAC-2 might be offered instead, because the U.S. may not be prepared to export the more advanced PAC-3 technology.

Philip Finnegan and Frank Olivieri, *Defense News*, 2/19/96-2/25/96, pp. 1, 29 (6228).

2/14/96

Ernest Jackson, Raytheon's director of international programs, said his company and the U.S. Army are assessing what Patriot ATBM technology can be exported to the UAE and at what price.

Philip Finnegan and Frank Olivieri, *Defense News*, 2/19/96-2/25/96, pp. 1, 29 (6228).

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2/28/96

Republican Representative Floyd D. Spence asked the General Accounting Office (GAO) to review National Intelligence Estimate 95-19 (NIE 95-19), titled *Emerging Missile Threats to North America During the Next 15 Years*. In 11/95, NIE 95-19 concluded that no new long-range missile systems will threaten the continental U.S. for at least another 15 years. Although Spence's request did not refer to any "politicization" of the issue, critics of the NIE, such as Republican Representative Curt Weldon from Pennsylvania, have claimed that it was "politicized" by the Clinton administration in support of its opposition to the deployment of a national missile defense, a concept supported by many Republicans.

Bill Gertz, *Washington Times*, 3/26/96, p. A4 (6122). *Arms Control Today*, 3/96, pp. 29-30 (6122). Jennifer Heronema, *Space News*, 2/5/96-2/11/96, p. 6 (6122). Bill Gertz, *Washington Times*, 5/3/96, p. A10 (6122).

3/96

CIA Director John Deutch suggested the creation of a "B-team" of experts—led by former CIA Director R. James Woolsey—to review the conclusions of NIE 95-19, on condition that the GAO review be canceled. Spence subsequently rejected the "B-team" idea in favor of an amendment to the defense bill.

Bill Gertz, *Washington Times*, 3/26/96, p. A4 (6122). *Arms Control Today*, 3/96, pp. 29-30 (6122). Jenni-

fer Heronema, *Space News*, 2/5/96-2/11/96, p. 6 (6122). Bill Gertz, *Washington Times*, 5/3/96, p. A10 (6122).

5/1/96

The U.S. House of Representatives' National Security Committee approved an amendment to the FY 1997 defense bill, which, if enacted, would force CIA Director John M. Deutch to establish a private group of experts to review National Intelligence Estimate (NIE) 95-19. The group of non-governmental specialists would be required to deliver its findings within three months.

Bill Gertz, *Washington Times*, 3/26/96, p. A4 (6122). *Arms Control Today*, 3/96, pp. 29-30 (6122). Jennifer Heronema, *Space News*, 2/5/96-2/11/96, p. 6 (6122). Bill Gertz, *Washington Times*, 5/3/96, p. A10 (6122).

5/31/96

Lt. General Malcolm O'Neill, retiring director of the Pentagon's Ballistic Missile Defense Organization said that he was skeptical of the prediction that "no rogue nation will have the capability to threaten the U.S. with missiles before 2010." The U.S. intelligence community is conducting a "worst case scenario" assessment at O'Neill's request, in order to give a "date plus or minus something" in which a "rogue nation" might be able to attack the U.S. O'Neill wants the assessment to demonstrate that the intelligence community is thinking the issue through and they understand "something could cause it to be earlier and something could cause it to be later." According to O'Neill, NIE-95-19 did not account for "wildcards," such as smuggling or gaps in U.S. technology, including the surveillance of underground facilities.

Jane's Defence Weekly, 6/5/96, p. 4 (6200). Joseph Anselmo, *Aviation Week & Space Technology*, 6/3/96, p. 32 (6275).

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