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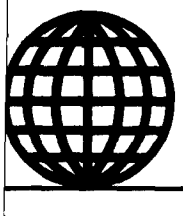

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France Training Chinese Engineers To Run Nuclear Power Plant

HK2208021389 Hong Kong SOUTH CHINA MORNING POST in English 22 Aug 89 p 5

[By Andy Ho]

[Text] A group of 47 Mainland Chinese engineers who will be responsible for the day-to-day operation of the future Daya Bay nuclear power plant is now in France on a training course.

On completion of the course they will be issued French-recognised diplomas by the technical consultant to the $28.8 billion Sino-Hong Kong atomic-power scheme, Electricite de France.

The team is among the first of 115 engineers recruited to be the elite corps responsible for the operation, maintenance and safety of the two pressurised water reactors to be installed at Daya Bay, about 30 kilometres northeast of the Sino-Hong Kong border in Shenzhen.

The Chinese engineers will be assigned to a French nuclear power station equipped with Framatome-designed reactors similar to those planned for Daya Bay.

They are required to take part in operating the station and to perform maintenance tasks under the supervision of French instructors.

The "shadow training program" in France is the fourth of a five-stage, three-year course for the Daya Bay nuclear engineers.

The final phase of training will take place at an on-site training centre, which is equipped with a simulator capable of duplicating normal and emergency situations at the plant.

French and British specialists will work with the Chinese engineers in the start-up and commissioning of the plant.

The Daya Bay engineers will also be assessed by the Chinese National Nuclear Safety Administration before they are allowed to work at the atomic station.

The administration has set up a supervisory office at the Daya Bay site to monitor the performance of the developer—the Guangdong Nuclear Power Joint Venture Company—and its contractors.

The engineers will be supported by some 200 technicians and foremen as well as 320 workers and clerks.

Meanwhile, construction work at Daya Bay is proceeding on schedule with the installation of three French-made "safety injection accumulators" which stores water to cool down the reactors in case of a severe accident.

Also, about two-thirds of the 90 centimetre-thick, 56.7 metre-high shell for the containment building of the first reactor unit has been completed.

Under an arrangement between the Chinese and Hong Kong partners of the Daya Bay project, 70 percent of the nuclear-generated electricity is earmarked for consumption in the territory.

Report Updates Daya Bay Plant Progress

HK2108071089 Hong Kong ZHONGGUO TONGXUN SHE in Chinese 1013 GMT 20 Aug 89

[Report by Luo Ping (7482 1627): "The Construction Project of the Daya Bay Nuclear Power Plant Makes Smooth Progress"—ZHONGGUO TONGXUN SHE headline]

[Text] Hong Kong, 20 Aug (ZHONGGUO TONGXUN SHE)—Various design, equipment manufacturing, and construction projects of the Daya Bay Nuclear Power Plant, the first nuclear plant built by a Sino-foreign venture in China, have been making smooth progress since last year. The civil engineering project has reached its peak and the work of installing equipment will begin within this year. The first group of backbone personnel responsible for the operation of the nuclear power plant is now being trained in France. All aspects of the projects are advancing according to the schedule.

The nuclear island project is making steady progress. The large globe-shaped safety shell of the first reactor has been erected, and the complicated internal structure of this solidly-built safety shell will soon be completed. Three water tanks for maintaining the safe operation of the power plant have been delivered to the construction site from France and have been installed.

The construction of the second reactor's plant is being advanced slightly ahead of schedule, and the construction of the safety shell is being smoothly conducted. The steel internal layer has been built and is 18 meters tall. The plant for handling nuclear fuel and the plant for supporting nuclear equipment are also being built smoothly. The two nuclear reactors are equipped with diesel generators for emergency use, and the oil tanks for these generators have also been installed.

The projects related to the conventional islands have also advanced smoothly. Each conventional island will be equipped with a 90-billion-kilowatt turbogenerator. The concrete structure project of the first turbine plant has been completed, and the foundation for the turbogenerator and the steel structure of the roof will soon be completed. At the same time, the project of the second turbine plant has been started.

There will be some pumps for taking sea water to the condensors near the conventional island, and the first pump house will soon be completed.

Now, the makeshift moles of the nuclear power plant are being expanded, and three permanent moles will be built. The eastern mole will be 560 meters long, and will stretch into Daya Bay. The moles will protect the whole

site from the impact of typhoons. In addition, an equipment wharf has been built inside the eastern mole for discharging the heavy-duty equipment successively delivered from Europe, and the wharf has been put into operation. The other two moles are also under construction.

The relevant construction companies and suppliers are now busy advancing the projects. The installation of the nuclear island was contracted to Famatong [3127 7456 6639] Group, and No.2 Company and No.3 Company of the Nuclear Industrial Corporation are sub-contractors. The installation works on the conventional islands are contracted to the Shandong Power Construction Company with the General Turbogenerator Company of Britain as the technical adviser. The installation works of the supporting projects are contracted to the Northeast Power Construction Company. They have now all arrived at the construction site and begun the preparatory works.

There is strict supervision over quality control and guarantee. The Guangdong Nuclear Power Joint Company has set up a quality guarantee station to exercise general supervision over every project in the nuclear power station. From 1987 to May this year, the quality guarantee station carried out more than 60 overall inspections and 1,748 routine checks in the main plants of the nuclear island, the conventional islands, and the supporting facilities, where the HCCM Nuclear Power Construction Joint Company is responsible for the civil engineering projects. Bokede [2672 0344 1795] Company of the United States acts as quality guarantee adviser to the Guangdong Nuclear Power Joint Company, and has sent nine quality guarantee engineers to assist the quality guarantee work of the joint company.

As for training, all the 115 engineers responsible for the operation, maintenance, and security of the nuclear power station are key personnel, who must receive training for not less than 3 years and must take training courses in five stages. The first group of 47 trainees have begun their fourth-stage training in France. Other trainees are receiving other training courses in Europe and are learning the operation of various equipment in the plants of the suppliers.

NORTH KOREA

Denial of Nuclear Weapons Production Cited

SK1708221289 Seoul Domestic Service in Korean 2100 GMT 17 Aug 89

[Text] According to a report of Xinhua-Yonhap News Agency from Pyongyang, North Korea yesterday denied foreign news reports that North Korea is preparing for production of nuclear weapons. In a news conference, Yi Song-ho, vice chairman of the North Korean antinuclear peace committee, said that North Korea policy is antiwar and antinuclear and that North Korea does not have the technological know-how to produce nuclear weapons. Yi Song-ho denounced the U.S. side's argument that North Korea wants to produce nuclear weapons as one for justifying U.S. nuclear deployment in Korea.

SOUTH KOREA

North Korean Nuclear Program Denounced

SK1008131789 Seoul CHOSON ILBO in Korean 9 Aug 89 p 2

[Editorial: "Nuclear Bombs of 'Peace-Loving People'"]

[Text] Those who shout peace and build up military power at the same time are the same as those contemptible hooligans who wield a fist after making people stand at ease. Certainly, the world, we think, knows that the North Korean authorities have more frequently talked about peace, national reunification, and the nuclear withdrawal than we have. However, the North Korean authorities, who claimed that they loved peace so much and ardently longed for national reunification, and who called for the withdrawal of nuclear weapons, saying that they were an obstacle to peace and national reunification, have been making nuclear bombs.

Some may say that this is not 100-percent accurate information. However, we strongly call for the North Korean authorities to immediately conclude, as a follow-up step after joining the Nonproliferation of Nuclear Weapons Treaty [NPT], a safeguards agreement with the International Atomic Energy Agency [IAEA]. This is a responsibility.

We joined the NPT in 1975, 10 years earlier than North Korea, and, immediately after this, we concluded a safeguards agreement as well. Accordingly, the ROK is under the IAEA's stringent and precise monitoring with regard to its nuclear facilities and in the use of nuclear materials.

Whenever they open their mouths, the North Korean authorities rave on the theory of peaceful reunification and demand that we jointly reduce armed forces. In this regard, they should make efforts so that the arms reduction and peace of North and South Korea will be equally guaranteed according to some objective standards, if they truly desire peace and arms reduction. U.S. satellite photos have reportedly spotted that the North Korean authorities, since the early eighties, have been building a large facility near the large research nuclear reactor in Yongbyon, North Pyongan Province, which appears to be a nuclear fuel reprocessing facility separating plutonium from nuclear fuel.

For clarification, the North Korean authorities, as we do, must accept the IAEA's inspection and monitoring according to the NPT regulations. If they refuse to do so, this will prove that they have a desire to develop nuclear weapons. And, in this case, they must explain who would be the target of mass destruction through the nuclear weapons they would manufacture.

The North Korean authorities habitually try to make excuses that they had to adopt the four-point military line in late 1962, because they saw that the Soviet Union was unable to offer active military support to Cuba at the time of the Cuban crisis, for fear of U.S. nuclear retaliation. We can move backward one hundred steps and say what they claim is true. But, still, it was already a long time ago that the military strength of North Korea, built up according to the four-point military line, grew much more formidable than necessary to overwhelmingly crush the "U.S. imperialists' aggressive ambition."

They have as many as three times more mechanized and armored units than we do; two times stronger fire power; a regular army, outnumbering ours by about 400,000 troops; and reservists that are superior in combat capabilities, fire power, and numbers. But, still not satisfied, they are manufacturing nuclear weapons. Somebody must stop this awful military buildup.

According to news reports, we, too, have developed maximum 256-kilometer-range ground-to-ground missiles. But, these missiles are behind North Korea's 304-km-range Scud B missiles.

Somebody must stop this formidable arms race. We are well aware who must be stopped first. However, we have no desire and see no need to debate on this. All in all, the ever-growing stockpile of weaponry in the armories on the small Korean peninsula must be removed. Which side has more powerful destructive means and which side would be annihilated by them must be clarified. Then, the stronger side must reduce its power first. The primitive trick of shouting peace and wielding fist must now be abandoned. Instead, arms reduction, which can appear convincing to anyone, must begin. First of all, the North Korea's atomic reactor, which has been spotted by the satellite, must be inspected by the international agency.

Only then can North-South mutual arms reduction be pursued and, after an agreement is reached on this, can the U.S. troops be withdrawn from South Korea. This is the proper course.

U.S., South Urge Nuclear Inspections of North

SK1308032289 Seoul THE KOREA HERALD in English 13 Aug 89 p 3

[Text] Korea and the United States have urged north Korea to sign an agreement that will place its nuclear facilities under international inspection, the Ministry of Science and Technology reported yesterday.

The action came in a meeting between Science and Technology Minister Yi Sang-hui and Reginald Bartholomew, the U.S. under-secretary for security assistance and science and technology, in Washington Friday.

Yi visited the U.S. capital Aug. 9-11 on the last leg of his three-nation tour, which had also taken him to Canada and Japan.

Quoting a report by Yi's aides in Washington, the Korean ministry said Yi and Bartholomew shared the view that north Korea should fulfill the safeguards of the International Atomic Energy Agency (IAEA) by late September when the 33rd IAEA Congress is to be held in Vienna, Austria.

North Korea, although it signed the Nuclear Nonproliferation Treaty (NPT) in 1985, has yet to complete the safeguards, thus keeping its nuclear facilities from being inspected by international officials.

Seoul officials said Pyongyang has not had any negotiations with the IAEA in ignorance of the NPT stipulations that require a member country to begin negotiations within six months of NPT membership and follow the safeguards within 18 months from when the negotiations began.

North Korea, which received four 440MW power-generating reactors from the Soviet Union in 1985, reportedly is striving to build nuclear weapons by constructing nuclear fuel reprocessing facilities.

Recent reports said that north Korea has built a nuclear fuel processing plant in Yongbyon, north of Pyongyang, where nuclear reactors have been in existence.

The second Yongbyon plant could extract plutonium, the raw material from atomic weapons, from spent nuclear fuel rods.

During the Washington meeting, Korean officials said, Yi and Bartholomew agreed that the two governments should reestablish a bilateral science and technology agreement in the near future.

The Korea-U.S. Science and Technology Agreement, which had been signed in 1976, expired last October and the United States has refused to renew the pact, demanding Seoul guarantee protection of U.S. intellectural property rights in Korea.

The breakthrough was made by Yi's promise that Seoul would introduce food patents and guarantee the protection of secret military patents of the United States.

Minister Yi reached agreements with U.S. officials for various joint research activities in nuclear and other up-to-date technologies during his three-day stay in Washington, according to Korean officials.

The Korean minister visited the U.S. Nuclear Regulatory Commission (NRC) and the National Science Foundation.

Among the Korea-U.S. joint projects are research into cold fusion at room temperature, superconducting super colliders (SSCS), integral fast reactors and environmental protection and space technologies.

U.S. Newspaper Story on North Korean Nuclear Plant Discussed

SK2208000189 Seoul THE KOREA HERALD in English 22 Aug 89 p 1

[Text] Washington (YONHAP)—North Korea is constructing a nuclear fuel reprocessing plant near an experimental nuclear reactor at Yongbyon north of Pyongyang with technical assistance from the Soviet Union, THE NEW YORK TIMES reported Sunday.

The TIMES said in a story entitled, "From the Great Leader to the Dear Leader," at least two Asians, including one who makes regular visits to North Korea, witnessed the nuclear facility due to an error made by a North Korean military intelligence unit.

Nicholas Kristof, Beijing branch chief of THE TIMES in London, contributed to THE NEW YORK TIMES magazine the story he wrote after attending the World Festival of Youth and Students held in Pyongyang early last month.

The influential daily quoted one of the two Asians, who has a close tie with North Korean leadership, during an interview, as saying that there was a facility near the Yongbyon reactor that appeared to be a nuclear reprocessing plant, which is under construction with Soviet technology assistance.

Kristof reported that if his remark is proved to be true, it would certify fears by South Korea and Western countries that North Korea is developing nuclear weapons capability.

Kim Chong-il, heir-apparent to North Korean leader Kim Il-song, has been deeply involved in state affairs, said the daily, quoting a foreigner living in Pyongyang as saying that the transfer of duties has been apparent in the past five months.

The daily predicted that there is a possibility that the generation of Kim Il-song era could oppose the power succession to Kim Chong-il after the death of Kim Il-song. Kim Chong-il will initially take over the leadership with no hitch.

The daily said Kim Chong-il's sticking power would depend on the loyalty of the military, noting that North Korean military leaders have recently been reshuffled.

Editorial Warns Against Nuclear Arms Development in Korea

SK1708134589 Seoul HANGYORE SINMUN in Korean 13 Aug 89 p 6

[Editorial: "'Nuclear Weapons' That Will Bring Annihilation to the Nation—The North and the South Should Not Develop Nuclear Weapons"]

[Text] A report that North Korea has been spotted building nuclear fuel reprocessing facilities capable of separating plutonium from nuclear fuel in an area close to Yongbyon, North Pyongan Province, has been followed by another report that U.S. technology codes useful for developing atomic bombs have been sold to many countries, including South Korea, through lawful channels. Moreover, on 7 August, the U.S. Arms Control and Disarmament Agency stated that both the North and South have deployed ballistic nuclear missiles for actual warfare.

We are not sure whether such reports are based on confirmed data or not. Nor are we certain whether or not these reports have any relation to the presence of nuclear weapons deployed on the Korean peninsula. However, these news reports, in conjuring up a picture of both North and South emerging from a conventional arms race and embarking upon a race to develop nuclear weapons, awaken a genuinely wretched feeling in our minds. We are well aware of just how formidable the nuclear weapons are. If these reports turn out to be true, what are both the North and South trying to prove by arming themselves with nuclear weapons?

It is apparent to everyone that the world is now moving toward a new detente. The United States and the Soviet Union, the two superpowers that have been engaged in a fierce arms race, have now agreed to partial arms reduction in their arsenals, and regional feuds in various parts of the world in which the two superpowers have exercised their influences now show signs of settlement. In addition, China and the Soviet Union, the two countries that had long entertained hostile relations, have now improved bilateral relations after holding summit talks early this year. Taking advantage of such a mood of detente, even our country is now actively engaged in economic exchanges with such communist countries as the Soviet Union, China, and East European countries.

We cannot help asking: Why do the North and South run counter to such a mood of detente, and why can they not abandon nuclear weapons at a time when the international community is on the move toward detente?

We know that countries with no power are unable to guarantee their own security in such an international era as today. There is no denying that the North and South should inevitably maintain military power until such time as they have reached an agreement on a firm peace structure between them. Because of their formidable destructive power, however, nuclear weapons are still very dangerous, even as a means of deterring war.

If and when either North or South develops nuclear weapons and takes possession of them, it can invite the other to do the same. If and when this happens, the North and South will find it unavoidable to enter a race of developing nuclear weapons, something that is beyond our imagination. In the face of these news reports that make both the North and South appear to be developing nuclear weapons in a competitive manner, we should remember what Taiwan's former President Chiang Kai-shek is supposed to have told his son Chiang Ching-kuo: Although we are in a standoff, the Chinese people should never toy with the idea of annihilating the other through the use of nuclear weapons.

Nuclear Plants Planned To Meet Electricity Demand

SK1708065489 Seoul YONHAP in English 0216 GMT 17 Aug 89

[Text] Seoul, Aug 17—South Korea needs to build 50 nuclear power plants by the year 2031 to meet 40 percent of the demand for electricity.

Demand will reach 454,158 megawatts in 2031, about six times the 1988 figure, and atomic energy should supply 40 percent of the total, a research report said Wednesday.

The report, prepared by the Institute of Energy Studies at Ajou University, was presented to a policy meeting of the Energy and Resources Ministry.

The nation's appetite for electricity will grow 6 percent per annum between 1989 and 2001, 4 percent between 2002 and 2011, 3.6 percent between 2012 and 2021 and 3.1 percent between 2022 and 2031, it predicted.

To meet the demand, the nation needs 50 more nuclear power stations, 65 coal-fired power plants and 40 fueled by oil and liquified natural gas, it said.

The government should develop state-of-the-art technologies to improve safety so that people no longer feel uneasy about atomic power plants and they win popular confidence, it said.

The report recommended that the government establish a firm policy on the disposal of radioactive waste and inform people living near plants of the whole procedure of their construction and operation.

It suggested the government form an independent body for public information on atomic plants that would be in charge of such matters as holding public hearings and other briefing sessions related with nuclear administration.

It also said the government should take public opinion into account in selecting sites and offer optimal compensation for local residents from the stage of land purchases to construction and operation.

The government should also settle problems raised by residents near atomic plants by conducting thorough investigations of allegations of radioactive contamination at the earliest date.

During the meeting, Energy and Resources Minister Yi Pong-so said the government will set up a long-term nuclear power development program based on the report.

Korea has eight nuclear power plants in operation and three plants under construction with three more due by 2001.

In 1988, atomic energy generated 40.1 billion kilowatt-hours of electricity, or 46.9 percent of the total, Yi said.

INTRABLOC AFFAIRS

International Nuclear Energy Conference Ends

AU2007114189 East Berlin NEUES DEUTSCHLAND in German 19 Jul 89 p 2

[ADN report: "International Conference on Nuclear Power Plants"]

[Text] East Berlin (ADN)—On Tuesday [18 July] representatives of the state control organs of Bulgaria, the CSSR, the GDR, and the USSR, which are working in the field of the peaceful use of nuclear energy, concluded their 2-day conference at the GDR State Office for Nuclear Safety and Radiation Protection in Berlin. Proceeding from the safety recommendations worked out by the IAEA, which reflect the worldwide consensus on a number of problems of nuclear safety, specific questions of further developing the safety of nuclear power plant reactors in the countries represented at the conference were discussed.

Soviet Firm To Modernize Hungarian Nuclear Plant

LD1508123889 Moscow TASS in English 1202 GMT 15 Aug 89

[Text] Kharkov August 15 TASS—A foreign trade firm, set up at Kirov plant in Kharkov, has signed the first cooperation agreement with the Hungarian Paks nuclear power station. The Soviet firm has received an order to modernise the oldest nuclear power unit at the station with a capacity of 440,000 kilowatts.

"We will replace steel rotors, fix more effective blades and improve settings at both turbines made at our plant," said Mikhail Virchenko, the Kirov plant's chief engineer.

"It is not that we are concerned over these turbines' reliability. The replacement of the turbines' parts was timed to coincide with regular short-time shut-downs for check-ups and refueling. The first shut-down will be this autumn, and we have made the required parts. Thanks to the modifications, the power capacity of the unit will increase by 15,000 kilowatts with the same fuel consumption," Virchenko said.

The Soviet firm has concluded another contract with Bulgaria. It is planned to modernise eight kharkov-made turbines with a power capacity of 760,000 kilowatts at the Bulgarian Kozlodui nuclear plant.

The deliveries of finished units will begin next year, and the modernisation will be completed in the next five-year period (1991-1995). The Soviet firm guarantees the extension of the maximum term of operation and the increase of the plant's power capacity by 60,000 kilowatts.

The Kirov plant is a major exporter of power equipment, and its turbines are operating in many European, Asian, Latin American and African states.

However, it is much more profitable for the enterprise to have a foreign trade firm and conclude deals independently, as all foreign currency goes to its account, whereas earlier ministries took the lion's share.

Economic reforms in the Soviet Union are abolishing this injustice, establishing ventures' independence and granting them the right to directly enter the foreign market.

CSSR, Hungary Discuss Nuclear Cooperation

LD1808211589 Budapest MTI in English 1636 GMT 18 Aug 89

[Text] Budapest, August 18—A discussion was held between Hungarian and Czechoslovak experts in Budapest on August 15-18, on the possibility of cooperation on the nuclear safety, radiation protection and exchange of information concerning nuclear power stations. The discussions were attended by representatives of the Hungarian National Atomic Energy Committee and their Czechoslovak counterpart, including experts of the relevant Hungarian and Czechoslovak ministries. As a result, a draft agreement was worked out by the participants on steps to be taken.

An important item of the agreement under elaboration is the speedy and accurate information to be provided to the public on all important aspects of the utilization of atomic energy. In the preparatory process, Hungarian experts will also visit the nuclear power station being constructed in the vicinity of Moh, in Czechoslovakia [CSSR] close to the Hungarian border. In addition they will be acquainted with the installations serving the safety of the population and the environment.

BULGARIA

Article Criticizes State Nuclear Power Policy

AU0908110289

[Editorial Report] Sofia POGLED No 32 in Bulgarian on 7 August on pages 8 and 9 publishes a 1,200-word article by Ivan Genov entitled "Is the Nuclear Energy Industry Indispensible?"

Genov explains that his article is in response to the article by Academician Prof Nikola Todoriev entitled "Water, Coal or Uranium?" published in POGLED No 28 of 10 July. He contests Todoriev's "categorical assertion" that "there remains only one possibility: the further utilization of nuclear energy to meet energy requirements."

Genov continues by arguing that nuclear power plants are "a symbol of the extensive economy," which is now completely out of fashion. He offers Soviet data on the immense cost of constructing new plants and quotes

other figures "from West European experts" showing that the electricity generating costs of nuclear plants are in fact much higher than for conventional types of power stations. He also points out that the direct costs of eliminating the consequences of the Chernobyl disaster were 8 billion rubles, while the Three Mile Island nuclear plant accident cost the United States $1 billion. "There is no doubt," says Genov, "that such costs (heaven forbid!), calculated for the scale of Bulgaria, would have ruinous economic consequences."

Genov briefly points out the imponderable ecological dangers posed by the problem of disposal of radioactive waste and also notes the falling worldwide trend in the numbers of new nuclear plants under construction.

Genov concludes his article with a general survey of alternative energy sources. Commenting: "Surely the flaccid statement in the article 'Water, Coal, or Uranium?' that 'new energy sources play no significant part in forming the energy balance' is an alarming indication of an inadmissible departmental apathy toward the vanguard field of nontraditional energy sources (wind, the sun, hydrogen, geothermal sources, tides, bioenergy, and so on)," he urges that Bulgaria should allocate substantial funds to serious research in these areas.

ARGENTINA

Commission Reports on Nuclear Plant's Flaws

PY0808163089 Buenos Aires CLARIN in Spanish 6 Aug 89 p 19

[Text] The Public Works and Service Ministry and the Energy Secretariat have received a report prepared by experts who were commissioned to determine what is happening at the Atucha 1 nuclear plant, the reasons for the delay in its repairs, and its future operation, which is indispensable for the national energy system to operate normally.

According to the report, the difficulties affecting the nuclear plant after 14 years in operation are unprecedented, even in countries where nuclear technology is advanced. One of those countries (FRG) has submitted a plan to repair Atucha 1. At the negotiation table with Argentine experts, however, the German specialists contended that those repairs cannot be made.

The official report indicates precision tools for the repair job had to be designed. Those tools must be capable of being operated from a distance of 11 meters through a hole 12 cm in diameter. The tools were specially manufactured, and some of them proved unsatisfactory. The tools have to be redesigned, and the repair job has therefore been delayed. The personnel to operate the manipulator—a robot—must be trained. Many technicians operate the robot well during trials, but are discouraged by the obstacles to working with it inside the reactor.

There were other nontechnical problems at Atucha 1. Great Britain could have provided help in 4 to 5 months, but suspended relations stood in the way of getting that help. Furthermore, the head of the prior government had to be convinced that, to import necessary elements, the "buy Argentine product" restriction had to be lifted.

There were obstacles in clearing imported items through customs and unexpected difficulties in opening the letters of credit. The official report that has recently been submitted mentions a case some time ago: A foreign manufacturer of a part needed to repair Atucha 1 had offered to make delivery in 8 weeks at a certain price, adding that the delivery time could be shortened with a 10-percent price increase. Nothing could be done because of the indecision of the Executive Branch, the Economy Ministry, and the Central Bank in opening the letter of credit in the last stages of the Alfonsin government.

According to experts, design is the shortcoming of Atucha 1. Its manufacturers, however, cannot by held responsible for that, because the plant has been in operation for 15 years, and at the time it was built there was not the expertise nor the technical problems that now exist.

The first signs of flaws in Atucha 1 appeared in 1985, but they were not obvious then. Only now, in retrospect, are those sign properly understood. For example, the temperature of the heavy water in the moderator varies a few degrees. The Energy Secretary visited the Atucha 1 plant for the first time last week, to hear opinions from the CNEA [National Commission for Atomic Energy] experts. No one had visited the plant before, when the problems began to develop.

All the repair deadlines are tentative. In the opinion of experts, only part of the Atucha 1 plant can be back in operation by late September.

Tlatelolco, Other Treaties Will Not Be Ratified

PY1108164089 Buenos Aires NOTICIAS ARGENTINAS in Spanish 2250 GMT 10 Aug 89

[Text] Buenos Aires, 10 Aug—Mario Campora, secretary for Multilateral and Special Affairs of the Foreign Ministry, reaffirmed today that Argentina will not ratify the Tlatelolco Treaty, nor will it sign the Nuclear Nonproliferation Treaty (TNP), and he highlighted the peaceful goals of the Argentine nuclear program.

During a news conference at the Foreign Ministry, Ambassador Campora was asked about a press report indicating that the government was studying the possibility of signing the Tlatelolco Treaty, to which he replied that "there are no changes in Argentina's traditional position," and he stressed that the Justicialist Party's platform is "very explicit in this respect."

He stated that the Peronist election platform stressed the continuation of "Argentina's independent program, and it did not promote the ratification of those treaties."

Asked about the importance of the visit of Richard Kennedy, U.S. ambassador for nonproliferation policy, who will arrive next week, Campora said that "the tendency regarding relations on nuclear matters is becoming more and more positive."

He reiterated that Argentina believes that the TNP contains "an obstacle to the independent nuclear programs of developing countries."

He said that "as an alternative to nonproliferation control we are proposing much closer cooperation with Brazil." He maintained that replacing Argentine-Brazilian rivalry with cooperation gives "us the best safeguard against nuclear proliferation," and the development of nuclear technology for military use.

He also stated that during President Carlos Menem's visit to Brazil from 22, to 24 August, annexes to the Nuclear Cooperation Protocols will be signed. Private Argentine enterprises will thereby be able to participate in the construction of the Angra II nuclear plant with an investment of approximately $15 million, while Brazilian enterprises will participate in the construction of Atucha II.

Suspension of Power Rationing Announced

PY1508035689 Buenos Aires Domestic Service in Spanish 1600 GMT 15 Aug 89

[Text] Energy Secretary Julio Cesar Araoz has announced that as of tomorrow, the electric energy cuts will be suspended all over the country. The suspension will last until the end of next week. He added that the Embalse nuclear plant will resume operations in 2 or 3 weeks. Araoz said the Atucha I plant is expected to resume operations between 23 and 30 October.

CNEA Held Responsible for Inactive Mine

PY1608174089 Buenos Aires NOTICIAS ARGENTINAS in Spanish 1326 GMT 16 Aug 89

[Text] Cordoba, 16 Aug—The Sanchez Granel Company is holding the National Commission for Atomic Energy (CNEA) responsible for the paralyzation of the activities at the Los Gigantes mine, stating that the CNEA owes the Sanchez Granel Company 500 million australs in work certificates to July 1989.

Jorge Armando Berisso, the deputy manager of the Los Gigantes mining complex, added that the Sanchez Granel Company has been asking the CNEA to expand the deposit's exploration program in order to assess the available reserves but that, so far, the necessary funds have not been forthcoming.

Berisso denied that the Sanchez Granel Company is trying to justify the possible removal of the facilities at which the raw nuclear fuel that is used in the Embalse and Atucha nuclear power plants is extracted.

The Los Gigantes mining complex has been virtually paralyzed since last June. This has forced the Mineworkers Labor Association to demand the government's intervention in order to solve the situation of 150 Sanchez Granel Company workers.

Cordoba Province legislators have presented a draft statement in which the CNEA is asked "to immediately approach the problem and seek the best solutions so that the national atomic program will not be affected."

In addition, the legislators warned that if work is not resumed at Los Gigantes—the world's lowest grade ore deposit—in the midterm, the fuel reserves for the operation of the nuclear power plants could be depleted and thus aggravate the energy crisis.

Concerning the uranium deposit's reserves, it has been explained that the (low grade) ore in the Los Gigantes deposit has diminished from 290 grams per ton of rock to 150 grams.

BRAZIL

Purchase of Nuclear Materials Reported

PY1508030089 Sao Paulo FOLHA DE SAO PAULO in Portuguese 13 Aug 89 p A-11

[By special correspondent in Luxembourg Tania Malheiros]

[Excerpts] The National Commission for Nuclear Energy (CNEN) owes approximately $10 million to Luxembourg's Gradel Corporation. The debt was contracted in 1981, when the CNEN purchased nuclear material produced by Gradel. The commission has never reported this purchase. The CNEN, which is a self-managed institution subordinate to the Presidency, has transferred approximately $1.2 million to Luxemburg annually in order to meet this obligation. [passage omitted]

Gradel director Eugene Biver has said that his company supplies equipment to countries of Euratom (European Nuclear Energy Community), which was formed by France, Luxembourg, the Netherlands, the FRG, and Belgium. Euratom was founded in 1958, and its headquarters is in Brussels. It was recently joined by Portugal, Spain, Italy, Greece, Denmark, Ireland, and the United Kingdom.

In 1981, when CNEN and Gradel closed their deal, the commission started operating four secret bank accounts, which were known as "Deltas," as reported by FOLHA DE SAO PAULO in 1986. The funds in those accounts were used for the parallel nuclear program. They have not yet been closed; they remain open under other names.

In 1981, the CNEN and the Navy began assembling the Aramar experimental center in Ipero (125 km west of Sao Pualo). The center enriches uranium for use by the first Brazilian nuclear submarine. The center is not under the supervision of the International Atomic Energy Agency (IAEA), in Vienna, Austria.

Special Defensive Equipment To Be Produced

PY1508004089 Rio de Janeiro O GLOBO in Portuguese 14 Aug 89 p 17

[Text] Sao Paulo—The Army Staff and the Sao Paulo State Federation of Industries (FIESP) will arrange to produce military equipment in Brazil for defense against chemical, biological, and nuclear weapons. In the next few days an Army staff officer will meet at the FIESP with industrialists who want to produce equipment such as automatic chemical agent detectors, signal systems for contaminated areas, decontamination pumps, stretchers, rain power meters [calculador de potencia de precipitacao], and radioactivity simulators.

Nelson Abbud Joao, director of FIEFP's industrial promotion department (DMI), has said that the Army is getting ready to face situations like the accident with

Cesium-137 in Goiania, when it had to import radioactivity control equipment. Businessman Mauro Daffre of Protin, Individual Protection Equipment, who is the president of the Union of Job Protection and Safety Industries, has stressed that Brazilian industry can meet the needs of the Army, including the production of nuclear protection equipment.

The products that the Army wants to be produced in Brazil are, among others, rapid chemical decontamination gloves, self-injecting syringes, protective clothing, and adhesive detection paper.

Private Company To Prospect for Uranium

PY1609005889 Brasilia Domestic Service in Portuguese 2200 GMT 15 Aug 89

[Text] During a ceremony attended by President Jose Sarney, Brazilian Uranium, a state-run company, signed a contract with the (Andrade Gutierrez) Mining Company for the exploitation of Brazil's largest uranium deposit, located in Lagoa Real, Bahia. The ceremony, held at President Sarney's office on the third floor of Government House, marked the beginning of the participation of private companies in the Brazilian nuclear program.

President Sarney said that this is another step by which the public and the private sectors are joining efforts to implement the Brazilian nuclear program. National Commission for Nuclear Energy—CNEN—President Rex Nazareth said that the participation of the private sector in uranium prospecting will not end the state monopoly in the nuclear industry which is provided for in the Constitution.

The private contractor will spend $10 million to study the economic feasibility of exploiting the Lagoa Real deposits. A $100 million investment will be made to construct a mineral-industrial complex for the production of uranium concentrate, which is the raw material for nuclear reactor fuel. The complex, which will be built in the district of Caitite, will generate 600 jobs.

Brazilian Uranium will sign two other contracts with private companies for prospecting for uranium in (Gondore), Minas Gerais, and in (Itatiai), Ceara.

CHILE

Construction of Thermonuclear Plant Under Study

PY1608144889 Madrid EFE in Spanish 1916 GMT 15 Aug 89

[Text] Santiago, 15 Aug—General Herman Brady, president of the National Nuclear Energy Commission, has said that Chile may build a thermonuclear plant to meet the increasing demand of electricity.

During a news conference, Brady said that the construction of a thermonuclear plant, which has already been analyzed on various occasions, is technically feasible but will depend on available financial resources.

Brady was accompanied by Richard Kennedy, U.S. ambassador at large for nonproliferation, who will end his official visit to Chile today.

Kennedy said that the United States might support the peaceful use of nuclear energy in Chile.

Kennedy added that "the U.S. Government is providing some support to Chile. Proof of this is the fact that Chilean students are taking advanced studies in the United States."

EGYPT

Nuclear Program Path Strewn With Obstacles

51004606 London AL-MAJALLAH in Arabic 3 Jul 89 p 35

[Article: "Problems of the Egyptian Nuclear Program"]

[Excerpts] During his visit to Cairo in the summer of 1974, former American President Richard Nixon offered to supply Egypt with nuclear power plants with a capacity of 1,800 megawatts. [passage omitted]

It was difficult for Egypt to find any advanced country to help her with her nuclear program, because all of them had agreed to impose almost the same conditions. At the same time, the Egyptian nuclear program faced increasing domestic opposition after the accidental escape of radiation from the Three Mile Island reactor in the United States in 1979. Local pressures in Alexandria and surrounding areas forced the Egyptian government to abandon its original plan to build the first Egyptian reactor in the Sidi Kurayr area, near Alexandria. New studies had to be made to select an alternative site.

The nuclear project was strengthened the following year with the formation of the Higher Council for Energy. It made new studies that confirmed the importance of generating electricity from nuclear power as a vital necessity for development in Egypt. In order to overcome international restrictions imposed on nuclear technology transfer, Egypt had to approve the nuclear arms nonproliferation agreement. It did so in February 1981.

Egypt's approval of the treaty provided a great opportunity for expanding the scope of nuclear cooperation between Egypt and the advanced countries in this area. In March 1981, a nuclear cooperation agreement was signed with France. In the same month, the Americans agreed to sign the agreement over which they had procrastinated for 5 years. Agreements with West Germany (1981), Canada (1982), Britain (1983), and Switzerland and Belgium (1984) followed. Also, there were understandings between Egypt and Sweden and Niger, which are considered important sources of uranium.

These agreements allow Egypt to obtain reactors from these countries. The prevailing tendency among Egyptian officials was to obtain one or two reactors from each country, so as to avoid becoming subject to a single country's monopoly, and so that by the year 2000 there would be eight Egyptian reactors, in accordance with the plan laid down for generating power. The shares of the French offering were increasing, since it provided ideal conditions. However, the Americans encouraged a different direction—opening the Egyptian nuclear project to bidding among international corporations, on the ground that this would provide an opportunity to choose the best of the offered bids. This method was adopted. The bidding was opened in 1983, and examination and study of the bids continued until 1985. A final decision to begin building the first Egyptian nuclear power plant was scheduled to be made in 1986; however, the Chernobyl accident in the Soviet Union in April 1986 had a negative effect on the Egyptian program, and a new wave of opposition to the project ensued.

INDIA

Newspaper Complains About U.S. Pressure

BK0908113589 Delhi THE HINDUSTAN TIMES in English 31 Jul 89 p 13

[K. Subrahmanyam article entitled "U.S. at the Old Game"]

[Text] In 1974, following the Pokharan nuclear test the United States, Canada and other Western countries joined together in applying pressure on India to discontinue the nuclear tests. The Indian leadership buckled under the pressure and discontinued further testing. Encouraged by that precedent, the United States Administration presumably is attempting to repeat that exercise and this time try to dissuade India from continuing further tests of Agni missile. Given our past record one cannot blame the U.S. Administration and the senators from making their attempts. One hopes that India of 1989 is not the India of 1974 and this time the country will be able to rebuff such monopolistic approach of some dominant powers arrogantly establishing the doctrine that missiles and sophisticated technologies are to be controlled solely by them and the developing nations are to be prevented by various means from catching up with them in technology. In their attempt, with their control of world-wide mass media a significant amount of disinformation has been generated to mislead both the American people and the rest of the world.

The United States built its atom bomb with the help of dozens of emigre scientists who fled from Europe. So was the case with the hydrogen bomb. The U.S. missile program was initiated by a famous Chinese scientist Dr Qian Xuesen who as a colonel in the U.S. Army recruited all the talented German rocket scientists from the Peenemunde establishments in Germany at the end of the Second World War to build missiles for the U.S. This included Dr Werner von Braun who launched the manned mission to moon. It also included a number of ex-Nazis whom the U.S. protected and shielded. Even today the U.S. has borrowed the Soviet technology for their neutral particle beam [term as published] for their Star Wars.

Given this background it is amusing to read about some U.S. congressmen and so-called experts talking of India having obtained technology for its missile from abroad. One expert even talked of the Agni's nose cone resembling the German one. So far only German missiles have been fired by the Germans who worked in the missile and space programs of the United States and Germany by itself has no independent missile program.

Now comes the announcement that U.S. would not sell to India combined acceleration and vibration climatic test system (CAVCTS) in order to prevent this country from developing missiles. This reminds one of a Tamil proverb about a cantankerous person hiding the comb of the bride with the object of preventing the marriage from taking place. The engineering firms in India have the capability to make the (CAVCTS) equipment and the Indian program will go through without any U.S. help. The Canadians stopped their aid to our nuclear program in 1974. Though there were delays we pressed ahead with our reactor program. Now the Canadians would like to come back but we have no need for them.

It is not a coincidence the Americans have launched a simultaneous propaganda campaign about Indian sale of chemicals to West Asia which allegedly could be used to make chemical weapons. The chemical in question, thionyl chloride, is two steps away from any chemical weapon and is not in the list of precursor materials drawn up in Paris and in Geneva which are not to be sold. In fact the only process in which this chemical can be used to make a poison gas can be carried out more easily by the cheaper and commonly available hydrochloric acid. Thionyl chloride is used commonly for detergents, cosmetics, and many other innocuous substances.

The fact of the matter is the poison gas plant in Iraq was built with West German help. The U.S. controls are so sloppy that Israelis took away from that country hundreds of kilograms of weapon grade enriched uranium and Pakistanis Kryton switches. Pakistan got all its equipment for its uranium enrichment plant from Western Europe. Just now the U.S. is reported to be applying pressure on France not to sell the vibration climatic test machine to Brazil. Earlier the U.S. failed to stop the West Germans from transferring to Brazil technology on uranium enrichment.

What the Americans overlook is that there are thousands of scientists in the Western world who have worked in the chemical, nuclear and missile programs who can be hired at appropriate prices by rich Arab countries. They are helping Iraq, Egypt, and Argentina in CONDOR missile program. The U.S. threw out Dr Qian Xuesen in 1955 and he went to his native land and built the Chinese missiles. The British scientists disbanded from the Manhattan atomic bomb project fabricated the British bomb. The American approach to stopping other countries from having weapons they develop with brains borrowed from the rest of the world is the same as that of gods in the Greek fable who wanted to preventy mankind form having the secret of fire. But Prometheus stole the secret of fire for the benefit of mankind.

The American Administration and Congress are still to reconcile themselves to the inexorable fact that the U.S. is no longer the hegemonic power it was and it no longer controls the scope and extent of technology it did in the fifties. Western Europe and Japan are its competitors and a vast amount of technology is available outside the U.S. while the Western Europeans and the Japanese may go along with the U.S. in terms to paying lip-service to U.S. sponsored missile control regime the Western governments have no control over the movement of talented personnel or exports of subsystems. The man who designed the nuclear export control trigger list, Claude Zangger of Switzerland, himself authorized export of subsystems required for the uranium hexaflouride circulation system to Pakistan as that system was not in the trigger list since he did not think that a developing nation could set up a uranium enrichment plant.

India has proposed that both nuclear weapons and chemical weapons should be outlawed and eliminated and there should be a total nondiscriminatory verification regime for all nations.

This is the only way in which nuclear and chemical wapons can be eliminated and the world can be made safe from proliferation both the ongoing one by the industrialized nations and China and the impending proliferation by threshold countries. [sentence as published] But the U.S. and its supporters unrealistically hope to keep such weapons in their cartelized control and prevent the other nations, especially non-white developing nations, from having them. They have developed a strategy of "Discriminate Deterrence" by which they aim to use missiles of high accurancy with stand off capabilities in developing world even while preaching non-proliferation of such weapons to those countries which are the intended victims of such punitive coercive diplomacy by the U.S. and other industrial countries. They oppose Gorbachev's plea for stopping missile modernization and insist that missile modernization is a necessity for their own security. At the same time they argue that other nations should not develop missiles. To recall the words of late Ambassador V.C. Trivedi during Geneva non-proliferation treaty negotiations in 1965 they want to disarm the unarmed.

Attempting to stop missile and chemical weapons proliferation even while the industrialized nations continued to proliferate them is a futile exercise. The NPT [Nonproliferation Treaty] could not stop Israel, India, Pakistan, Brazil, Argentina and South Africa from developing adequate know-how to make the weapons. The missile non-proliferation regime does not stop Israel from developing Jericho II, China from selling CSS-2 missiles to Saudi Arabia, Silkworm missiles to Iran and M-9 missiles to Syria. The joint Iraq-Egypt-Argentinian missile project is not going to stop, nor Pakistani missile projects. As the West increases economic pressures on China, they would sell more missiles to Arabs to earn foreign exchange.

The chemical weapons are very easy to make for any country which has a pesticide industry. Hundreds of European scientists are waiting to sell their services. Given this international situation which is beyond U.S. capacity to control it would do well to listen to the Indian advice and join in a cooperative international effort to ban and then eliminate chemical and nuclear weapons. If

the U.S. continues to persist in its hegemonistic dreams then India will have to protect its own national security in the best possible way. So long as "discriminate deterrence" is pursued by U.S, China continues to have missiles and sell them. India cannot afford to give up its missile program.

Today the U.S. has no economic clout vis-a-vis India. If they think of reducing aid to India they should give thought to the possibility that India might be compelled to sell technology including various kinds of weapon technology. India has been exercising extraordinary restraint in regard to transfer of weapon technology. The U.S. Congress may now refuse to sell India combined acceleration and climatic vibration test machine. When India develops those machines in the next few years the U.S. will have no hold on India selling it to other countries. A noted U.S. strategist, who worked on President Reagan's White House staff, Geoffrey Kemp, recently warned his countrymen India was not Libya and it would be counterproductive to club them together. Some of the U.S. senators and congressmen with their parochialist fixations may not be aware that even in their own country the Indian community has contributed significantly to the U.S. scientific achievements. It should be made known to them that India has a reservoir of scientific and technical talent. The Indian missile program should be pressed ahead with full vigor without undue worry about U.S. pressure.

Minister Details Nuclear Cooperation With USSR

PM1708081389 Moscow PRAVDA (Second Edition) in Russian 14 Aug 89 p 5

[Own correspondent O. Kitsenko dispatch: "Developing the Nuclear Power Industry"]

[Text] Delhi, 13 Aug—India is now one of the countries devoting much attention to the development of the nuclear power industry. The Narora Atomic Power Station in Uttar Pradesh State recently became the country's fourth operational nuclear power station when its first power unit, with a capacity of 235 megawatts, was commissioned.

This, and the immediate development prospects of the country's nuclear power industry, was covered in a reply to a parliamentary question presented by Minister of Science and Technology K.R. Narayanan. In addition to the four operational stations, India is now building three more nuclear power stations. The government has decided to create a few more nuclear power stations with four 235-megawatt power units and six 500-megawatt power units.

The minister dwelt in detail on Soviet-Indian cooperation in this sphere. Under an agreement signed in November 1988, two nuclear power units of 1,000 megawatts each will be built in India with assistance from the Soviet Union. Studies are currently under way on their location and the creation of the necessary infrastructure. It is planned that construction work will begin in 1992, with both power units scheduled to start generating electricity by 1999.

According to Nuclear Power Department plans, the total on-line capacity of India's nuclear power stations should reach 10,000 megawatts by the end of the century, accounting for 10 percent of the country's total power capacity.

Future Nuclear Reactor Plans Detailed

BK1208163189 Islamabad Domestic Service in Urdu 1500 GMT 12 Aug 89

[Text] India is constructing another 12 nuclear reactors of 235 megawatts capacity each and 6 reactors of 500 megawatts capacity each, to be complete by the year 2000. The first reactor of this series at Narora reached criticality in March this year. Other than this, India has decided to construct two more reactors of 1,000 megawatts capacity each with Soviet assistance. This was stated by the secretary of the Department of Atomic Energy of India. Mr M.R. Srinivasan, in an interview to an Indian weekly. He said overall 32 nuclear reactors will start operating in India by the year 2000, out of which 26 reactors will be designed and built with indigenous technology.

IRAN

IAEA Secretary General Interviewed

NC1208085489 Tehran Television Service in Persian 1415 GMT 11 Aug 89

[Interview with Hans Blix, secretary general of the International Atomic Energy Agency, by an unidentified correspondent of the Science Group of the Voice and Vision of the Islamic Republic of Iran during Blix's recent trip to Iran; recorded in English with superimposed Persian translation]

[Excerpts] [Interviewer] [Passage omitted] Our guest is Mr Hans Blix who is the secretary general of the International Atomic Energy Agency [IAEA]. It is a unique opportunity for us to interview him during a friendly meeting.

Mr Hans Blix, thank you very much for participating in this scientific program. I would like to ask some friendly questions about your trip to our country, about your mission, and about your proposals for Iran's future in the field of energy. I welcome you to Iran, and ask my first question on your mission.

[Blix] The IAEA is an intergovernmental organization with 150 member countries, like the United Nations or FAO. The Iranian Government invited me to discuss with your officials the assistances and services that this agency can extend to your country in the field of atomic energy and its peaceful use, in industry, agriculture, and medicine, and in setting up nuclear power plants.

[Interviewer] When referring to developing countries, we are speaking primarily about the peaceful use of atomic energy. Talking about Iran especially, what is in mind is the use of nuclear energy for producing electricity. When a country has immense oil resources, do you think it is to its benefit to use nuclear power in terms of producing energy?

[Blix] Yes. I think so. At some point, at any rate, oil and its resources will be finished. This applies to gas as well. Of course, we hope that will be a long time from now. Moreover, we know that we can use both oil and gas for purposes other than consumption. For example, they can be used in the petrochemical industries where the molecules of oil are extremely valuable. It is a shame that when uranium can be used to produce electricity to use these valuable molecules instead, because uranium, contrary to oil, can be used only for the production of energy.

Of course, today the world relies mainly on fossil fuel such as gas, oil, and coal; and this situation will continue for years to come. For a country like Iran, it is natural for these resources to be used. However, I think that the creation of possibilities for using nuclear energy in Iran is logical.

[Interviewer] What is your opinion of Iran's current position in the use of nuclear energy? In other words, do you consider the situation in Iran favorable for moving toward the creation of possibilities to produce nuclear energy?

[Blix] Your nuclear power programs were relatively ambitious. In addition to the Bushehr Power Plant, there were installations in other parts of your country. Moreover, forecasts were made on the industrial use of nuclear power. Then the revolution came and then the war. Now you have the Bushehr Nuclear Plant installations on which you have spent a great deal. These installations are ready constructionwise, that is as far as concrete and construction framework. However, they are not completed as far as installations and equipment are concerned. Much force has been used to build them and it is a pity that you have not continued them and completed them. Of course, the damages inflicted during the war, the taxes, economic expenditures, and the time required for their completion by the government should be calculated and the necessary decisions made so that this building can become the Bushehr Nuclear Power Plant.

[Interviewer] In view of the visit you paid to the Iranian Atomic Energy Organization [IAEO], how do you assess the Iranian experts as far as the recommencement of the nuclear installations for energy production are concerned, and do you think that they have the necessary scientific and expertise capabilities?

[Blix] Our impression is that the scientific level in Iran is high. You have been working in this field for a long time. You have capable scientists, experts, and technicians. I inspected your laboratories in Tehran today. I gained much information on these installations and tests. Your activities are of a high standard. [Passage omitted]

For more rapid results, the government, too, should undertake certain things. We have seen many examples. Some governments which wanted to set up installations for the use of nuclear energy faced problems during the initial years, and these led to high costs. Therefore, if a government decides to take a step in the nuclear field, it should be prepared to undertake some commitments. These commitments concern management, prevention, and control, and of course these should be coordinated through extensive industrial plannings.

[Interviewer] You referred to problems such as the war which delayed the nuclear activities in Iran. Can a country like Iran, in view of the problems that it is facing, be able to provide its electricity through nuclear power?

[Blix] I should say that we do not tell member countries what they should do. The governments themselves decide. If you ask me if we have experts, researchers, and other means to help, I can say yes and of a high standard, too. If you ask me if it is economically wise for this step to be taken, I think that your government should answer and not I. The construction of a nuclear power plant is very expensive, and much more expensive than the construction of a power plant that operates on coal, gas, or oil. On the other hand, a nuclear power plant is less expensive in the long run because its fuel—uranium—is economical and much cheaper than gas, coal, and oil. [passage omitted]

A point that I should emphasize is that the main reason I support nuclear fuel is for environmental purposes. In my country, Sweden, we have seen the destruction of thousands of lakes because of acid rain resulting from excessive coal and oil burned in European countries and in Sweden. Nuclear fuel does not produce any sulphate dioxide or nitrogen oxide and all its waste can be controlled. This is why I prefer nuclear fuel to all other fuels. [Passage omitted]

[Interviewer] You recall the news some years ago on the Chernobyl incident and on its safety and its wastes. What is your opinion on this?

[Blix] I think that the waste issue is not a big problem. We have very advanced technology on dumping nuclear waste outside the biosphere even for the next thousand years. As for the safety issue, I should say that any type of power-producing resource has its own risks. If you use water to produce electricity, there is the risk of the dam bursting and we have seen such incidents where thousands of people died. Recently there was a gas leak in a power plant in the Soviet Union which led to an explosion on two trains where 600 people were killed. About a year ago, an oil platform sunk, killing 150 experts, engineers, and researchers. Of course, Chernobyl was the most severe incident in the nuclear field and 31 people were killed. I do not want to say that nuclear power is without risks, but I say that if you want electricity, you

should look for ways to ensure the fuel resources for it. And any resource you choose to ensure electricity will have its own risks. In my view, nuclear power has fewer risks compared to other resources for the production of energy. If a comparison takes place between all the deaths and damages of all the incidents that have taken place, then this point will be further clarified.

[Interviewer] What percentage of today's power plants are using nuclear energy?

[Blix] Today 17 percent of the world's electricity is produced by nuclear energy, about 20 percent by water resources, and the remainder by coal, gas, and oil.

[Interviewer] Still, in view of these figures and facts, do you believe that the risks of nuclear energy are fewer?

[Blix] Yes, I certainly think that the risks in using nuclear energy are within a logical limit. This, of course, does not mean that we can have peace of mind. We should pay more attention to the issue of safety more and more each day. This is something that has always applied whenever a new technology has been introduced, and I should say that the issue of safety in nuclear energy has made spectacular progress. [passage omitted]

[Interviewer] But I am still not convinced about nuclear waste. The reports appearing in the press and on the radios all speak of the disputes that have started on the issue of nuclear waste. Do you think that we can have a technology that can protect ourselves from nuclear waste?

[Blix] Yes certainly. I would even say that the solutions to and technologies on nuclear safety have progressed very much and more results have been achieved on this in comparison with fossil fuel. I will tell you how it is done. Last year the total number of nuclear power generators throughout the world produced about 7,000 tonnes of nuclear waste. This waste is to a great extent radioactive and great precision should be taken to control this. This waste is put in water tanks for many years in order to reduce its radiation and radioactivity. Another solution is to place nuclear waste in copper capsules and bury them deep inside the earth in areas that have been geologically stable for thousands of years and which will remain stable forever. Another solution is to find a way to reduce nuclear waste. At any rate, whichever solution is picked will be the techniques and methods used today and which do not cause concern among those who use this kind of energy resource.

[Interviewer] Mr Blix, when people speak of nuclear power, they confuse its meaning with the atomic bomb. Can you please clarify the relationship that nuclear power has with the atomic bomb?

[Blix] Yes, certainly. Of course the basis of nuclear science is the same for nuclear power and the nuclear bomb. But a noteworthy point is that all the governments that have a nuclear bomb intially manufactured the nuclear bombs and then sought to set up nuclear power stations. Now, if you wish, you can either go for the nuclear bombs or for nuclear power. It is a question of your will.

[Interviewer] Therefore, there is a difference in the technology of each one of these.

[Blix] Yes, their technologies are completely different. However, the nuclear science in both is the same.

[Interviewer] Therefore, the mere fact of having a nuclear power plant does not necessarily mean having a nuclear bomb.

[Blix] No, on the contrary, the organization that I represent has the duty to monitor the peaceful use of nuclear power in its member countries and it tries to prevent any military use of nuclear power. We send our inspectors to all the countries that have promised to use nuclear energy only for peaceful purposes in order to confirm that they are doing so.

[Interviewer] And are you sure that the information that governments give you on their activities are true?

[Blix] We are confident that all the countries that have promised not to use nuclear energy for military purposes have remained faithful to their promise and that their installations have been set up only for the purposes of electricity and industry. Of course some countries have refused to accept our representatives and inspectors. But I cannot name those countries here.

[Interviewer] Do your inspectors go to military areas and to weapons' factories?

[Blix] No. They do not go to weapons' factories in five countries that manufacture weapons in the world—that is, the United States, Britain, France, the Soviet Union, and China. Of course they have access to their peaceful installations, but not to their military centers.

[Interviewer] Then what is the purpose of your organization?

[Blix] The first purpose is our insistence that member countries make peaceful use of nuclear energy. Some examples are in the field of nuclear medicine, the use of nuclear energy in agriculture such as the improvement of seeds, the use of nuclear energy in industries such as the polymer industries and, finally, in the field of electricity production. Also, we help interested countries to make use of nuclear energy facilities and to help their industries to flourish. Meanwhile, we place safety standards at their disposal. Moreover, through continuous inspections, we prevent the idea of setting up nuclear installations for military purposes.

[Interviewer] My last question is a personal question. Are you a nuclear scientist?

[Blix] No, I am a lawyer.

[Interviewer] Then why are you in this business?

[Blix] It is a peculiar story. As a student, immediately after World War II, I wanted to work to help build a better world. Therefore, I started studying international law because I think that the world needs more law and less violence. Therefore, I studied for years and participated in disarmament activities. And as I said before, since nuclear energy does not pollute the environment and create acid rain, I started my activities in this field in my country, Sweden. [Passage omitted]

[Interviewer] What are the limits of your organization's activities? Can you prevent illegal activities?

[Blix] No. We have neither a police force, nor an army. But we have inspectors who travel throughout the world and report on violations to the world through the mass media. You, who work in the mass media, know the power of telecommunications. This is something we can do and something that causes reactions.

[Interviewer] Again, my final question, and of course this is the second time I am asking the final question. At any rate, what is your forecast on developing countries, and especially Iran, and the future that they have in nuclear energy? Will Iran basically have a future in nuclear energy?

[Blix] Yes, I think so. The only question is when you start and when you want to start. I think that you need more programs in the field of nuclear energy. When the information coming from industrial countries on nuclear energy is little, definitely the information that the developing countries will have on nuclear energy will also be little. We are acquainted with water energy, oil energy, and wind energy and are used to these. But people do not know anything about radiation, even though there is sun radiation and you see it every day, especially here in Tehran, where its radiation is strong. Nevertheless, people do not know about it. They know about X-ray which is radiated at their body only in name. The same applies to nuclear energy which is a mystery to many. We should remove the negative thoughts that exist on this. We should be careful of X-rays and even sun radiation. However, ill thoughts are something else. We should become acquainted with all these energies and harness them. Developing countries should only use nuclear energy for their needs and not for nonpeaceful purposes.

[Interviewer] I thank you very much for having given us some of your time and for having participated in our program.

LIBYA

Libyan Chosen as Arab Atomic Energy Head

LD0808172189 Tripoli JANA in English 1631 GMT 8 Aug 89

[Text] Tunis, Hannibal [August] 8, Jamahiriyah News Agency—Great Jamahiriyah was chosen president of the Arab Corporation of Atomic Energy [ACAE] at the conclusion of the corporation's general conference sessions held at the Arab League in Tunisia today.

The conference asserted the importance of backing ACAE to complete its scientific projects to help the Arab countries in the use of atomic energy for peaceful purposes.

At the conclusion of its sessions the ACAE general conference approved the five-year plan for the projects and the annual plan for 1990. It also approved the project for coordination amongst Arab countries in the international conference for atomic energy due to be held in Vienna next al-Fatih [September] month.

PAKISTAN

Official Notes PRC Concern Over Indian Missile

BK1008100189 Karachi DAWN in English 26 Jul 89 p 3

[Text] Islamabad, July 25—The Senate Chairman, Mr Wasim Sajjad, has presented to President Ghulam Ishaq Khan the report of his recent visit to China which notes an increased concern of the Chinese authorities over the launching of Indian Agni missile, it was reliably learnt here on Tuesday [25 July].

In his detailed report, Chairman Wasim Sajjad has covered the discussions that his high-powered 10 member delegation had with Chinese leaders who reportedly informed their guests also about the recently held Sino-Soviet summit and the talks the Chinese leaders had with Indian Prime Minister Rajiv Gandhi.

The Senate Chairman is believed to have been told by the Chinese authorities that China felt equally concerned over the launching of Indian Agni missile and had recorded their concern in the meeting with the Indian Premier.

The delegation was stated to have been apprised by the Chinese authorities about latter's relations with the Soviet Union and India. They said China would surely like to improve its relations with Moscow and New Delhi, but at the same time wanted them to end their interference in Kampuchea and Tibet respectively.

According to sources the report of the Senate Chairman also contains certain suggestions formulated in the light of the discussion that the delegation had held with Chinese leaders especially on regional issues.

The report presented to the President reportedly suggests that China had received unparalled support and cooperation from Pakistan when faced with a mini-insurgency about two months ago. Chinese authorities are believed to have highly appreciated the visit of Senate delegation to Beijing at a time when it was confronted with its internal crisis and was wrongly accused by the West of committing recesses on its yosuth, especially the student community.

The Chinese leaders are said to have told the delegation that the number of killings during the disturbances was highly inflated in reports that appeared in Western Press.

Chinese leaders are said to have offered the Pakistan delegation to expand military and economic cooperation between the two countries. Offer has reportedly been made to further enhance Chinese participation in the bigger industrial projects of Pakistan and expansion of those industries which were established with the active financial and technical support of China.

Nuclear Pact With India Ratified

BK1008115189 Islamabad Domestic Service in English 1100 GMT 10 Aug 89

[Excerpt] The Federal Cabinet at its meeting in Peshawar today discussed law and order, internal situation in the country, relations between the federal government and the provinces, and took a number of decisions. The meeting was presided over by the prime minister, Ms Benazir Bhutto. Briefing the newsmen, the minister of state for information and broadcasting, Mr Javed Jabbar, said that the Federal Cabinet ratified the agreement of nonattack on each other's nuclear installations between Pakistan and India. The agreement was signed on secretarial level on the 31st December last year. It also ratified the agreement on scientific and technical cooperation between Pakistan and the Republic of Brazil. [passage omitted]

'Islamic Bomb' Author Denounces Arrest to Press

BK2308012489 Hong Kong AFP in English 2200 GMT 22 Aug 89

[Text] Islamabad, Aug 22 (AFP)—Zahid Malik, owner and editor-in-chief of the PAKISTAN OBSERVER, accused the authorities Tuesday of illegally detaining him for two weeks for his journalistic activities.

Mr Malik was detained on August 6 allegedly over "Dr Abdul Khadir Khan and the Islamic Bomb," his book on the founding father and director of the Nuclear Research Centre at Kahuta, east of Islamabad. He was arrested by the Federal Investigation Agency (FIA) for allegedly including material "prejudicial to the national interest" in the book, which was published in June. But, he told a news conference here, "99 per cent of the questions" asked him during his "interrogation" had to do with his newspaper and its "funding" rather than the book.

Mr Malik, 52, who was released on bail Monday, defended the "independent policy" of the PAKISTAN OBSERVER, the country's only evening paper. "We are an opposition paper, we support the government on basic issues," he said. He "no special relationship" with the opposition Islamic Democratic Alliance (IJI), although two influential members of the IJI, former Prime Minister Muhammad Khan Junejo, and chairman of opposition in Parliament, Ghulam Mustafa Jatoi, were among "many" people who called him upon his release.

Mr Malik said he had received no charges against him in writing, nor a "written complaint from the Pakistani Government" on his book. He did not rule out suing the authorities for his "illegal detention."

Mr Malik said his book was based on published articles and on Pakistani and foreign books as well as "personal opinions" on the nuclear program, adding that it had "nothing to do with the secrets of Pakistan." The book contained nothing new on the nuclear policy of Prime Minister Benazir Bhutto government, he said.

He recalled that Ms Bhutto's predecessor, General Muhammed Ziaul Haq, "tried to stop the publication" of his book.

Ms Bhutto has stated on numerous occasions that her government does not possess any nuclear missiles and has no intention of manufacturing them.

PRC Scientists Visit Dubna Nuclear Institute

OW1908233789 Moscow International Service in Mandarin 1400 GMT 9 Aug 89

[Text] The Joint Institute for Nuclear Research is located in Dubna, which is some 130 km north of Moscow by the Volga River. The 11 socialist member states of the Council for Mutual Economic Assistance are members of the institute. The PRC was also a member of the institute from 1956—when the institute was founded—to 1965. Chinese scientists stopped participating in the work at Dubna as of 1965. A few days ago, some scientists from China's Research Institute of Atomic Energy Sciences came to Dubna. They included Prof Wang Ganchang, who worked as deputy director of the Joint Institute for Nuclear Research from 1956 to 1960; Prof (Ding Datao), who has also served in Dubna for several years; and (Wang Guogang), a young expert who is on his first trip to Dubna.

Prof Wang Ganchang and his Chinese colleagues were received at the Joint Institute for Nuclear Research on 8 August. Academician (Kishi), director of the Joint Institute for Nuclear Research and Hungarian scientist, briefed the Chinese scientists on the institute's activities and its scientific and technological achievements. During their talks, it was noted that Chinese experts made important contributions to theoretical research and experiments during their stay in Dubna from 1956 to 1965.

In his interview by this station's reporter, Prof Wang Ganchang said that he was glad to revisit the Joint Institute for Nuclear Research, where he carried out some of his scientific activities after so many years had passed. He was also delighted to meet his old colleagues, with whom Chinese scientists worked to produce certain results during the early years after the founding of the institute.

The Chinese physicists will also visit the institute's nuclear reaction laboratory and the neutron physics laboratory, where two fast neutron pulsed reactors are located. The Chinese guests will also visit the high energy laboratory, which is famous for its synchrocyclotron, which has been used by Prof Wang Ganchang, Prof (Ding Datao), and many other Chinese experts to carry out scientific research. The Chinese physicists also plan to visit Serpukhov High Energy Physics Institute in suburban Moscow, which has the largest proton accelerator in the Soviet Union.

Atomic Energy Ministry To Change Focus

LD2607174989 Moscow TASS in English 0943 GMT 26 Jul 89

[Text] Moscow July 26—The Soviet Ministry of Medium-Machine Building, whose activities were once top secret, and which is now called the Ministry of Atomic Energy and Industry, will largely change its focus, according to Minister Vitaliy Konovalov interviewed by the PRAVITELSTVENNY VESTNIK newspaper.

"If one is to speak about the prospects of the industry, it will still have its defence production program, but civil products will account for an ever growing share of its total output. The industry designs nuclear steam generating units. To make these units secure, a greater volume of design work and stand tests will be made. Enterprises which manufacture equipment for nuclear power stations will also be in our industry. We shall also supervise the exploitation of nuclear power stations".

A unified complex of designing, construction and safe exploitation of nuclear power stations is thus being created.

The industry will put out consumer goods and construction materials, products made of rare metals and rare-earth elements, and computers in increasing quantities, Konovalov said.

Public Union on Nuclear Safety Issues Set Up

PM1108153389 Moscow MOSKOVSKAYA PRAVDA in Russian 27 Jul 89 p 1

[MOSKOVSKAYA PRAVDA-TASS report: "Constituent Conference of One of the First Organizations of the 'Chernobyl' All-Union Voluntary Self-Managed Public Union Held"]

[Text] G. Kuznetsov, deputy chief of the USSR Academy of Sciences Vernadskiy Institute of Geochemistry and Analytical Chemistry permanent radiogeochemistry expedition to eliminate the aftermath of the Chernobyl accident, has become chairman of the union's primary organization, which comprises staffers of several USSR Academy of Sciences scientific research institutes. The primary organization's work plans consist of public monitoring of radiation in Moscow's environment, the setting up of a database on all cases of nuclear accidents in our country and abroad, the compilation of a list of people who have suffered thereby, and the provision of legal and social assistance to them. Plus helping make the population more aware of radiation in the environment and liaising with foreign public organizations and movements in the struggle for a safe world.

Nuclear Safety Committee on July Stoppages

LD1308001289 Moscow World Service in English 2100 GMT 12 Aug 89

[Text] The recently created Committee for Control of Safety in Industry and Nuclear Power Engineering says July was a quite month for the Soviet nuclear power plants. Only four sudden stoppages and five unforeseen energy slumps were registered across the country last month. No safety regulations were violated and there

were no radioactive leaks. Information about the performance of nuclear power plants is supplied to the committee by its own inspectors at each plant.

Suspension of Nuclear Reactor Construction Urged

LD0808120689 Moscow TASS in English
1104 GMT 8 Aug 89

[Text] Kiev, August 8—By TASS correspondent Aleksey Petrunya:

Academician Boris Paton, people's deputy of the USSR and president of the Ukrainian Academy of Sciences, has called for suspending the construction of nuclear power stations in the Ukraine until a new generation of nuclear reactors with an increased degree of safety are developed.

He emphasised that water-moderated and water-cooled power reactors as well as those of RMBK and VTTR type are morally and technically obsolescent.

In his view, it is possible to increase the capacity of nuclear power stations only by using plants which meet new rigid safety requirements.

Radiation dangers associated with the development of nuclear power engineering became particularly obvious following the Chernobyl accident three years ago.

The consequent contamination of farm produce with radionuclides may result in the supply of radioactive food to the population of not only the Ukraine but also other regions of the country, the academician warns.

Paton's opinion is that about 90 per cent of the republic's territory is unfavourable for the siting and safe operation of nuclear power stations from geological and hydrogeological points of view.

Besides, according to scientific data, the saturation of the Ukraine with nuclear power stations would inevitably lead to an increase in radiation background levels and deterioration of people's health.

Paton believes that the alternative to further construction of nuclear power stations on the republic's territory is the large scale introduction of power-saving technologies and the use of such sources of power as the sun, wind and thermal waters.

It is necessary to thoroughly analyse power consumption, which will reveal reserves equal to the capacity of several nuclear power stations, the scientist said.

"Unfortunately, the departmental approach has not yet disappeared in this important field either," Paton said. "The Ministry of the Nuclear Power Engineering and Industry is a bastion that is hard to penetrate. But this should be done to prevent a recurrence of Chernobyl-type disasters. Science, and not departmental interest, should have the final say."

Situation Around Chernobyl 'Markedly Improved'

LD0408130289 Moscow TASS in English
1245 GMT 4 Aug 89

[Text] Kiev, August 4—"The situation in the area around the Chernobyl nuclear power station has markedly improved since the accident," Vladimir Bebeshko, director of the Soviet Clinical Radiology Institute, told TASS.

"This happened due to the decay of short-life radionuclides and also an unexpected drop in the amount of Caesium-137 being passed down the food chain from soil into vegetation and then—into milk and meat."

Because of the significant improvements in radiation readings and also as a result of the implementation of restrictive measures, radiation doses for the overwhelming majority of the population appeared to be significantly lower than established limits, the scientist said.

These doses are three times lower in the rigid control zone and 10 times lower in the sanitary monitoring zone. Only in some populated localities did some residents show a slight overdose. In carrying through measures to enhance the safety of the population in the areas affected by the accident, the Soviet Government has recently decided to resettle residents of those settlements.

Bebeshko emphasised that although almost 40 months have passed since the Chernobyl tragedy, its impact on the destinies of thousands of people continues to be felt. The state does not slacken efforts to deal with the consequences of the accident and the best minds are involved in this work.

The conclusions by experts of the World Health Organisation, who visited the USSR at the invitation of the Soviet Government, bear out that these measures have been effective. They praised Soviet scientists' actions to overcome the consequences of the Chernobyl accident.

Chernobyl Radiation Affects Plants, Wildlife

LD1408082889 Moscow TASS in English
0755 GMT 14 Aug 89

[Text] Minsk August 14—By TASS Correspondent Aleksandr Kryzhanovskiy:

Authorities in Belorussia have decided to set up a special sanctuary on the territory of three regions, stricken by the accident at the Chernobyl nuclear power plant, from where the population was evacuated.

Specialists want to know how radiation affects wildlife and plants, and what its present and future consequences are. High levels of radiation in the first period seriously damaged pines and spruces within 6 to 7 kilometers of the nuclear station. Nearly 1,000 hectares of forest are expected to die in the wake of the Chernobyl disaster.

With radiation levels in the affected forests reaching 300-450 rads (man develops acute radiation sickness at levels of 300 rads and more) and needles of a pine-tree retain the same shape but increase their mass ten times. On the border between the dead, or the so-called "red", forest, there are giant conifers, whose growth was affected by the tragedy. Oak leaves are half of the size of burdock and there are acacia trees with blades as large as a child's palm.

High concentrations of radioactivity were found on the bottom of water reservoirs. Belorussian specialists in hydrobiology and ichthyology studied invertebrates and fish and discovered a high concentration of radioactivity in fish of prey, like pike and perch. Water bugs and leeches were found to have the same high dose. In bream and roach, the liver is most contaminated, with the skin, skeleton and muscles affected to a smaller extent.

Hedgehogs, shrews, as well as bank voles which are rather common in the republic, were found to have high concentrations. Although rodents developed genetic abnormalities, no marked changes occurred in their condition and behaviour.

High concentrations of radionuclides were found in teals, mallards and coots, the main objects of hunting. Wild ducks are comparatively "clean", as they moved from the zone to fish breeding farms where they feed on combined fodder.

Among the mammals, wild boars, foxes and rabbits have the highest level of radioactivity, while elk, deer, roe deer and wolf are least affected. Specialists have not so far noted abnormal behaviour which could be traced to radioactivity.

FEDERAL REPUBLIC OF GERMANY

Missile Technology Transfers to India Examined

51003024 Hamburg DIE ZEIT in German
4 Aug 89 p 18

[Article by Wolfgang Hoffmann: "The Agni Affair"]

[Text] While German Foreign Minister Hans-Dietrich Genscher has for years been exhausting himself in working for peace, more and more of his countrymen have been coming under suspicion of dubious transactions—namely weapons deals. The most recent accusation, which again originates in the United States, is that the nuclear-capable medium-range missiles that India has recently acquired are—at least in part—of German origin.

Previously, only companies and their managers had been accused of making profits by selling nuclear knowledge or deadly military poisons. Now, for the first time, scientists have also come under suspicion. In early July the American business newspaper WALL STREET JOURNAL reported about the first test of an Indian medium-range missile. The paper traced the origin of the missile technology to both the United States and the Federal Republic of Germany and named the parents, NASA and DLR, the German Insititution for Aerospace Research and Testing, which, until the foundation of DARA, the German Space Agency, was the German counterpart of NASA.

Indian acquisition of medium- and long-range ballistic missiles has been expected at least since India's first successful test of an atomic bomb in 1974. Its success has been an established fact since 21 May 1989. The German Press Agency (DPA) reported on 22 May that, at 0717 hours local time, a missile with the code name "Agni" (the Sanskrit word for fire), was launched from the Chandipuros Ses missile-testing area, 1,300 kilometers southeast of the Indian capital, New Delhi. The range of the 2-stage missile is 2,500 kilometers, far enough to reach central targets in the neighboring countries of China and Pakistan.

The test must have been successful. DPA was later able to report that "about 400 scientists at the test site [had] had broken out in loud cries of joy. It is possible that German scientists in Oberpfaffenhofen, the most important center of the DLR, were also secretly happy about the Sanskrit fire in the sky.

Gary Milhollin, an American professor and scientist, is, at any rate, convinced that India's military missile program was inconceivable without German DLR assistance. According to Milhollin, "more than any other developed country, the FRG will be responsible" for the fact that "the strategic balance in Asia [will] change."

In the FRG, only the Berlin newspaper TAZ and the French news agency AFP reported extensively about the possible complicity of German scientists. Both based their stories on the WALL STREET JOURNAL. The fact that this explosive revalation caused no greater echo here perhaps has something to do with Milhollin. He is, in fact, the author of the study about the origins of Indian missile know-how and is thus the real source of the WALL STREET JOURNAL report. Government officials in the FRG do not like to hear Milhollin's name. This is because the research and analyses of the U.S. professor once before embarrassed the federal government in Bonn.

Milhollin, director of the University of Wisconsin School of Law, is head of a project for nuclear weapons control located in Washington. In this capacity, he has documented the participation of German companies in the efforts of several Third World countries to acqurie nuclear weapons technology. Bonn thus came indirectly under suspicion of having—to put it mildly—not taken the Nuclear Non-Proliferation Treaty very seriously. Shortly before Milhollin was to testify before the nuclear investigation committee in Bonn last year, various negative rumors about him were circulated. The purpose of these rumors, which originated in the German Embassy in Washington, became apparent only when Milhollin testified before the committee. It was to undermine the credibility of the witness. The attempt was, however, unsuccessful, not the least because the nuclear investigation committee not only found a good deal of evidence in the files of government departments that confirmed Milhollin's report, but also discovered additional material, of which Milhollin had not known.

The methodology of Milhollin's latest study on possible DLR participation in an Indian program to develop strategic missiles is solid. The plausible sounding conclusions lead to the accusation that DLR scientists have since the 1970s been instructing their partners in the Indian Space Research Orgainization (ISRO) in three essential technologies: missile guidance, missile testing, and the technology required for the production of composite-fiber materials, which are needed for missile nose cones and nozzles.

Milhollin also provided proof for his individual charges. For example, DLR provided India with a so-called interferometer, which is indispensible for gudiing missiles. In addition, there were transfers of the far more complex know-how which is required for missile guidance which is independent of ground signals. Beyond this, a model of an Indian missile section was allegedly tested by DLR in the mid-1970's. Precisely this section is supposed to be identical with the first stage of the Agni military missile, which was tested in May.

DLR does not dispute Milhollin's facts. It does, however, disagree with their interpretation as grounds for an accusation. DLR spokesman Rolf-Michael Schmidt insists: "We were never involved in work on guidance or control of Indian missiles." According to Schmidt, the interferometer which Milhollin refered to, can only be used for high-altitude research rockets, and, in the same way, as far as the other charges are concerned, the

technology supplied by DLR is only useful in giving individual scientists on the ground direct access to an experiment in space. The various guidance systems are of very different types. The conclusion of the DLR: "It is inconceivable that the Agni guidance system could have been derived from cooperation with the DLR/ISRO. There are no DLR contacts to Indian organizations which could have or, in fact, did directly or indirectly give out information of this nature."

This defense does not sound very plausible. Is it possible that German scientists were so naive that during more than a decade of close cooperation with their Indian colleagues they never noticed what was behind the civilian program? The fact that the cooperation was and still is very close and by no means casual is demonstrated by the minutes of a DLR/ISRO conference in Bangalore in January 1982. In his opening speech, Indian professor D. Dhawan described the highpoints of the Indian space program and emphasized "the important role which cooperation with ISRO and DLR had played in it."

Statements of this kind about successful cooperation are, however, still not proof of the validity of the charges. They are at best indications of the quality of the cooperation. More telling is a fact which Milhollin uses to refute the DLR defense: "The early ballistic missiles in the superpowers' arsenals used interferometers for guidance." In addition, Milhollin says that "there is no difference between a high-altitude research rocket and a ballistic missile. A missile is a missile."

For those who are not convinced by this argument, Milhollin refers to details in the minutes of the German-Indian space-flight conference. The text clearly shows that the cooperation also includes the development of an "independent guidance system" with which "the position, the speed and the performance" of a rocket payload in space can be determined. These, however, are all also functions which are required for the guidance of ballistic missiles.

The other charges are for the most part confirmed by DLR, but they are given a different interpretation. For example, the wind tunnel test of an Indian rocket is admitted, but, according to DLR, it is unaware of whether or not this was part of the Agni military missile. The DLR also does not deny its help in transferring composite-fiber technology for missile nose cone and nozzle production. It does however point out: "It should not be forgotten in this context, that composite-fiber technologies are basic technologies, which are used to manufacture tennis rackets, skis and other sports equipment, as well as car and airplane parts, light containers, and, in addition, also rocket nose cones.

This example makes it very clear that no longer or only to a limited extent can a distinction be made between the transfer of military and civilian know-how. For the DLR, this is evidently also the reason that the institute's management has a clear consicence and, even after the launcing of the Agni missile, sees no reason to terminate or even reconsider its cooperation with India. The DLR statement on this matter maintains: "The DLR is cooperating with the civilian Indian space agency ISRO in the area of space flight on the basis of a government agreement. The continuation of cooperation with India in the field of civilian space flight remains justified in the opinion of the DLR." In addition, the text, which was given to DIE ZEIT, states: "International space flight cooperation is an especially important part of future programs in the fields of communications, environmental protection and the monitoring of the earth."

However, an additional admission that peaceful cooperation does not prevent misuse for military purposes would have been candid. The fact that this is not an eccentric consideration is proven by the agreement of the nations of the world economic summits—the U.S., Great Britain, France, Italy, Canada, the FRG and Japan—which established the so-called Missile Technology Control Regime in 1987. This agreement provides guidelines for exports of missile technologies. These guidelines, which do not have the force of international law, are a kind of supplement to the Nuclear Non-Proliferation Treaty. They are supposed to prevent potential atomic bomb nations, such as India, Pakistan, Brazil or Argentina, from obtaining nuclear weapons delivery vehicles. In this context, the question of whether or not the "contintuation of cooperation with India," praised by the DLR, is really still justified appears legitimate.

The mention of another fact is necessary to maintain the candor of the discussion: the U.S., the initiator of the missile regime, itself shares responsibility for Indian acquisition of important missile technology. When the first U.S. charges against the DLR were made, Dieter Wurzel, the DLR's Washington representative, payed back with the same coin. He told the WALL STREET JOURNAL that the U.S. is much more directly involved in the Agni case. It was NASA which trained S. Abdul Kalam, the engineer who now heads the team which runs India's military program.

But the Americans ignore this. Without the slightest sign of being concerned about U.S. involvement, Senators Jeff Bingaman, John Glenn and Claiborne Pell have requested an official investigation in identical letters to the U.S. State Department, the U.S. Defense Department and NASA. The purpose of this investigation is to determine whether the DLR technology transfer involved American know-how. The Senators showed no interest in whether and what NASA might have transferred to India. This, in turn, should strengthen those in the FRG who view American crticicism of German technology exports as simply the envy of the unsuccessful rival.

The fact that the U.S., in fact, does not always take nonproliferation of sensitive technologies as seriously as it expects its allies to do is proven by Washington's latest billion dollar deal. President George Bush wants to sell Pakistan the very F-16 bombers with which it can

transport over long distances something that German aid helped them to acquire—the Islamic bomb.

Firm Illegally Reexports Nuclear Technology

AU2108144689 Paris AFP in English 1434 GMT 21 Aug 89

[Text] Bonn, Aug 21—A West German firm has obtained high-technology nuclear-related products from the United States and re-exported them illegally to Pakistan and India, a specialized trade magazine reported here Monday.

The magazine, NUCLEARFUEL, said that in 1986 NTG Neue Technologien GmbH re-exported from West Germany two high-powered lasers manufactured in the United States to the Pakistan Atomic Energy Commission (PAEC) for use in the production of nuclear fuel.

NTG "systematically sought, and in some cases obtained, technology from U.S. companies for nuclear-related programs in Pakistan and India over the past few years," the report said.

The magazine said NTG purchased the lasers for 143,942 dollars and sold them to Pakistan for 425,000 dollars.

The alleged transaction appeared to be in violation of U.S. Commerce Department restrictions on high-technology exports and would also contravene Coordinating Committee for Multilateral Export Controls (COCOM) regulations on laser sales.

COCOM, the North Atlantic Treaty Organization's watchdog agency for high-technology exports from Western countries, must issue a license for exports of lasers with a wavelength above 0.06 micrometers and an impulse energy of 0.5 joules or more.

The two lasers in question had wavelengths of 1.06 micrometers and an impulse energy of 25 joules and were described by their manufacturer, Coherent General, as the "most powerful lasers of their type."

The sales also appeared to have been made without the required administrative authorization for exports of sensitive material from West Germany's Federal Office of the Economy.

NTG, formerly known as NTG Nukleartechnik GmbH, has been under investigation by West German criminal justice authorities for the past year following revelations that the company had exported an array of nuclear-related technolgy to India and Pakistan, the report said.

The federal prosecutor in charge of the investigation, Reinhard Huebner, told the magazine that so far there had not been sufficient grounds to investigate the firm's business in the United States.

"That no longer seems to be the case," he added.

But NTG general manager Juergen Ickes told AGENCE FRANCE-PRESSE that the investigation involved only the company's former technical manager Rudolf Ortmayer and not the company as a whole.

The magazine also said that in 1987, NTG shipped U.S.-origin components for a reactor refuelling machine to India under a Canadian license.

The article quoted Western intelligence sources as saying that the refuelling machine could be used as an "unsafeguarded reactor" in India.

Canadian authorities prohibited the export of the equipment by Canadian firms in 1986.

Public Prosecutor Investigates Technology Transfer

Businessman Allegedly Sold Nuclear Plans

LD2308202489 Hamburg DPA in German 1938 GMT 23 Aug 89

[Text] Frankfurt (DPA)—The public prosecutor's office in Hanau has received a tip from a U.S. journalist about the sale of secret military plans from the FRG to Pakistan, India, and South Africa. Authorities are following up on the tip but cannot yet say whether or not it is correct, Public Prosecutor Albert Farwick said on Wednesday in Frankfurt.

According to the daily newspaper FRANKFURTER RUNDSCHAU, Rudolf Ortmayer, the former managing director of the company Neue Technologien Gmbh (NTG), is said to have delivered more than 50 plans for nuclear and military technology plants to Pakistan, India, and South Africa from Gelnhausen in East Hesse via a company in the United States. Investigations of Ortmayer have been under way for a long time because of suspicions of the illegal export of parts for nuclear technology plants.

Further on Investigation

AU2408101189 Frankfurt/Main FRANKFURTER RUNDSCHAU in German 24 Aug 89 p 4

[Report by FRANKFURTER RUNDSCHAU staffer Bernd Salzmann: "Hanau State Prosecutor Investigates Sale of Secret Military Plans"]

[Text] Gelnhausen, 23 August—The affair concerning illegal nuclear exports from the FRG to Pakistan, India, and South Africa is expanding. According to information received by FRANKFURTER RUNDSCHAU from circles familiar with Bonn's Nuclear Investigation Committee, the Hanau Office of the State Prosecutor is currently examining the tip-off, according to which the former managing director of the company Neue Technologien GmbH (NTG), Rudolf Maximilian Ortmayer, is said to have illegally delivered more than 50 plans for plants to the above-mentioned countries via a U.S. company. These plans are said to provide information

about U.S. know-how in nuclear acceleration, fusion, and laser technology, and some of them are reported to have been military secrets.

Ortmayer is suspected of having carried out this "know-how transfer" over many years, independently of the NTG company, which is based in Gelnhausen in Hesse. The Hanau State Prosecutor's Office has been investigating NTG in connection with the illegal export of components for the production of nuclear fuel elements to Pakistan, India, and South Africa. A company called "Scientific International," which was founded by Ortmayer in the United States in 1984, is said to have played a key role in this case.

According to the tip-off, Ortmayer is said to have bribed staffers in U.S. institutes, research institutions, and military laboratories to obtain plans, parts of which were military secrets. He is said to have even managed to procure NASA plans. In other instances Ortmayer allegedly illegally bought FRG technology from employees of certain companies.

The State Prosecutor's Office in Hanau, which is currently investigating Ortmayer for illegally exporting parts of nuclear technology plants, confirmed that it has information that goes beyond the results yielded by the investigations up to now. On Wednesday [23 August], Public Prosecutor Albert Farwick told FRANKFURTER RUNDSCHAU that he will examine this "in an adequate manner." He said that, for the time being, he cannot say whether the accusations regarding the transfer of plans are correct.

Bonn's Nuclear Committee expressed concern about the new suspicions. Some people call it the largest illegal information transfer in FRG history. If the accusation proves to be well-founded, it would be an important indication of the obvious lack of a working control system not only in the FRG, but also in other countries.

Further indication of insufficient control methods in the FRG might be provided by a tape-recorded telephone conversation between Ortmayer and an employee in the Foreign Economy Department of the FRG Economics Ministry, which was allegedly conducted in connection with the illegal export of goods made of zirkaloy [as published], an alloy for producing fuel elements, to Pakistan. According to information from FRANKFURTER RUNDSCHAU, the French Government told the FRG Government that the former managing director of NTG had bought this material in France, and it was allegedly destined to be supplied to India. This information was passed on from the FRG Foreign Ministry to the Economics Ministry, it was stated. Although Ortmayer did not try to receive a license from FRG authorities to resell this material, no official body showed any interest in the whereabouts of the delicate material. However, Ortmayer was told on the telephone by that employee in the Economics Ministry that there is such information.

State Prosecutor Farwick refused to comment on the content of the illegally taped telephone conversation. Without making any further reference to the above-mentioned telephone conversation, he merely said that "quite a few telephone conversations were tape recorded." These recordings may not be used as evidence in court.