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Programme for Promoting Nuclear Non-Proliferation, Newsbrief, Number 19

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Summary:

A compilation of the latest news, events, and publications related to nuclear weapons and nuclear non-proliferation. The "Newsbrief" was produced by the PPNN and personally edited by Ben Sanders.

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NEWSBRIEF

Autumn 1992

Editorial note

The present issue of the **Newsbrief** covers developments relating to the non-proliferation of nuclear weapons during the period July/September 1992.

The **Newsbrief** is published four times a year, as part of the effort of the Programme for Promoting Nuclear Non-Proliferation (PPNN) to foster awareness of the issues related to the spread of nuclear weapons and of national and international developments that may help constrain that spread. PPNN's **Newsbrief** seeks to present an accurate and balanced picture of current events in the area, including relevant aspects of the peaceful uses of nuclear energy.

The **Newsbrief** is based on publicly available information derived from reputable and generally reliable sources which in the opinion of the editor deserves the readers' attention. The limited size of the **Newsbrief** makes it necessary to choose among items of information and to present them in condensed form. This applies in particular to topics which the world press considers of special interest, such as current developments in Iraq or North Korea, on which at times reports appear almost daily in the major newspapers, many of them virtually identical.

As editor of the **Newsbrief**, the Executive Chairman of PPNN is responsible for its contents. The inclusion of an item does not necessarily imply the agreement of the members of PPNN's Core Group collectively or individually, either with its substance or with its relevance to PPNN's work.

Subheadings used in the **Newsbrief** are meant to facilitate presentation and assist clarity; they are not intended as judgments on the nature of the events covered. Related items of information may be combined under one subheading, even though some might fit also into other categories of subjects identified in the **Newsbrief**.

Readers who wish to comment on the substance of the **Newsbrief** or on the manner of presentation of any item, or

who wish to draw attention to information they think should be included, are encouraged to send their remarks to the editor for possible publication.

Unless otherwise stated, sources referred to date from 1992.

I. Topical Developments

a. Background

- In the Conference on Disarmament in Geneva, negotiations have been completed on a treaty prohibiting the development, production, stockpiling and use of chemical weapons. The UN General Assembly is expected to endorse the treaty at its regular session in the Autumn, after which it will be opened for signature in Paris, in January 1993. It will enter into force after two years or following ratification by 65 states, whichever comes later. The Egyptian Foreign Minister is quoted by a major German news agency as saying that the Arab states will not join the treaty as long as Israel maintains its nuclear arsenal. The USA has accused India of supplying nations in the Middle East — including Iran and Iraq, and most recently Syria — with 'precursor' materials: substances that can be used in the manufacture of chemical weapons. (*The New York Times*, September 2 and 21; *Die Presse* [Vienna], 24 September)
- In a meeting in Moscow on 10–11 September, the **Russian Federation** agreed to let inspection teams from the **United Kingdom** and the **United States** inspect its biological research sites to verify that work on biological warfare agents, which had allegedly been going on there in contravention of the 1972 Convention on the prohibition of the development, production, and stockpiling of bacteriological (biological) and toxin weapons and on their destruction [which the USSR ratified in 1975 – Ed.], until it was banned by presidential decree last April, has indeed been stopped. Russia is said to have agreed to unrestricted access, sampling, interviews with personnel, and audio and video taping.

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(Joint Statement by the Governments of the United Kingdom, the United States and the Russian Federation; The New York Times, September 15)

- As the date for the first **shipment of plutonium** from France to Japan gets closer, and criticism grows, Japan's state-owned Power Reactor & Nuclear Fuel Development Corp. (PNC) has released data to show that there is an urgent need for additional plutonium for use in the 280-MW Monju breeder reactor. Critics within and outside Japan say that the country's plutonium stocks are adequate to meet present needs. A request from private groups, one of them the Nuclear Control Institute in Washington, to the French Government, for closer scrutiny of Japan's real need for plutonium has been refused by France's Ministry of Industry and External Trade. The US Government has reportedly approved Japan's transportation plan. The 4,800 ton freighter *Akatsuki-maru* (the former UK spent-fuel carrier *Pacific Crane*, which has been refitted), which will carry the one metric ton of plutonium from France to Japan, has left Yokohama for France on 24 August, followed by the 6,500 ton escort cutter *Shikishima*. *Shikishima* was seen to return to Yokohama on 7 September, supposedly because of engine trouble. France and Japan have negotiated an agreement about the use to which the plutonium will be put, enabling France to issue the necessary permits, but as of the end of the quarter there were said to be some administrative matters still to be settled. Japan is understood to plan shipping 40 to 50 tons of plutonium — initial reports speak of 30 tons — from France and the United Kingdom by 2010. Apprehension about the risk of these shipments is expressed in the Congress and in countries along the presumed shipping route. Member states of the South Pacific Forum have expressed the hope that Japan would not carry out its plutonium-shipping plans. Indonesia, Singapore and Malaysia oppose shipment of the plutonium through the Strait of Malacca. Hong Kong and Indonesia have announced that plutonium carriers will be refused access to their waters, even for emergency stops; a similar ban has been issued by South Africa (which claims a territorial zone of 200 miles). Argentina has reportedly given permission for passage through its territorial waters in case the vessel rounds Cape Horn, and has promised a naval escort, but the convoy will have to stay at least 200 miles from land. There are press reports that, for both economic and political reasons, the Japanese government has begun to reconsider the country's plans for the use of breeder reactors. While Japan is evidently still planning eventually for energy independence through the creation of a self-sustaining nuclear fuel cycle, it is reportedly reassessing its mid-term plans and considering to burn plutonium in reactors and, in co-operation with the Russian Federation, converting plutonium from dismantled warheads into reactor fuel. (*Daily Telegraph*, 9 July; *International Herald Tribune*, July 7 and 14, September 19; *Nuclear Engineering International*, July; *Atoms in Japan*, 36(8), August; *The New York Times*, August 3; *The Washington Post*, August 19; *Enerpresse*, No. 5641, 25 August and 5653, 10 September; *New Scientist*, 29 August; *Nucleonics Week*, August 3 and 27 and September 10; *The Times* [London], 24 August; *NuclearFuel*, August 31 and September 14; *Libération*, 9 September; *The Guardian* and *Daily Telegraph*, 18 September; *Kurier* [Vienna], 23 September; *Neue Zürcher Zeitung*, 24 September)
- The leader of the self-proclaimed **Serbian Republic of Bosnia-Herzegovina** has threatened to bomb European nuclear power plants if Western countries intervene in the civil war in Bosnia. The Serbian side is said to have a large airforce. During brief fighting in Slovenia, last year, there were Serbian threats to bomb the 640-MW station at Krsko. The plant was buzzed by MiG fighters, but no attacks have been reported. (*Nucleonics Week*, August 13)
- According to reports from the **Russian Federation**, during the coup attempt of August 1991, President Gorbachev lost control of the 'nuclear suitcase'. This was supposedly taken to Moscow where, according to an earlier account, the codes were changed and the device was stored 'in a safe place'. It appears that, as a result, the Soviet military for a while had the means to set off a nuclear attack, without the President's approval. (*New York Times*, August 23; *The Washington Post National Weekly Edition*, August 31-September 6)
- A recent Canadian newspaper article expressed concern at the **use of depleted uranium** to enhance the penetrating capacity of armour-piercing shells and to harden tank armour. Besides being slightly radioactive, depleted uranium is chemically toxic. A byproduct of uranium enrichment, its use for non-nuclear military purposes is difficult to control. The article claims that large amounts of the material — some of it in easily-inhaled dust particles — are spread over the Persian Gulf War area, causing long-term health risks. It calls for Canada, the world's biggest uranium exporter, to stop selling this material abroad. A report on the use of 'radioactive bullets' has also appeared in an Iraqi newspaper. (*Toronto Star*, 6 August; *Baghdad Observer*, September 5)

b. NPT Events

- On 3 August **France** deposited instruments of accession to the NPT in the capitals of the three Depositary Powers: Russia, the United Kingdom and the United States. After China's accession, last March, France was the fifth nuclear-weapon-state to become a party to the Treaty (*Agence France Presse* and *IAEA Press Release PR 92/30*, 3 August; *l'Humanité*, *Le Figaro*, and *The Wall Street Journal*, 4 August; *Libération* and *Enerpresse Daily News Bulletin*, 5 August)
- **Niger** acceded to the NPT on 4 September (*Direct Information*)

c. Other Non-Proliferation Developments

- **Cuba** has declared its intention to sign the Tlatelolco Treaty (*IAEA Bulletin*, Vol. 34, No. 1; see also below under g. *IAEA Developments*; 2. *General Conference*)
- Within **Egypt's** Ministry of Foreign Affairs a Division of Disarmament and Peaceful Uses of Nuclear Energy has been set up. The new division, which is headed by Dr. Mahmoud Kareem, will deal with non-proliferation issues. (*Direct information*)
- On 24 August **France** deposited in Mexico City its instrument of ratification of Protocol I of the Treaty on the Denuclearization of Latin America (Tlatelolco Treaty). (*Direct information from CEA*, Paris, 25 August; *NuclearFuel*, August 31)

- At a plenary meeting of the **Missile Technology Control Regime**, held at Oslo, Norway, on 29 June-2 July, which was attended by 22 members, including four new members: Greece, Ireland, Portugal and Switzerland, it was decided to amend the MTCR Guidelines to extend the scope of the Regime to missiles capable of delivering biological and chemical as well as nuclear weapons. The press release adopted at the meeting, and the joint appeal made by the members are reproduced below as **Section V a and b**, respectively (**Royal Norwegian Ministry of Foreign Affairs, Press Release Nr. 119/92, 2 July**)
- In his address to the United Nations General Assembly on 21 September, the President of the **United States** announced his intention 'to work with the U.S. Congress to redirect the Arms Control and Disarmament Agency ... to refocus its talents on providing technical support for nonproliferation, weapons monitoring and destruction, and global defense conversion'. He also called for a reaffirmation of positive security assurances through the Security Council. (**Official Text, United States Information Service, September 23**)
- On 13 July, the **United States** Administration issued a fact sheet formally announcing a halt to the production of plutonium and highly enriched uranium. HEU production in the USA in fact ended in 1964, and plutonium production ceased in 1988; the recycling of fissionable material from dismantled warheads will not be affected. The announcement was made as part of the President's 'comprehensive initiative' on non-proliferation, which also provides for tightened controls on nuclear exports. The Department of Energy announced on 15 September that it would support the President's initiative by redirecting \$166 million of its budget appropriation for 1993 from the new tritium production reactor, which it has decided not to build (see below **i. Events in Nuclear-Weapon States: United States**) 'to support a more robust nonproliferation program at its national laboratories'. (**DOE Fact Sheet, 15 September and Background Paper, 14 September, reproduced in Section V c and d, respectively**)

d. Nuclear Disarmament

- The **United States** has announced that it has completed the withdrawal of all its land-based nuclear weapons from Europe and Asia. All tactical weapons for use by the US navy have been moved to US territory. (**Frankfurter Allgemeine Zeitung, Süddeutsche Zeitung, International Herald Tribune, 3 July; Le Monde, Financial Times, 4 July**)

e. Nuclear Testing

- There had been a suggestion in Washington that **China** might be preparing to accept a comprehensive test ban, so that its 1-megaton test of last May would be its last. A contrary report, however, based on an analysis of recent commercial satellite imagery, which spoke of indications that China was making preparations for further tests before December 1992 was borne out by a test explosion with an estimated yield of between 1 and 20 kilotons at Lop Nor on 25 September (**Defense News [Washington], June 22-28; Trust and Verify, No.30, July/August and No. 31, September**)
- President Mitterand has announced that **France** will resume nuclear testing if the other nuclear powers

continue their tests. (TV interview of 14 July, cited in **Trust and Verify/VERTIC, No.30, July/August**)

- The commander-in-chief of the armed forces of the **Commonwealth of Independent States** has confirmed that Russia will resume its nuclear tests unless by the end of the year the other nuclear states announce a halt to testing. Similarly, the Russian Minister of Atomic Energy has said that his country will probably test in 1993. A spokesman of the Russian Foreign Ministry has expressed the hope that current developments in the USA will lead to the end of American nuclear tests. According to a British newspaper report, the test-site at Semipalatinsk contains an unexploded nuclear bomb that was left underground when the Kazakh authorities forbade further tests. The device cannot be removed. It is expected to be stable for two years; what will happen after that is not known. (Interview in **Bild Am Sonntag [Hamburg], 21 June, in JPRS-TND-92-020, 25 June; Komsomolskaya Pravda [Moscow], 22 July, in JPRS-TND-92-026, 31 July; Süddeutsche Zeitung, 24 July; The Sunday Times, 13 September**)
- In a vote on the defence budget on 20 September, the **United States** Senate adopted, with 55 votes in favour and 40 against, a proposal for a nine-month moratorium on nuclear testing, the limitation of the number of tests during the next three years to fifteen, and an end to all tests after September 1996, unless by then Russia still conducts nuclear tests. In a similar vote on 3 August, one month earlier, the proposal had been approved by a vote of 68-26; the close result — presumably influenced by the submission of a more conservative proposal that would have called for a six-month moratorium, a cessation of all tests by 1998 and 20 tests in the interim — means that the Senate will not be able to override the expected veto by the President. Experts in the Department of Energy are quoted in the press as saying that 25 tests will be needed to confirm the operation of five existing warheads following safety improvements. Shortly before the first vote by the Senate, and supposedly to forestall its move, a letter from National Security Adviser Scowcroft, Defence Secretary Cheney and Energy Secretary Watkins had announced a five-year policy of testing only for the purpose of improving the safety and reliability of weapons, and making no more than six tests a year, three of them with a yield below 35 kilotons. In June, the House of Representatives, by a vote of 237 to 167, adopted a call for a 12-month moratorium. That vote, too, is insufficient to override a veto. Meanwhile the US has carried out two more tests — making six for this year. Australia has formally expressed its 'disappointment' at these events, which it had detected by its own seismological means. The cancellation of the last scheduled 20-kiloton underground test of the nuclear-powered X-Ray laser weapon, which was to have been part of the Strategic Defense Initiative, is seen by some as a consequence of the Administration's new policy on testing. Critics claim, however, that of the next ten scheduled tests, only four have safety or reliability as their principal objective, while three are for antimissile defence weapons. According to press reports, besides these new weapons, at least two new kinds of aircraft-carried nuclear weapons are under development, as are 'radio-frequency weapons', designed to affect an enemy's electronics and communications. Three new weapons under development are identified in a recent **New York Times** article as a ten-ton warhead to destroy underground bunkers; a 100-ton antimissile

warhead; and a 1000-ton 'counter-projection' weapon for attacks on ground troops. Reportedly, none of these weapons could be developed without testing. (*The Bulletin of the Atomic Scientists*, 48(6), July/August; *Arms Control Today*, 22(6), July/August; *The New York Times*, July 15 and 21 and August 4; 'OpEd' article by William M. Arkin, September 9; *The Christian Science Monitor*, July 23; *International Herald Tribune*, July 30 and September 24; *The Washington Post*, August 6; *Trust and Verify*, No.30, July/August and No. 31, September; *Nucleonics Week*, August 6 and September 17; *The Washington Post*, September 19; *Die Presse* [Vienna], 19 September; *La Stampa* [Milan], 20 September; *Süddeutsche Zeitung*, 21 and 25 September; *Frankfurter Allgemeine Zeitung*, 21 September; *Neue Zürcher Zeitung*, 22 September)

- According to an Australian report, a 'Nuclear Claims Tribunal', set up in the Marshall Islands with a fund of \$45-million from the US to consider claims by Marshall Islanders for damage caused by American tests that took place between 1946 and 1958, had made 379 award totalling \$14-million as of mid-June 1992. There were said to have been 5,000 requests for compensation. The deadline for claims to be filed was 8 August. (*Sydney Morning Herald*, June 19)

f. Nuclear Trade and International Cooperation

- Urenco, the **British/Dutch/German** uranium-enrichment consortium that uses gas centrifuge technology, has received large orders for the supply of low-enriched uranium to major utilities in **France** and **Japan**. It is awaiting additional orders from **Japan**, as well as from **Taiwan** and the **Republic of Korea**. (*NuclearFuel*, August 3)
- In July of the current year, **China** reportedly offered to sell **Bangladesh**, **Egypt** and **Iran** each a 300-MWe nuclear power station. The early publicity was ascribed to China's wish to avoid accusations that these transactions would further nuclear proliferation. At the time, Iran announced that it was discussing a contract with China for the supply of a power plant, and on 10 September, Beijing confirmed that it would supply Iran with a 300-MW power reactor. Later reports of Iranian origin speak of two 300-MW reactors to be obtained from China. The intended supply is said to raise concern in Washington, which is opposed to any nation helping Iran develop a nuclear programme, reputedly because it lacks confidence in that nation's dedication to the NPT. The prospective sale has given rise to considerable publicity. (*The International Herald Tribune*, July 31; *Der Standart* [Vienna], 31 August and 11 September; *Daily Telegraph*, *Financial Times* and *Neue Zürcher Zeitung*, 10 September; *Le Monde*, *Süddeutsche Zeitung* and *Die Welt*, 11 September; *The New York Times*, September 11; *Reuter's*, 23 September; *Kurier* [Vienna], 24 September; *Frankfurter Allgemeine Zeitung*, 10 and 24 September)
- On 5 September, President Fidel Castro of **Cuba** announced that work on the two 440-MW VVER power reactors at Jurugua, near Cienfuegos, had been halted. Construction was started in 1980, with Soviet assistance, and has reportedly cost Cuba \$1.1-billion so far. The announcement followed reports that **Russia** would no longer subsidise the project through the barter arrangement that had existed with the Soviet Union, and had insisted that Cuba pay the further costs in convertible currency. One of the units was said to be 85%-90% complete, but to be still without a control system, which Cuba had hoped to get from Siemens. Russia has apparently asked Cuba to start repaying the loans it received for the project (*Literaturnaya Gazeta* [Moscow], 10 June, in *JPRS-TND-92-020*, 25 June; *New York Times*, September 7; *Nucleonics Week*, September 10)
- Personnel from the Dukovany Nuclear Power Station (four VVER 440-213 PWRs) in the **Czech and Slovak Republic**, have visited power stations in **Japan** to acquaint themselves with various aspects of operational management there. Japanese experts have visited Dukovany to exchange more information. The exchange is part of a ten-year project in the framework of Japan's efforts to help improve the safety of nuclear power plants in the area concerned, in which 1,000 nuclear technicians from the Commonwealth of Independent States and Eastern Europe will receive training in Japan on the safe management of nuclear power plants (*Atoms in Japan*, 36(6), June and 36(7), July)
- **Egypt** is reported to have ordered a 22-MW research reactor in **Argentina**. Its original nuclear research reactor was supplied by the **USSR**, thirty years ago, and is now being dismantled. There is also talk about a possible Egyptian order to **China** for a 300-MW power reactor (*Financial Times*, 23 September)
- **France's** Cogema and **Russia's** Ministry of Atomic Energy (Minatom) have agreed to co-operate at all stages of the nuclear fuel cycle. Cogema will invest in the Siberian gas centrifuge enrichment complex at Tomsk (*ENS NucNet News* No. 302-3/92, 6th August; *Nucleonics Week*, August 20)
- Besides buying two 300-MW power reactors from China (see above), **Iran** has announced that it will buy two VVER-440-213 reactors from the **Russian Federation**. At a press conference held in Vienna on 15 September, Iran announced the supply which is to be made pursuant to a bilateral agreement signed in Teheran on 24 August. There was an earlier report that Russia had approached western industry to participate in the supply; it is said to be urging Siemens in particular to participate and to seek German consent for the retransfer to Iran of advanced electronic technology which that firm supplied some years ago to the Soviet Union. (*Nucleonics Week*, September 17; *Press Release* 'Islamic Republic of Iran and Russian Federation', 22 September; *Reuter's*, 23 September; *Frankfurter Allgemeine Zeitung*, 24 September; *Le Monde*, 25 September. See also below: k. **Developments of Concern for Horizontal Proliferation: Iran**)
- The Tokyo Electric Power Co. of **Japan** is considering the possibility of importing natural uranium from **China**. (*Tokyo Kyodo*, 21 July, in *JPRS-TND-92-026*, 31 July)
- **Japan** and **Russia** have agreed to cooperate in the development of nuclear-powered merchant ships. Japanese engineers will visit Russian installations and a series of joint activities is being planned. (*Tokyo Kyodo* and *ITAR-TASS* [Moscow], 29 July, in *JPRS-TND-92-027*, 5 August)

- There are contradictory reports about **China's** sale of a power reactor to **Pakistan**. Pakistani sources maintain that preparations for the construction of the 300-MW PWR station are proceeding and there are reports that Chinese engineers and technicians have arrived on the site at Chasma to start work on the infrastructure of the support services. Pakistan has also asked for bids for the civil engineering works for the plant. Many Western experts, however, claim that China will not be able to supply key components such as the pressure vessel, primary circuit pumps and the instrumentation and control system. The countries of origin can sell those items only if Pakistan puts all its present and future nuclear activities under IAEA safeguards; Pakistan has said that it will do so only if India does. For the same reason, **France** cannot sell a power reactor to Pakistan, as it had earlier been expected to do. China does not require that recipients of its nuclear supplies submit all their nuclear activities to IAEA safeguards. In June, the IAEA's Board of Governors approved an agreement with Pakistan pursuant to INFCIRC/66/Rev.2, pertaining to the facility and the nuclear materials concerned. (*Islamabad Radio Pakistan*, 10 May, in *JPRS-TND-92-015*, 20 May; ditto, 10 June, in *JPRS-TND-92-019*, 19 June; *NuclearFuel*, July 20; *The Frontier Post* [Peshawar], 31 July, in *JPRS-TND-92-027*, 5 August; *Nucleonics Week*, September 3)
- The **Republic of Korea** plans to buy two 'Candu' reactors from **Canada**, to function as units 3 and 4 of the Wolsong Power Station. The sale will bring the total number of Canadian-design power reactors in South Korea to five. (*Ottawa Citizen*, September 18; *Globe and Mail*, September 18 and 19; *International Herald Tribune*, September 21)
- The General Conference unanimously approved the applications by Croatia, Slovenia and Uzbekistan for membership in the IAEA. In line with the decision of the UN General Assembly, the Conference adopted, by a roll-call vote of 69 in favour, three against and 12 abstentions, a resolution expressing the view that the 'Federal Republic of Yugoslavia (Serbia and Montenegro) [could] not continue automatically the membership of the former Socialist Federal Republic of Yugoslavia in the IAEA' and deciding that it should apply for membership in the Agency. The resolution stipulated that the Federal Republic of Yugoslavia should not take any further part in the work of the Board and the General Conference (GC(XXXVI)/1035, 23 September).
- With regard to the examination of delegates' credentials members of the Arab Group circulated a statement concerning their reservations about the credentials of the Israeli delegation. The African Group circulated a declaration concerning its reservations to the credentials of the South African delegation. That declaration expressed 'satisfaction' at the nuclear developments with respect to South Africa, which it termed 'a significant step towards the denuclearization of Africa', and was concerned mainly with the representation of South Africa's population as a whole. The report of the General Committee on the credentials was adopted without a vote. (GC(XXXVI)/ 1033, 1034 and 1044)
- Among topics discussed, 'Iraq's non-compliance with its safeguards obligations', 'South Africa's nuclear capabilities', the 'Application of IAEA safeguards in the Middle East' and the 'Strengthening of the safeguards system' received much attention. The General Conference took note of the Director General's report on the Agency's activities concerning Iraq in 1991-92 under United Nations Security Council Resolutions 687, 707 and 715(1991) and, after a largely procedural debate in which the delegation of Iraq claimed that the item was invalid because it was complying with all its obligations, adopted by a roll-call vote of 67 in favour, one against and 11 abstentions (China, the DPRK, Iran and a number of Arab and African states) a resolution condemning Iraq's non-compliance, demanding immediate and full compliance, and asking the Director General to report on the matter at the next General Conference. It also included a request to the Director General — inserted on the initiative of France — for the implementation of the long-term monitoring plan. (GC(XXXVI)/1014, 1014/Add. 1 and Add. 2, 1043 and 1043/Mod.1).

g. IAEA Developments

1. General

- On 21 July, representatives of the European Community, Japan, Russia and the United States signed an agreement to cooperate in the engineering design of an experimental fusion reactor, under the auspices of the IAEA (IAEA Press Release, PR 92/29, 22 July)
- Vladimir Fortakov, from the Russian Federation, has been appointed Director of the Division of Development and Technical Support, Department of Safeguards (IAEA Press Release, PR 92/28, 23 July)
- Hiroshi Tani, from Japan, has been appointed Director of the Division of Safeguards Information Treatment, Department of Safeguards (*Atoms in Japan*, Vol. 36, No. 6, June; IAEA Press Release, PR 92/28, 23 July)
- John Tilemann, from Australia, has been appointed Special Assistant to the Director General, Office of the Director General (IAEA Press Release, PR 92/28, 23 July)

2. General Conference

- The General Conference of the IAEA held its thirty-sixth regular session in Vienna from 21 to 25 September. President of the General Conference was Mr. Simeon Adewala Adekanye of Nigeria. The Conference approved the Agency's Regular Budget for 1993 of U.S. \$191 million (at an exchange rate of 12.70 Austrian Schillings to the US Dollar), representing a growth of \$1.5 million, or 0.8% in real terms.

The Director General submitted a report on the completeness of the inventory of South Africa's nuclear installations and material, which states, inter alia, that the Agency's inspection team had been able to visit all facilities and locations it had asked to see and found no evidence that the list provided by South Africa was incomplete. It also states that the team had evaluated historical accounting and operating records and made a large number of measurements, concluding that the amount of enriched and depleted uranium included in South Africa's initial report was considered to be consistent with the historical records, 'taking into consideration the inherent difficulties associated with the evaluation of historical data extending over a period of fifteen years and the quality of the nuclear material accountancy system in use during that time'. (According to *NuclearFuel* September 28, South Africa may have

produced an amount of weapons-grade uranium well in excess of 400 kg, at the so-called Y-plant, a pilot enrichment facility at Valindaba, which has now been decommissioned.) The report ends with the remark that the team found no evidence that the inventory included in the Initial Report was incomplete. The Conference adopted without a vote a resolution sponsored by Nigeria on behalf of the Group of 77, taking note of the Director General's report; requesting South Africa to 'continue to co-operate with the Agency in the implementation of the safeguards agreement'; requesting the Director General to assist the African States in their efforts towards the establishment of a NWFZ in Africa; and asking him to report on progress in implementing this resolution and bringing it up again in 1993 (GC(XXXVI)/1015 and 1029)

The Director General had made a report on the modalities of the application of safeguards in the Middle East, without, however, presenting a model agreement for that eventuality — an omission criticised by some Arab states. Egypt and Kuwait submitted a draft resolution asking the Director General to continue consultations with the states of the Middle East 'to facilitate the early application of full-scope Agency safeguards to all nuclear activities in the region as relevant to the preparation of model agreements, as a necessary step towards the establishment of a nuclear-weapon-free zone in the region ...'; it also called on all states in the region to cooperate with the Director General in this matter and to 'take measures, including confidence-building and verification measures, aimed at establishing a nuclear-weapon-free zone' in the area. Saudi Arabia, supported by six Arab states, sought to add a paragraph calling on all states in the Middle East 'which have not done so' to accede to the NPT 'as soon as possible'. As this was clearly directed in the first place at Israel it would not have been acceptable to a number of delegations. After a lengthy discussion in which the possibility of a twenty-four hour extension was raised, a UK move to close the debate on the amendment was adopted by a roll-call vote and the original version of the resolution was adopted without a vote. (GC(XXVI)/1019 and 1045)

The strengthening of the safeguards system was mentioned with satisfaction in a number of statements in the general debate, and was the subject of a resolution submitted by Western delegations, and adopted in the Plenary without a vote, in which the General Conference called on the Director General to 'continue and intensify his efforts towards improving the effectiveness and cost efficiency of the safeguards system, taking into account new requirements'. (CG(XXXVI)/1017)

As usual, there were many comments about the need for the IAEA to put more stress on its promotional activities, which are seen by some delegations, especially among developing states, as taking second place to the regulatory activities. A resolution on 'Strengthening of the Agency's Main Activities', which calls for 'an adequate balance' between the Agency's 'safeguards and non-safeguards activities', was submitted by Nigeria on behalf of the Group of 77 and adopted without a vote (CG(XXXVI)/1018)

The Director General's statement in the opening session contains a comment on suggestions that it is not appropriate for an international Agency charged with

regulatory functions like safeguards also to serve in a promotional capacity. Extracts from the statement are contained in **Section V e**. The General Conference adopted a number of resolutions regarding the organisation's promotional activities, to which the Director General's statement may serve as a general guide (**Director General's Statement of 21 September**)

Argentina, Chile, Finland, Hungary, Libyan Arab Jamahiriya, Malaysia, Nigeria, Paraguay, Saudi Arabia, Sweden and Syria were elected to serve on the Board of Governors. The following states were already members of the Board: Algeria, Australia, Brazil, Bulgaria, Canada, China, Ecuador, Egypt, France, Germany, Greece, India, Japan, Republic of Korea, Mexico, Norway, Pakistan, Romania, Russian Federation, Spain, United Kingdom, United States, Viet Nam and Zaire (IAEA Press Release PR 92/34, 24 September; GX(XXXVI)1041)

The Director General, the delegates of Argentina and Brazil and the representatives of the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL) and of the Brazilian-Argentine Agency for Accounting and Control of Nuclear Material (ABACC) all referred to the changes to the Treaty on the Prohibition of Nuclear Weapons in Latin America (The Tlatelolco Treaty) that were approved at the special session the General Conference of OPANAL held in Mexico on 26 August, and on the prospect that Argentina, Brazil and Chile will soon bring the Treaty into effect. The delegate of Cuba stated that his country would accede to the Treaty once all states had assumed their responsibility under it. The text of the pertinent articles of the Treaty, containing the amendments agreed upon at the OPANAL meeting is given in **Section V f**, below. The changes, which will come into force once the states concerned have taken action in accordance with their respective constitutional requirements, are generally seen as improving the Treaty and enhancing the IAEA's role pursuant to it. (**General Debate Statements**: Manuel Angel Mondino, delegate of Argentina; Mr. José Luiz de Santana Carvalho, delegate of Brazil; Mr. Andres Garcia de la Cruz, delegate of Cuba; Mr. Antonio Stempel Paris (OPANAL) and Mr. Jorge A. Coll (ABACC))

h. Peaceful Nuclear Developments

- On 8 July, after their meeting in Munich, the leaders of the seven major industrialised nations announced a plan to address immediate and long-term **nuclear safety issues in Eastern Europe**. While it had been widely expected that a sum of \$700-million would be made available for the purpose right away, the G-7 only agreed in principle to the establishment of an international fund to finance the most immediate safety improvements, with the full amount being stated to be a 'target' but not formally agreed to. German authorities are reported to tie large disbursements to a firm commitment by recipients to shut down unsafe reactors, notably RBMKs and old VVERs, although they recognise that this will have to depend on alternative energy options. A meeting of OECD member states in Brussels, in mid-July, made no progress on the creation of an assistance fund but confirmed adoption of a five-point multilateral programme, including the improvement of reactor safety; short-term technical improvements to plants with the highest safety risk; the upgrading of nuclear

regulatory and surveillance authorities in the countries concerned; investigations into alternative energy sources; and refurbishing the more modern VVER power reactors which are seen as having a higher level of safety.

Meanwhile, problems are growing. Western technicians are of the opinion that all 58 operating power reactors of Soviet design lack essential safety features and that as many as 26 should be shut down altogether; the others are said to need upgrading. The director of the National Radiation Protection Institute of Sweden is quoted as saying that it should not come as a surprise if during the ten years he thinks it will take to fix up the most serious safety problems of these installations, another Chernobyl-type accident occurs. The head of the US Nuclear Regulatory Commission has reportedly said that an emergency safety programme would cost about \$10-million per reactor; a French estimate puts the cost of supplying basic safety features and refits for all those that can be saved — those belonging to the two latest generations of pressurised water reactors, or VVERs — at \$6-billion. Another Western estimate is that it would cost \$100 per kilowatt of capacity to make these plants both safer and more efficient.

German reactor operators are reported to plan 'twinning' their plants with East European nuclear power stations. Under the plan, German operators intend to 'adopt' VVER-type nuclear power plants in the CIS and other European countries to help improve their safety standards. A number of these arrangements, involving so far 28 VVERs, are already in operation. A 'Twinning Program Engineering Group' (TPEG), set up by utilities in Belgium, France, Germany, Italy, Netherlands, Spain and the UK, is expected to act as a conduit of European Community assistance in the area. There is talk about TPEG taking over from the World Association of Nuclear Operators (WANO) in the effort to upgrade Bulgaria's Kosloduy power station and possibly also at similar plants in Czechoslovakia and Russia. WANO's work at Kosloduy so far is said to have helped improve plant management there.

The press has paid much attention to what are said to have been small fires caused by short circuits in two 1000-MW reactor units at Kosloduy, within twelve hours. The fires were quickly brought under control and are not believed to have caused radiation risks.

French, German and Ukrainian safety authorities have agreed to cooperate in an analysis of the safety of the Soviet-design PWRs (2 VVER-440(230)s and ten VVER-1000s) in that republic. Reportedly, the two-year programme, which will be funded by the European Community, should help create a reactor licensing system in Ukraine and will also involve support in developing plant safety inspection techniques, crisis management, radioactive waste management, radiological protection and public information.

The Czech Republic has decided to complete construction of the four VVER-1000 power reactors at Temelin. The American firm Westinghouse will supply \$220-million worth of electronic equipment.

While German utilities say that all RBMK-plants must be shut down as soon as possible, as part of the 'twinning' effort operators have offered to co-operate with

their counterparts also at those reactors, to help promote their operational safety as long as they are still in use.

A new report of the IAEA on the causes of the Chernobyl event once again puts the main blame on faulty design. Russian nuclear authorities, however, remain opposed to the early decommissioning of RBMK reactors and in Ukraine, where the definitive closing of the three remaining Chernobyl reactors had been foretold, it has been announced that units 1 and 3 are being backfitted, for restart in Autumn 1992.

The Swedish-Lithuanian project for the improvement of safety at the latter's two Ignalina RBMKs is said to require technical information that can only be found in Moscow and does not seem to be easy to obtain. Hundreds of defective welds — supposedly due to initial bad workmanship rather than later erosion — have been found in the pressure tubes of both reactors (as well as in the Leningrad-3 and -4 RBMKs and in Chernobyl-3). Ignalina-1 is being repaired, but Ignalina-2 has been cleared for restart at somewhat reduced power, after repairs of only part of the defective welds. Leningrad-3 is also back in use (CSTK Radio [Prague] 27 May and 16 June, in JPRS-TND-92-019, 19 June; EnsNucNet, Background No. 40/92, 27th July; *Financial Times*, July 3; *The New York Times*, July 8 and September 23; *Nucleonics Week*, July 9, 16, 23 and 30, August 6, 20 and 27; *The Economist*, August 15th; *Der Standart* [Vienna], 19, 23 and 25 September; *Independent, Kurier* and *Süddeutsche Zeitung*, 24 September)

- **Brazil's** Angra-2 power plant is being completed with the help of a \$700-million loan from German banks, and should be ready to operate by 1998 (ENS NucNet, 6/92)
- **In Germany**, the decommissioning and dismantling of the nuclear power complex at Greifswald, in the former German Democratic Republic, comprising eight Soviet-design VVER-440 reactors — of which four were in operation, one was undergoing trials and three were under construction when the station was shut down — and associated storage facilities, will be a gigantic task. Present estimates put the cost at around \$8-billion, which will have to be paid from taxes as no funds existed for the purpose. (*Nucleonics Week*, July 16)
- **India's** nuclear programme is criticised for its inability to scale up the power of its indigenous Candu-type reactors to their rated capacity of 235 Mwe. The first four of these reactors — two each at the Madras and the Narora Atomic Power Project (MAPP and NAPP, resp.) — reportedly do not exceed 220 MW and the same is expected at ten further units now being built or in planning. Adding to this the downgrading of the old American-supplied light water reactor at Tarapur by 100 MW, of the first power reactor supplied by Canada, RAPP-I, by 120 MW and of RAPP-II by 20 MW, the programme is far from achieving its production target. This gives rise to doubt at India's ability to design and build a 500-MW reactor using Candu technology, as reportedly planned (*Indian Express* [Madras], 9 April, in JPRS-TND-92-015, 20 May)
- **Japan's** Atomic Energy Commission recommends abandoning for the present the development of laser isotope separation for the enrichment of uranium and concentrating instead on the improvement of centrifuge

technology. Urenco, the Western Europe enrichment consortium, is also said to reconsider plans for research on laser enrichment, while the US Congress has called for a cut in funds for the atomic vapour laser isotope separation programme (AVLIS) (*NuclearFuel*, August 3)

- In **Sweden**, where the percentage of those favouring continued use of nuclear energy is said to have declined from 62% in 1990 to 54% now, a senior utility executive has expressed the view that, as there are no environmentally safe and economic alternatives, nuclear power will have to serve beyond 2010, the year when the law decrees that all reactors are to be shut down. The Swedish Minister for Industry, a member of the Prime Minister's pro-nuclear Conservative Party, has since made a similar statement. An anti-nuclear group has presented him with a petition bearing 60,000 signatures, calling for the immediate shut-down of one of Sweden's twelve power reactors. Five of the oldest BWR units have since been shut down for repairs to their emergency core cooling systems. Some reports say that the cause lies with cleansing filters that clog up faster than foreseen and that repairs will take around three weeks; others indicate that the cause is not yet known. As around half of Sweden's electricity is generated by nuclear power, the shut-down has a strong effect on the country's power supply (*Nucleonics Week*, July 9, August 27 and September 3; *Süddeutsche Zeitung*, *Neue Zürcher Zeitung*, 18 September; *Enn NucNet* 353/92, 17th September and 358/92, 18th September; *International Herald Tribune* and *Daily Telegraph*, September 19; *Die Presse* and *Kurier* [both Vienna], 19 September; *Financial Times*, 23 September; *Svenska Dagbladet*, 20 September)
 - **Ukraine** has problems with spent fuel management, caused by the refusal of the Krasnoyarsk regional authorities to allow the fuel cycle complex there to accept spent fuel from Ukraine's VVER-1000 reactors, as previously agreed, apparently because of a disagreement over trade questions. In the short term, if no solution is found, the discharge capability at two reactors that are now down for refuelling will be impaired, and over the longer term, all of Ukraine's operating reactors will be affected. Ukraine refuses to allow transit through its territory, from Czechoslovakia to Russia, of damaged spent fuel from the A-1 reactor at Bohunice, which was decommissioned after accidents in 1976 and 1977 (*NuclearFuel*, July 20 and August 17)
 - The **United Kingdom** Government has confirmed its decision of 1988 to shut down the Dounreay 250-MW Prototype Fast Reactor by 1994 on the ground that commercial deployment of fast reactors in the UK will not now be required for 30 to 40 years. In 1991, **Germany** abandoned its plans for the 300-MW SNR fast breeder reactor at Kalkar. In **France**, Phénix has been out of service since 1990. Operation of the 1,200-MW Superphénix, which has been down since July, 1990, is suspended indefinitely, pending public safety inquiries and a renewal of its operating license, necessary because it has been out of service for over two years. Experts say that the plant may never go into commercial operation. If so, there may shortly be no breeder reactors operating in Western Europe. (*Nucleonics Week*, July 2 and August 13)
 - In the **United States**, the 16-year old, 1,178-MW 'Trojan' nuclear power station in the state of Oregon, which was licensed for operation until 2011, will be shut down in 1996, rather than having its four steam generators replaced at an estimated cost of \$125-200-million. The decision follows similar moves elsewhere. In 1989 it was decided to close the Fort St. Vrain gas-cooled reactor in Colorado, rather than repairing it; in January the company owning the 25-year old San Onofre-1 plant in Southern California decided to shut the plant down; and in February the same decision was taken in respect of the 32-year old New-England Yankee power station. Anti-nuclear groups want an investigation of the damage which hurricane 'Andrew' did to the Turkey Point nuclear power station in Florida. While apparently the station itself withstood the storm without any problems, its sirens, water tower and meteorological tower were damaged and escape routes were blocked. (*The New York Times*, August 11; *Nucleonics Week*, August 13; *International Herald Tribune*, September 26/27)
- ### i. Events in Nuclear-Weapon States
- **France** has announced that it will build four new ballistic-missile submarines in stead of the six originally planned. The first boat of this class, Triomphant, is expected to be commissioned in 1995; work has started on the second, Téméraire. (*The Bulletin of the Atomic Scientists*, 43(6), July/August)
 - In the **United Kingdom** the first Trident ballistic-missile submarine, HMS Vanguard, has been launched. Contracts have been let for two more, Victorious and Vigilant, and funds have been set aside for a fourth boat. The Trident II D-5 missiles will be American-built, but will carry MIRVed warheads produced in the UK, which are said to be similar to the 100-kiloton W76 warhead on the US Trident I C-4 missile. Apparently, the safety of these warheads cannot be validated properly without an analysis by two separate independent teams using supercomputers; Britain lacks a second expert team, however. A working group led by the Chief Scientific Advisor of the Ministry of Defence, Professor Ronald Oxburgh, is reportedly satisfied with the safety of the weapon as designed, although aspects of it could be improved and safety features could be adopted in future. A safety review is being made of the freefall WE177 bomb used by the Royal Air Force, not, apparently, because of any specific concern but as a precaution. The weapon is slated for replacement at the end of the century. As recommended in the working group's report, the Government plans to appoint an official ('champion') to oversee nuclear weapon safety. (*The Times* [London] and *The Guardian*, 14 July; *Jane's Defence Weekly*, 18 and 25 July; *The Bulletin of the Atomic Scientists*, 43(6), July/August)
 - The **United States** Administration intends to maintain the capability of manufacturing plutonium triggers for new warheads. It is considering five existing weapon facilities as alternatives for the Rocky Flats plant, which was shut down for reasons of safety. Construction of the new facility will reportedly take ten years.
- The Department of Energy announced on 11 September that, given the reduction in the number of nuclear warheads of Russia and the USA, it need not build the new tritium-production reactor which it had planned to construct to replace the three reactors at Savannah River that were closed down for safety reasons. Existing tritium supplies are said to be sufficient for the next twenty years. The new reactor would have cost at least

\$6-billion; reportedly, \$5-billion has been spent so far on its development and on rebuilding and upgrading one of the old Savannah River reactors, which is now also said to be no longer needed.

The Defense Nuclear Facilities Safety Board has reportedly found that there is no documentation at the Savannah River plant with respect to the reliability of parts and equipment in that facility obtained before 1989.

The cancellation of the test of the nuclear-powered X-Ray laser [see above, under 'Nuclear Testing'] is seen as denoting the end of that project, although the Lawrence Livermore National Laboratory has merely said that it had been put 'on indefinite hold'. Support for other aspects of the US anti-missile programme is said to be negatively affected by reports that officials responsible for its development have presented test results in an exaggeratedly, and at times falsely, favourable, light. There is also evidence that the 'Patriot' missiles used against Iraqi 'Scuds' were much less successful than initially claimed.

Radiation from the Hanford Nuclear Reservation, in Washington State, where for forty years plutonium was produced for weapons-use, reaches the Pacific Ocean, 200 miles downstream along the Columbia River, but the level is apparently much reduced since the Hanford reactors were shut down and the practice of dumping cooling water from the reactors directly into the river was discontinued. Over 16,000 technicians, engineers and scientists are engaged in the Hanford clean-up, which will involve an estimated 1,391 waste sites. The job is expected to take 30 years and cost \$60-billion. (*Arms Control Today*, 22(6), July/August; *NuclearFuel*, July 20; *The New York Times*, July 14, 17 and 21, September 12 and 22; *The Washington Post*, July 14, August 6 and September 12; *The Economist*, August 15th; *International Herald Tribune*, September 17 and 24)

j. Events in the Commonwealth of Independent States

- The United States has decided to buy highly enriched uranium (HEU) from dismantled Russian warheads. The 94% U-235 is to be diluted to an enrichment level of about 4% and sold by the Department of Energy to commercial customers. The text of the President's announcement is reproduced as Section V g. Reportedly, the announcement followed a period of contention within the US Administration between those favouring the purchase as an effective disarmament measure that could permanently reduce Russia's military threat and mitigate the risk of accidents and theft, while also assisting the Russian economy, and those who feared that it might destabilise the uranium market. Negotiators of the two nations have reached agreement in principle and within twelve months an implementing contract is to be concluded on the terms of the purchase. It is intended that part of the proceeds should be used to upgrade the safety of nuclear reactors in the former Soviet Union. The implementing contract will provide for the purchase from Russia of no less than 10 metric tons of HEU in each of the first five years and no less than thirty metric tons during each of the following fifteen years, resulting in a total purchase of 500 metric tons over a twenty-year period. According to the US Department of Energy, these are target figures; if possible, purchases would be made faster and in higher quantities. Earlier American

estimates, including one by the General Accounting Office, put the total Russian HEU stockpile at about 500 metric tons; at least one UK source spoke of 700 tons. A recent report from the Natural Resources Defense Council NRDC cites President Yeltsin's assertion that Russia has 1,200 tons of fissionable material (HEU and separated plutonium). Experts believe that Russia possesses 150 tons of plutonium, so that it would have 1,050 tons of HEU. According to NRDC's report, this makes the deal less important as a disarmament measure and points to the need to verify warhead dismantlement. However, an administration official is quoted as saying that Mr. Yeltsin's statement was not credible and that even if there was more HEU in Russia than had been believed, the US could buy that as well.

Russia's Atomic Energy Minister, Mikhailov, is reported to have made it a condition for final agreement on the HEU deal that the antidumping action which representatives of United States uranium producing interests have brought against Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan is dropped. That action, initially aimed at the sale in the United States of natural uranium at prices lower than is considered fair by the indigenous producers has gone forward. The US Department of Commerce has made a preliminary determination in favour of the mining companies, which means that duties of 115.82% of the value of the uranium must be added. Government-level discussions have started about conditions under which the republics would be able to import uranium into the United States without being subject to prohibitive duties and quotas. The Administration seeks a settlement, in hopes of improving trade relations with the CIS. The uranium mining companies reportedly expect to win the case and will insist on the imposition of strict volume limitations and non-competitive minimum prices. They also argue that HEU should be covered by any anti-dumping decision but there appears to be some doubt that this would bring them as much as they expected. It appears that the US Congress is thinking of adding to the energy bill now under consideration a clause requiring use of domestic origin uranium, and the US Secretary of Energy has announced that in that case Administration advisors would recommend that it should be vetoed, as contrary to US free-trade commitments.

One obstacle to the speedy transfer of strategic weapons from Belarus, Kazakhstan and Ukraine to Russia is said to be the high cost of the operation. However, the fact that Ukraine has not so far moved toward acceding to the NPT as a non-nuclear-weapon state, although it has committed itself to doing so in the protocol to START which it signed last May, is causing concern. There are American observers who think that Kiev is trying to use the issue to obtain economic and political concessions, including US security guarantees. Some Russian military experts seem to think that Ukraine intends to remain a nuclear power and is seeking to obtain control of the strategic weapons on its territory. Belarus has confirmed that it intends to become a non-nuclear-weapon state and to join the NPT as such.

Dismantling of tactical warheads started at the Arzamas-16 nuclear centre in June. Ukrainian observers were expected to attend, to see for themselves that the weapons were indeed liquidated.

One of three plutonium-producing RBMK reactors at Krasnoyarsk-26 has been shut down as planned; a second one will be closed by the end of 1992. Another production reactor has been shut down at Tomsk. There are said to be still three production reactors operating in Russia.

There has been a further series of smuggling cases, involving attempts to sell small amounts of nuclear material from the former USSR in Western European countries, particularly Austria, Germany and Switzerland. German sources report that the physical protection and materials accounting measures in the CIS, which used to be handled by the Red Army and the KGB, are not adequate to ensure proper control. Most of the cases that have so far come to the attention of law enforcement authorities in the countries concerned modest amounts of low-enriched uranium; in some cases gram-quantities of radioactive material of no relevance to the nuclear fuel cycle were offered for sale, at exorbitant prices. In the area of Bremen and in Berlin police arrested three Germans who were trying to sell two 50-kilogram containers with radioactive cobalt; also in Berlin, two Austrians were seized when they tried to sell small amounts of Caesium-137 and natural uranium and milligram quantities of plutonium for smoke detectors, to an undercover police official. In Poland, caesium was stolen by deserting Russian soldiers from an army base. In Germany again, four persons have been sentenced to prison for smuggling nearly 3 lbs of RBMK fuel pellets of Soviet origin, which they attempted to sell for about \$1,250,000. Each case by itself seems to be of relatively little practical interest, but taken as a whole they are said to reflect worsening controls and inadequate materials management, giving rise to serious concern about physical protection, radiation safety and non-proliferation issues. (Radio Moscow World Service and Moscow Radio Rossii, both 23 June, in JPRS-TND-92-020, 25 June; Izvestiya, 1 July, INTERFAX [Moscow], 2, 3 and 6 July, and Moscow Radio Rossii Network, 7 July, all in JPRS-TND-92-022, 10 July; The Independent, 6 July; Nucleonics Week, July 9, August 20 and September 3; Daily Telegraph, 4 and 10 July; Der Standart [Vienna], 11/12 July; Neue Zuercher Zeitung, 18 July; PAP [Warsaw], 18 July, in JPRS-TND-92-025, 22 July; Wall Street Journal, July 20; Energy Daily and The Washington Post, July 23; Moscow Radio Rossii Network, 24 July, in JPRS-TND-92-026, 31 July; Le Monde, 28 July; NuclearFuel, August 3, 17, September 2 [special issue] and 14; The New York Times, September 1 and 11)

k. Developments of Concern for Horizontal Proliferation

- There are reports from Argentina that key components of the Condor II medium-range ballistic missile, which President Menem promised one year ago would no longer be produced, have not yet been destroyed. There are still said to be 14 first-stage rockets in storage as well as some guidance systems that were bought in France. Also, US officials have reportedly noted that an Iraqi missile plant contains parts of the Condor II project. As in the case of the cancellation of nuclear cooperation with Iran (see below) President Menem is criticized at home for having given in to American pressure in stopping the Condor project. (The New York Times, August 19)
- The expected resignation of President Collor de Mello of Brazil raises a question about the continuation of his

non-proliferation policies, particularly if the military should increase their influence on the government (The New York Times, August 28, 29 and 31)

- The representative of the Democratic People's Republic of Korea at the IAEA in Vienna has repeated his country's claim that it must complete its 'radio-chemistry laboratory' — which the Agency rates as a reprocessing plant under construction — for the technological and economic development of the country. North Korea's Ambassador at Geneva has stated that his country would stop developing its nuclear reprocessing capacity if Japan and the USA supplied it with light-water reactor technology.

American experts are still heard to say that North Korea may have a secret stockpile of weapon-grade plutonium extracted in a pilot facility, without which it would not have been able to construct a bigger plant. North Korea has denied this and observers note that both the British and American military production programmes proceeded directly from hot-cell separation of plutonium to full-scale production. One question is how much uranium was irradiated at the 5-MWe natural-uranium reactor since that began operating, in 1987. President Roh Tae Woo of the Republic of Korea stated recently that he remained suspicious of North Korea's nuclear intentions, but had become convinced that its determination to develop nuclear weapons had become weaker. US officials are reported as saying that the CIA may have overestimated North Korea's nuclear achievements.

In September the IAEA carried out its third *ad hoc* inspection of North Korea's nuclear installations. The inspection was off to a late start, reportedly because Pyongyang raised objections to the composition of the Agency's team. This delay and the fact that the IAEA still does not seem to have full information about the total inventory of fissile material is said to make it necessary to have yet another *ad hoc* inspection before the Agency is in a position to make a full evaluation of that country's nuclear programme.

A report from the Republic of Korea claims that since 1956 hundreds of scientists from North Korea studied at the Soviet nuclear research centre at Dubna. A South Korean report from Moscow cites Russian sources as stating that Russia will no longer give North Korea assistance that might be used for military purposes.

North Korea is still unwilling to allow the South to inspect its nuclear facilities, in return for reciprocal access. Apparently it has told South Korea that the fact that the IAEA was now inspecting its nuclear installations made the bilateral inspections unnecessary. It has recently also tied further talks to the closing of a South Korean naval base that is used by American submarines. Mutual inspection is seen as important especially in Japan and the USA, to complement the Agency's inspection and help reveal installations that may be hidden from IAEA inspectors. South Korea is said to link the possibility of establishing closer political ties with the North to the latter's acceptance of a reciprocal inspection regime. Reports that North Korea demands access to military installations in the South, claiming that US nuclear weapons have not in fact been withdrawn, seem to be contradicted by the news that it has welcomed the American announcement that all

tactical weapons had been withdrawn. South Korea has since said it may drop the distinction between military and civilian nuclear facilities in the inter-Korean inspection regime if North Korea stops insisting on inspecting US bases in the South.

North Korea's Institute of International Affairs is accusing Japan of harbouring nuclear-weapon ambitions.

There is speculation about the effect the establishment, on 24 August, of diplomatic relations between Beijing and Seoul may have on North Korea's nuclear policy. There are suggestions that this may further isolate North Korea and prompt it to intensify its nuclear-weapon efforts but there is also the view that China may encourage it to allow South Korean inspections and abandon its nuclear ambitions. The issue has reportedly been raised by South Korean President Roh Tae Woo during his visit to China in September. (*Yonhap* [Seoul], 11 June – two reports – and *Seoul KBS-1 TV Network*, 16 June, all in *JPRS-TND-92-019*, 19 June; *Yonhap*, 19 June, and *Korean Central Broadcasting Network* [Pyongyang] 21 June, in *JPRS-TND-92-020*, 25 June; *Seoul KBS-1 Radio*, 6 July and *YONHAP* [Seoul], 6 July, two items, in *JPRS-TND-92-022*, 10 July; *Korean Central Broadcasting Network* [Pyongyang] 23 July, in *JPRS-TND-92-027*, 5 August; *KCNA* [Pyongyang] 20 July, in *JPRS-TND-92-025*, 22 July, and 23 July, two items: in *JPRS-TND-92-026*, 31 July, and in *JPRS-TND-92-027*, 5 August; *The Economist*, July 4th; *The Christian Science Monitor*, July 27; *The Independent*, 22 August; *The New York Times*, August 23 and 24, September 16, 18 and 21; *Defense News*, August 31-September 6; *Nucleonics Week*, September 10; *Die Welt*, 17 September; *International Herald Tribune*, September 19/20 and 25)

- **India** is thought to have stockpiled by late 1991 about 290 kg of weapon-grade plutonium; by late 1995 it could have 400 kg. It is reportedly working on the development of a thorium/uranium 233 fuel cycle. Further, its centrifuge enrichment effort is estimated to be capable now of producing 'several kilograms' of weapon-grade uranium a year, which might be part of a long-term plan to develop thermonuclear weapons. (Leonard S. Spector, in *The Wall Street Journal Europe*, August 19; David Albright and Mark Hibbs, 'India's Silent Bomb', *The Bulletin of the Atomic Scientists*, 48(7), September)
- **Iran** has announced its intention to meet its energy needs to a large extent by the use of nuclear power. It has disclosed that it is talking to several countries about the construction of nuclear power stations; an agreement has been reached with China for the supply of at least one 300-MW light-water reactor and possibly two; an agreement for the supply of power reactors has also been concluded with the Russian Federation (see above, f. **Nuclear Trade and International Cooperation**). Iran is still urging Germany to help it complete the power station which Siemens was building at Bushehr when the war with Iraq broke out. Germany's Economics Ministry, however, has once again denied permission for the export of \$300-million worth of equipment for that project, on the ground that Iran is still an area of tension. Another reason given is the dual-use nature of the equipment. Iran's press expresses great indignation at the refusal.

President Menem of Argentina is reportedly urged by his foreign minister to revive an agreement with Iran for

cooperation in uranium conversion and fuel element production; on 5 May, after meeting with King Fahd of Saudi Arabia, the President had announced that he would suspend nuclear shipments to Iran.

Allegedly, Iran is spending large sums to strengthen its armed forces, and reports in the US press cite assertions by Saudi and French officials that it has plans to build nuclear weapons — an allegation emphatically denied by the Iranian government.

IAEA inspectors preparing to visit Iran in October will reportedly be provided with information from various sources about the alleged nuclear-weapon programme. A claim that Iran is rapidly approaching a nuclear-weapon capacity comes from the 'Task Force on Terrorism and Unconventional Warfare' of the Republican Research Committee in the US House of Representatives, as well as, apparently, the Simon Wiesenthal Center, but US officials are said to discount these reports.

Reports that China — which has already supplied Iran with a small calutron and a miniature research reactor and intends to sell it a power station — would also help it construct a large natural uranium research reactor and ancillary installations are not substantiated.

The old allegations that Iran has obtained warheads from the former USSR have surfaced once again. The Western intelligence community does not seem to give credence to detailed accounts in a number of reputable publications on the European continent, in Britain and in the US, of the theft or purchase of two warheads from Kazakhstan. German publications have aired the unsubstantiated rumour of an agreement between North Korea and Iran to jointly develop nuclear weapons.

Russian media repeat the claim that nuclear scientists from the Commonwealth of Independent States are working in Iran. There is a report from Israel that a Russian nuclear scientist previously employed at a Soviet nuclear installation in Kazakhstan, who had settled in Israel and was refused work in the Israeli nuclear establishment, has found employment in Iran. (*Kuranty* [Moscow], 7 May, in *JPRS-TND-92-015*, 20 May; *La Prensa* [Buenos Aires], 13 June, and *Komsomolskaya Pravda* [Moscow], 24 June, both in *JPRS-TND-92-020*, 25 June; *NuclearFuel*, July 6; *Sunday Times*, 12 July; *The Australian*, 13 July; *The Washington Post*, July 31; *Frankfurter Allgemeine Zeitung*, 31 July; *Jomhuri-ye Islami*, quoted by IRNA [Tehran] on 1 and 2 August, in *JPRS-TND-92-027*, 5 August; *Süddeutsche Zeitung*, *The Independent* and the *International Herald Tribune*, August 3; *Die Presse* [Vienna], 4 August; *Nucleonics Week*, August 6 and 20; *The New York Times*, August 8)

- **Iraq**. After the destruction in July of buildings and installations at Al Tarmiya and Ash Sharquat associated with uranium enrichment, Iraq's principal weapon-related nuclear facilities have now reportedly been put out of action; its stock of maraging steel is to be melted and mixed with lower-quality steel to ensure that it can no longer serve to make centrifuges.

In early July, German law-enforcement officers raided nine firms suspected of having made clandestine supplies to the Iraqi centrifuge programme — the second such

action of this year. To date, one German firm is said to have been convicted of helping Iraq's clandestine weapons programme, four are on trial for export violations and 37 others are under investigation. The Chairman of the US House Armed Services Committee is cited as saying that up to 80% of the nuclear-related supplies Iraq received came from Germany. UN and German sources assert that German exports in the period 1986-90 included an estimated \$198-million worth of dual-use items; that Iraq's centrifuge programme was assisted by six German firms; that for a long time the German government was remarkably slow in responding to US intelligence reports about the involvement of German firms in Iraq's development of weapons of mass destruction; and that the German authorities are convinced that the exporting firms were aware of the use for which their products were intended.

Iraqi authorities have reportedly revealed the source of supply of high-frequency converters used to drive centrifuges, but they still have not produced a complete list of relevant equipment and material. Notwithstanding continued pressure from the IAEA, Iraq remains unwilling to give any further information about its procurement network for the centrifuge programme or the source of its information on manufacturing centrifuges, on the pretext that disclosure would expose the people concerned to retaliation by Israeli agents. While it is thought that the refusal may complicate the IAEA's efforts to finalise its plan for the long-term verification of Iraq's nuclear activities, the Agency has said that it seeks this information also 'through other avenues'.

IAEA inspectors and other officials acting in Iraq under the authority given them by Security Council Resolution 687 have been subject to various forms of harassment. In early July, Baghdad refused UN inspectors access to its ministry of agriculture, where it was believed documentation on missile development was stored, arguing that such an inspection would infringe its sovereignty. This led to a 21-day standoff, in the course of which the inspection team was compelled to withdraw, and which ended when, after intensive negotiations, the Executive Chairman of the UN Special Commission obtained Iraq's concurrence with access by an inspection team that did not include nationals from Gulf War Coalition members. As expected, after the long wait during which the agriculture ministry was barred to inspection, the eventual search did not yield any relevant materials. Word that the ministry had contained important documentation on nuclear and biological weapons, and that these had been moved through secret tunnels under the building, was ascribed to Kurdish sources. Shortly after, Iraq announced that it would tolerate no further inspections of government ministries. Nevertheless, following what was said to be fresh intelligence, the UN Special Commission initiated a new inspection, which reportedly was to have included another ministerial building. At that time, there were reports that the US Administration was seeking to force a confrontation with Iraq by insisting on access to sensitive sites; a refusal would be followed by punitive military action. The UN team visited eight sites, but supposedly cancelled a visit to what *The New York Times* called 'a military ministry considered off-limits by Iraq'. The inspection otherwise proceeded without incident. Press reports indicate that it yielded data on Iraq's ballistic missile programme, as well

as on chemical, nuclear and biological matters, and that the Iraqi side had been co-operative.

In early September, the IAEA carried out a further inspection of nuclear sites. Reportedly, this inspection was also permitted to proceed unhindered. Upon its completion, the team leader, Maurizio Zifferero, termed it 'successful, quiet and fruitful'. The team leader was further quoted as saying that there was no longer any nuclear activity in Iraq, and that the country had no facilities left where it could make nuclear weapons. Following this statement, the IAEA let it be known that this should not be taken as 'a clean bill of health for Iraq in the nuclear sphere', that in fourteen inspections the destruction of all known nuclear equipment and buildings had been supervised, but that this did not exclude the possibility of further discoveries in the future.

Reportedly, the latest inspection focused on the long-term monitoring of Iraq's nuclear activities. One new element in the Agency's monitoring scheme is a nation-wide programme of taking water samples for radiation testing, to detect nuclear activity. Iraq has agreed to this approach, given its non-intrusive nature. During the latest inspection fifteen water samples were taken; the programme may eventually involve sampling at up to forty sites, several times a year.

Mr. Zifferero's remarks, that he had taken at face value the Iraqi assertion that the country had abandoned its nuclear programme, and that water-sampling would permit the Agency to detect any undeclared nuclear activity, have prompted reactions among American experts, who have decried his optimism in the past, and do not consider the water sampling method as necessarily foolproof. These experts note that Iraq's nuclear activities had been underestimated also by US intelligence and that since the Gulf War Iraq has repeatedly tried to hide parts of its nuclear programme. It is also recalled that when Mr. Zifferero said earlier that the largest part of Iraq's nuclear programme had been identified, the Executive Chairman of the Special Commission, Amb. Ekéus, disagreed. Some American experts still talk about a yet-to-be-discovered centrifuge cascade in which low-enriched uranium could be enriched to weapon grade. Little or no evidence has been unearthed so far of the existence of this installation or of the 'secret underground reactor' for the production of plutonium about which rumours also surface periodically. Apparently, Iraq has indeed made feasibility studies for an underground power reactor at several sites, but none of these seems to have been suitable and the matter is thought not to have been carried any further. The IAEA says it is continuing to pursue all leads towards any hitherto undeclared facilities.

In Washington, the criticism is heard that in negotiating about conditions under which Iraq would permit inspections, and accepting some of its terms, the Chairman of the Special Commission has put further investigations in Iraq at risk. The Special Commission has rejected this assertion and the Chairman is reported to have called his mission 'a complete success'.

In the current presidential election campaign prominence is given to the charge made in the US Congress that in the years preceding Iraq's invasion of Kuwait the incumbent Administration, in the interest of strengthening relations

with Baghdad, although aware of Iraq's human rights violations, its hospitality towards terrorism and its nuclear-weapon ambitions, allowed proscribed financial and technical aid to go there. A National Security Directive of October 1989 called for the normalization of relations and expansion of trade with Iraq, ostensibly to help moderate its behaviour. Experts within the Defense, State and Energy Departments and the Central Intelligence Agency are now known to have warned, even before the directive was issued, of Saddam Hussein's efforts to produce weapons of mass destruction, in particular nuclear weapons. At least one of these reports pointed to extensive purchases by Iraqi agents of material for the manufacture of centrifuges and weapon components, which were said to show 'detailed knowledge of designs for weapons assembly'. Nevertheless, the Administration guaranteed a \$1-billion loan to be made through the Atlanta office of the Banca Nazionale del Lavoro (which was then under criminal investigation and whose manager was involved in a scheme to provide funds for Iraq's clandestine arms purchases) for the purchase of farm implements but which Iraq, according to the responsible State Department official, was likely to use for its weapons programme. The warning, reportedly delivered at the highest level, was not heeded. Information given to Congress by the Commerce Department about the export to Iraq during the same period of more than 700 sensitive items, 162 of which are said to have had potential nuclear application, appears to have been altered to avoid showing that these transactions had been sanctioned by a full-fledged interdepartmental licensing review in which the Departments of State, Energy and Defense had participated. The charge has also been made in Congress that US intelligence detected the existence of an extensive network of Iraqi-owned companies that were buying American equipment, but that the Administration allowed these activities to go on for more than a year after it knew of them. A request by congressional Democrats for the appointment of an independent prosecutor, to avoid leaving the investigation of the case in the hands of the Administration, has been refused. (IAEA Newsbriefs, 7(3) [55], June/July; *Daily Telegraph*, 8 July; *The Guardian*, 9 July; *U.S. News & World Report*, July 13; *International Herald Tribune*, July 9, 10, 14, 16, 27, September 1 and 8; *Baghdad Observer*, July 19 and 27; *Nucleonics Week*, July 9, 23, August 6; *Agence France Presse* from Ankara, 22 July, in *JPRS-TND-92-026*, 31 July; *The New York Times*, July 8, 13, 14, 18, 19, 20, 22, 23, 25, 26, 27, 28 and 30, August 2, 5, 7, 9, 16, 17, 18 and 19, September 4 and 16; *The Washington Post*, June 28, July 7, 8, 16, 18, 23, 24, 27, 28, August 6, 7, 10 and 11; *The Financial Times*, July 8, 17, 21, 27 and 29, and August 7; *NuclearFuel*, August 31, September 14; *Basler Zeitung*, 8 September)

- Iraq's intransigence over the issue of inspection access, and its allegedly many other contravention of the armistice conditions, such as its military action against the Shiite populace in Southern Iraq and its disregard of the ban on flights of fixed-wing aircraft, has led to sharp reactions, especially on the part of the United States and its Gulf War coalition partners. After repeatedly warning Iraq that its defiance was putting the armistice at risk, the United States has resorted to air action to interdict Iraqi flights south of the 32nd parallel. The military and diplomatic pressure on Iraq and the latter's reactions have a bearing on the future of the verification regime in

Iraq. The press, particularly in the West, follows the situation closely. The following is a selection of references to news items on the ongoing confrontation: **The Baghdad Observer**, July 25 and 28; **The Christian Science Monitor**, July 22, August 2, 3, 7; **The Daily Telegraph**, July 9, 18, 23, 28 and 30, August 8; **The Economist**, 29th August; **The Financial Times**, July 16, 22, 23, 24, 27 and 29, August 8, 17; **Frankfurter Allgemeine Zeitung**, 31 July; **The Guardian**, July 29, August 17; **The Independent**, 17, 22, 29 July; **International Herald Tribune**, July 10, 16, 22, 23, 24, 27 and 29 and August 1 and 15, ; **Jane's Defence Weekly**, 8 August; **Kurier** [Vienna], 22, 23, 24 July; **La Libération**, 23 July, 2 August; **Le Monde**, 23 July; **Neue Zürcher Zeitung**, 10 July; **The New York Times**, July 23, 27, 30; **Die Presse** [Vienna], 23 July, 7 August; **Der Standart** [Vienna], 10, 22, 28 July; **The Times** [London], July 18, 21, 23 and 28, August 8, 10; **Time**, August 10; **U.S. News & World Report**, July 20, August 10; **Wall Street Journal**, July 22, August 3; **The Washington Post**, July 15, 17, 24, 31)

- Israel's new Prime Minister, Yitzhak Rabin, is said to have made the denuclearisation of the Middle East a priority project of his government. Reportedly, his concern that nuclear weapons will be introduced into the Middle East figures prominently in his desire for a successful conclusion of current peace negotiations and for American security guarantees.

There are again reports that workers at the Dimona facility and inhabitants of the area around the plant are calling for an impartial review of its safety.

When, in the mid-1960s, 200 lbs of highly enriched uranium was missing at the American conversion plant at Apollo, Pennsylvania, there were suspicions that the material had been stolen by Israeli agents, for use in nuclear weapons. This was denied in both countries and was never proven. The plant is now being decommissioned. It appears that a considerable amount of HEU has been lost through spillage. (*Middle East International*, No. 428, 26 June; *Nucleonics Week*, July 9; *International Herald Tribune*, 3 August)

- An American court has convicted a retired brigadier general, citizen of **Pakistan**, of criminal charges connected with the attempt, in the mid-1980s, to export maraging steel and beryllium from the United States. The general was arrested in Germany in 1991 and extradited. An associate, a Pakistan-born Canadian, was convicted in 1987 and pleaded guilty in exchange for a reduction of his sentence. The conviction is being appealed. (*NuclearFuel*, August 3)

II. PPNN Activities

- On 10 September PPNN Study No. 3 **A New Nuclear Triad: The Non-Proliferation of Nuclear Weapons, International Verification and the International Atomic Energy Agency** by David Fischer, Ben Sanders, Lawrence Scheinman and George Bunn was presented to the press during a luncheon meeting at the National Press Club in Washington, D.C. organised for PPNN by Dr. John R. Redick of the University of Virginia. Presentations by Benjamin Sanders and Lawrence Scheinman were followed by a one-hour discussion.

- On 11 September, John Simpson was the lunch-time speaker at the Uranium Institute Annual Conference in London. His topic was: 'Nuclear Non-Proliferation: The Evolving Context'. On 27 September, he addressed a joint meeting of Swedish and German Lawyers Against Nuclear Arms [IALANA] on the role of non-governmental organisations in 'Saving the NPT and Abolishing Nuclear Weapons'.
- Between 28-29 September, Darryl Howlett presented a paper entitled, 'The Nuclear Non-Proliferation Regime' at a conference on 'The New World Order' organized jointly by the Foreign and Commonwealth Office and the Welsh Centre for International Affairs.
- The twelfth PPNN Core Group meeting will be held on 27 November at the Keidanren Guest House, Sunto-gun, Shizuoka Prefecture, Japan. It will be followed on 28-29 November by a seminar on non-proliferation issues as they relate to the region, organised in conjunction with the Japanese Atomic Industrial Forum.

III. Other Non-Governmental Groups Active in Related Areas

- In October the **Canadian Centre for Arms Control and Disarmament** will become the **Canadian Centre for Global Security**, reflecting its broader post-Cold War mandate. While continuing its focus on arms control and disarmament, with particular emphasis on nuclear non-proliferation, the Centre is increasingly involved in areas such as defence industry conversion, international peacekeeping, nuclear safety and security in the former Soviet republics, environmental security, and regional security co-operation.
- **The Monterey Institute of International Studies CIS Nonproliferation Project** will hold its third core group meeting in Kiev, Ukraine, October 11-14 1992. Together with the RAND Corporation, it is holding a meeting on security and non-proliferation in Alma-Ata, Kazakhstan on October 15-17 1992.
- **The Albert Einstein Peace Prize Foundation and the American Academy of Sciences** are organising a conference at the University of Chicago on 3-5 December 1992 on 'The Proliferation of Nuclear Weapons: Past, Present, and Future', to mark the 50th anniversary of the first sustained nuclear chain reaction.
- **UNIDIR** is organising a conference on the future of Nuclear Deterrence and Non-Proliferation, in Paris on 10-11 December 1992.
- **ISODARCO** (International School on Disarmament and research on Conflicts) is organising a course on Technology Transfer to Developing Countries and the Problem of Dual (Military-Civilian) Technologies at Folgaria, Italy on 31 January-7 February 1993.

IV. Recent Publications

- Books:

Shlomo Aronson, **The Politics and Strategy of Nuclear Weapons in the Middle East**, (New York: State University of New York Press, 1992), 398 pp.

D. Shyam Babu, **Nuclear Non-Proliferation: Towards a Universal Regime**, Konark Publishers PVT LTD, Delhi 1992, 206 pp.

Frank Barnaby, **Plutonium and Security: The Military Aspects of the Plutonium Economy**, (Basingstoke: Macmillan Press, 1992), 296 pp.

J. B. Poole & R. Guthrie, **Verification Report 1992: Year-book on Arms Control and Environmental Agreements**, (London: VERTIC, 1992), 372 pp., including: Frans Berkhout and William Walker, 'Safeguards at Nuclear Bulk Handling Facilities'; Allan S. Krass, 'Verification of Nuclear Warhead Dismantlement'; Johan Molander, 'The United Nations and Iraq: a Case of Enforced Verification and Disarmament?'; John Simpson, 'The Nuclear Non-Proliferation in 1991' and 'The Iraqi Nuclear Programme and the Future of the IAEA Safeguards System'; extensive bibliography.

William G. Sutcliffe, Ed., **Fissile Materials from Nuclear Arms Reductions: A Question of Disposition**, (Proceedings of an AAAS meeting of 18 February 1991), Center for Technical Studies on Security, Energy and Arms Control, Lawrence Livermore National Laboratory, CTS-31-92, 86 pp.

Towards a Comprehensive Test Ban Treaty, Expert Study on Questions Related to a Comprehensive Test Ban Treaty, Royal Norwegian Ministry of Foreign Affairs, Oslo, May 1992, 132 pp.

John Tower *et al.*, **Verification: The Key to Arms Control in the 1990s**, (McLean VA: Brassey's US Inc., 1992), 243 pp.

- Articles and Other Materials:

IAEA Bulletin, 34(1), Special Issue on **Safeguards**. Articles by Hans Blix, 'Verification of nuclear non-proliferation: Securing the future'; J. Jennekens, R. Parsick and A. von Baeckmann, 'Strengthening the International safeguards system'; K. Naito and D.E. Rundquist, 'Technological developments and safeguards instrumentation: responding to new challenges'; Leslie Thorne, 'IAEA nuclear inspections in Iraq'; D.L. Donohue and R. Zeisler, 'Behind the scenes: Scientific analysis from nuclear inspections in Iraq'; Lawrence Scheinman, 'The Non-Proliferation Treaty: On the road to 1995'; S.K. Singh, 'Asia: Non-proliferation and safeguards'; and M. ElBaradei, 'Application of IAEA safeguards in the Middle East'.

David Albright and Mark Hibbs, 'Pakistan's bomb: Out of the closet', **The Bulletin of the Atomic Scientists**, 48(6), July/August, pp. 38-43.

David Albright and Mark Hibbs, 'Iraq's Quest for the Nuclear Grail: What Can We Learn?', **Arms Control Today**, 22(6), July-/August, pp. 3-11.

David Albright and Mark Hibbs, 'India's Silent Bomb', **The Bulletin of the Atomic Scientists**, 48(7), September, pp. 27-31.

Bruno Barillot, 'French Finesse Nuclear Future', **The Bulletin of the Atomic Scientists**, 48(7), September, pp. 23-26.

Hans Blix, 'Verification and Iraq', **The Washington Quarterly**, 15(4), Autumn 1992, pp. 57-65

Ken Booth, 'Loose Nukes and the Nuclear Mirror: The Dangers and Opportunities Resulting from the Break-up of the Soviet Union', **Arms Control**, 13(1), April 1992, pp. 140-50.

Peter Brogden and Walter Dorn, Editors, **Controlling The Global Arms Threat**, [Proceedings of a Workshop on The Technology of Arms Control Verification in the 1990s] Aurora Papers 12, Canadian Centre for Arms Control and Disarmament, July 1992, 102 pp., including: Ben Sanders, 'Nuclear Non-Proliferation in the Middle East'; and Ron Cleminson, 'Inspection of Iraqi Nuclear Installations under UN Security Council Resolution 687'.

Michael Brown, 'Has De-Nuking Become De Rigueur?', **Pacific Research**, 5(3), August 1992, pp. 10-13.

Robert H. Bruce (ed.), **Nuclear Proliferation. South Asia and the Middle East**, Monograph No. 2, (Perth: Indian Ocean Centre for Peace Studies, 1992).

George Bunn and Charles N. Van Doren, **Two Options for the 1995 NPT Extension Conference Revisited**, A Publication of

the Lawyers Alliance for World Security, Washington, D.C., July, 14 pp.

Ted Galen Carpenter, 'A New Proliferation Policy', *The National Interest*, Summer 1992, pp. 63-72.

John M. Deutch, 'The New Nuclear Threat', *Foreign Affairs*, Fall 1992, Vol. 71, No. 4, pp. 120-134.

Warren H. Donnelly, 'Rejoining the Battle Against Nuclear Proliferation' (book review), *Arms Control Today*, 22(5), June, pp. 37-38.

Warren H. Donnelly and Zachary Davis, 'Japan's Sea Shipment of Plutonium', *CRS Issue Brief*, (Washington D.C: Congressional Research Service, updated June 25, 1992).

Rolf Ekéus, 'Iraq and Nonproliferation', *The Washington Quarterly*, 15(4), Autumn 1992, pp. 67-73.

David Fischer, 'Nuclear non-proliferation. The prospects for the non-proliferation regime after the Gulf War', *Energy Policy*, July 1992, pp. 672-681.

Darryl Howlett and John Simpson, 'The NPT and the CTBT: Linkages, Options and Opportunities', *Arms Control*, 13(1), April 1992, pp. 85-107.

Ryukichi Imai, 'The Age of Plutonium: Nuclear Technology for Energy and Weapons Proliferation', *International Institute for Global Peace, IIGP Policy Paper 99E*, Tokyo, August 1992.

Ryukichi Imai, 'Making IAEA Inspections More Effective and Disarmament and Arms Control after the Cold War', *International Institute for Global Peace, IIGP Policy Paper 90E*, Tokyo, June 1992.

Kumao Kaneko, 'Wanted: A Genuine Nuclear Non-Proliferation Policy - A Proposal for NPT Revision', *Atoms In Japan*, July, 36(7), pp. 15-19.

Aaron Karp, 'Controlling Weapons proliferation in the 1990s: The Role of Export Controls', (Ebenhausen: Stiftung Wissenschaft und Politik, September 1992).

James F. Leonard and Gary Milhollin, *North Korea: Do They or Don't They Have the Bomb*, report by Adam M. Scheinman of a discussion and debate sponsored by the Lawyers Alliance for World Security and the Washington Council on Non-Proliferation, Washington, D.C., 28 July, 18 pp.

Steven E. Miller, 'Western Diplomacy and the Soviet nuclear legacy', *SURVIVAL*, 34(3), Autumn 1992, pp. 3-27.

Harald Müller, 'The Future of the NPT: Modifications to the Nuclear Non-Proliferation Treaty Regime', *Harvard International Review*, XIV(3), Spring 1992, pp. 10-13.

J.F. Pilat, 'Iraq and the Future of Nuclear Nonproliferation: The Roles of Inspections and Treaties', *Science*, 255(5049), 6 March, pp. 1224-1229.

Dan Plesch, 'Safety of British Nuclear Weapons', *Bulletin of Arms Control*, No. 6, May, pp. 7-13.

Michael C. Pugh, 'Unilateral Nuclear Disarmament at Sea', *Arms Control*, 13(1), April 1992, pp. 108-120.

Lawrence Scheinman and Myron Kratzer, *INF and IAEA: A Comparative Analysis of Verification Strategy*, Los Alamos National Laboratory, LA-12350, July 1992, 87 pp.

Leonard S. Spector, 'Repentant Nuclear Proliferants', *Foreign Policy*, No. 88, Fall 1992, pp. 21-37.

Johan Swahn, *The Long-Term Nuclear Explosives Predicament*, Technical Peace Research Group, (Goteborg: Chalmers University of Technology, 1992)

Gordon Thompson, *Strengthening the International Atomic Energy Agency*, Institute for Resource and Security Studies, Working Paper No. 6, Cambridge, Mass, September 1992, 16 pp.

David B. Thomson, *The Strategic Arms Reduction Treaty and Its Verification*, Report No. 15, July 1992, Centre for National Security Studies, Los Alamos National Laboratory, 49 pp.

Andrei Zagorgski, 'Post-Soviet Nuclear Proliferation Risks', *Security Dialogue* (formerly, *Bulletin of Peace Proposals*), 23(3), September 1992, pp. 27-39.

V. Documentation

a. Missile Technology Control Regime: Press Release from the Oslo Plenary Meeting 29 June-2 July 1992.

'A Plenary Meeting of the Missile Technology Control Regime (MTCR) was held in Oslo 29 June-2 July and chaired by Norway. Greece, Ireland, Portugal and Switzerland, the new members of the Regime, attended for the first time. This multilateral non-proliferation regime thus comprises the following 22 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland and the United States of America.

Partners agreed that the MTCR Guidelines for Sensitive Missile-relevant Transfers of 16 April 1987 remain an essential mechanism for preventing proliferation of missiles capable of carrying nuclear weapons.

In view of the Partners' concern about the use of missiles to deliver all kinds of weapons of mass destruction, the member countries agreed to amend the Guidelines to extend the scope of the Regime to missiles capable of delivering biological and chemical as well as nuclear weapons.

The Partners took note with satisfaction of the decision of a growing number of countries to observe the MTCR Guidelines and issued a joint appeal to all states to do likewise. The text of the appeal is annexed.

The next Plenary will be held in Canberra 8-11 March 1993'.

b. Missile Technology Control Regime: Joint Appeal

Participating countries in the Missile Technology Control Regime (MTCR) - Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland, and the United States of America - appeal to all states to adopt the Guidelines for Sensitive Missile-relevant Transfers. The Partners welcome that a growing number of countries have indicated to them or in national statements their commitment to observe the Guidelines. Observance by as many states as possible of export control measures in accordance with these Guidelines will contribute to limiting the risks of proliferation of delivery systems for weapons of mass destruction and to fostering international security.

c. President Bush's Nonproliferation Initiative: Factsheet on DOE Support, September 15, 1992

- Noting that 'the potential spread of the capability to produce or acquire weapons of mass destruction and the means to deliver them constitutes a growing threat to U.S. national security interests', the President last month announced a comprehensive initiative to bolster U.S. efforts to stem the spread of these capabilities and to discourage any use of such weapons.
- In response to the President's initiative, the Department of Energy (DOE) plans to redirect \$166 million of its FY 1993 budget from the New Production Reactor (NPR) Program to support a robust nonproliferation program at its national laboratories.
- This additional funding will increase DOE's FY 1993 nonproliferation budget from \$61.4 million to \$227.4 million and represents a significant long-term commitment by the Department to support the President's initiative.
- The program, which will build on the unique and comprehensive technical expertise at DOE's national laboratories, will include both near-term and long-term projects to enhance U.S. and international capabilities related to:
 - proliferation detection technology (\$160.0M);
 - nonproliferation technical analysis (\$13.0M);
 - proliferation country analysis (\$4.0M);
 - export control (\$17.0M); and
 - international safeguards (\$28.4M)
- In each of these areas, not only will DOE's traditional technical support activities related to nuclear weapons

proliferation be increased, but they will be expanded to include other weapons of mass destruction (i.e., chemical and biological weapons) and the means to deliver them.

- The focus of DOE's efforts will be to utilize the technology and R&D base of its national laboratories to provide tools and technical assistance needed by other U.S. departments and agencies, as well as international agencies, to enhance their efforts to stem proliferation. Thus, the DOE program will complement the efforts of other organizations in implementing the President's initiative, and is intended to support those efforts.
- In addition, the program includes funding (\$5.0M) to support DOE laboratory participation in cooperative efforts with their Commonwealth of Independent States (CIS) counterparts that are aimed at reducing the 'brain drain' of CIS weapons scientists and engineers to proliferant states.

d. President Bush's Nonproliferation Initiative: Background on DOE Support, September 14, 1992

DOE Support of the President's Nonproliferation Initiative				
	FY92 [\$ million]	Current FY93* [\$ million]	Redirected FY92** [\$ million]	Total FY93 [\$ million]
Proliferation Detection Technology	21.0	50.0	110.0	160.0
Nonproliferation Technical Analysis	0.5	12.0	1.0	13.0
Proliferation Country Analysis	0.5	1.0	3.0	4.0
Laboratory-to-Laboratory Cooperation	1.5	3.0	2.0	5.0
Export Controls	1.0	1.0	16.0	17.0
International Safeguards	5.3	5.4	23.0	28.4
Total	29.8	61.4	166.0	227.4
* Funding requested in DOE's FY 93 budget submission				
** Additional funding from a redirection of \$166M from DOE's FY 93 NPR program budget request to nonproliferation related programs.				

e. Extracts from Statement by Director General Hans Blix, to the Thirty-Sixth Session of the General Conference of the International Atomic Energy Agency, 21 September 1992

Introduction

...The creation of the IAEA in 1957 was an integral part of the efforts to realize the Atoms for Peace policy and to meet the dual challenge of the atom.

The Agency's role to 'promote' nuclear energy or – to use the terms of the Statute – to 'accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world' is sometimes criticized. It has been suggested that, whatever legitimate transfers of technology there might be, they could be taken over by other United Nations bodies, confining the Agency to what are termed 'regulatory' functions – specifically nuclear safety and safeguards. I submit that such surgery on the functions of the Agency would be unwise. The Agency is there to serve all its Members and many of these see its greatest value precisely in 'promotional' activities, notably in the transfer of technology. Indeed, discussions and resolutions of the General Conference demonstrate convincingly that

support for the Agency rests on the maintenance of an appropriate balance of activities.

This is not, however, to suggest that the status quo is sacred and immutable. After 35 years of operation it is by no means unreasonable to examine whether the Agency's programme mix responds to present priority interests of Members and – if need be – to adjust it to new circumstances. An international organization is a living thing that must adapt to meet the challenges of a changing world.

Thirty five years ago, governments' involvement in the nuclear field was mainly in research. Today governments have many other interests in the nuclear sphere. There is a large and mature nuclear power industry producing some 17% of the world's electricity. There are major industrial suppliers building nuclear power plants and other nuclear equipment, and there are nuclear techniques routinely applied on a large scale in medicine, agriculture, industry. The Agency must be available as an instrument which Members can employ to respond flexibly to emerging needs in a constantly changing world. It is easy to see that the last 12 months have brought many changes which impact upon and may call for responses through the Agency.

The agreements on rapid reduction in the nuclear arsenals of the US and Russia, and the withdrawal of tactical nuclear weapons help promote horizontal non-proliferation. However, as security problems recede between the declared nuclear-weapon States, regional security problems – including nuclear-related ones – continue and need to be addressed. The revelations by Agency inspections in Iraq under Security Council Resolution 687 have prompted not only a decision by the Council about the neutralization of a clandestine nuclear weapons development programme but also new thinking and action about safeguards verification.

The emergence on the territory of the former Soviet Union of a number of States joining or about to join the NPT as non-nuclear-weapon States drastically expands the area of non-proliferation – and the obligations of the Agency in the field of safeguards. The same emancipation combined with changes in the political and economic systems lead to the recognition of urgent nuclear safety problems which must be addressed. Here, too, the Agency and member governments are facing new challenges. The cases of trafficking in nuclear material also place new demands of alertness on the IAEA....

I would submit that the IAEA has shown itself to be a viable and versatile instrument. We have seen this demonstrated at the time of the energy crisis, the Chernobyl crisis, the continuing environmental crisis and the Iraqi crisis. The Agency must continue to be ready for new challenges. And it must not be allowed to become paralysed by financial crisis....

... some areas which governments may wish to examine: ...

- The way in which nuclear materials recovered from dismantled weapons is used, is of interest not only to weapon States. The entire international community may wish to feel confident – through international verification – about the peaceful use or storage of this material. Is this a role that the Agency should be asked to fulfil?
- The stocks of plutonium will increase both from the dismantling of weapons and from the reprocessing of spent nuclear fuel. Should new international measures be taken to ensure and verify the peaceful use or storage of this material? Should 'international plutonium storage' again be on the agenda?
- In a world of accelerated nuclear disarmament and of non-proliferation, do governments wish to examine the question of verified restrictions on the production of weapons-usable materials? ...

....As an introduction to your deliberations let me present an overview of some of the activities of the Agency...

Transfer of Technology and Technical Co-operation

First, a general precondition for all responsible transfer of nuclear technology is that there should be adequate safety, proper radiation protection and proper waste management....

Second, human resource development remains a major aim of the TC [Technical Co-operation] programme and a necessity for

technology transfer. This is particularly true in countries where nuclear technology is still in the early stages....

Third, the introduction of a significant level of nuclear technology into industries in Asian countries with IAEA and UNDP assistance and extrabudgetary resources has been very successful. A Regional Co-operation Agreement (RCA) project on industrial applications has helped convince emerging industries that applied nuclear technology could lead to industrial and commercial advances....

Fourth, irradiation of medical equipment for sterilization is already broadly practised....

Fifth, there is increasing interest in Agency assistance in the use of nuclear techniques for environmental monitoring purposes, an area in which the IAEA has much experience and capability....the Agency is the only body in the UN family to have a Marine Environment Laboratory, and its services are increasingly being used....

Sixth, it should also be mentioned in this context that the Agency is giving increased assistance to Member States in Eastern Europe, which are operating WWER-type reactors to upgrade safety in plant management and in radioactive waste management.... extrabudgetary resources have been forthcoming for this purpose so that the bulk of these new safety activities can continue to be met without drawing on resources needed for developing countries in other continents.

Seventh, for the pursuit of activities such as these the financial health of the Agency's Technical Assistance and Co-operation Fund is crucial. The total value of the TC programme delivered in 1991 amounted to \$43 million, having doubled in the last decade....

Lastly,...there are programmes for the transfer of technology partly or wholly outside the TC framework which are of direct importance to members in the developing world. An example is the successful screwworm eradication campaign in Libya, which was financed by extrabudgetary contributions. It has been calculated that the benefit to cost ratio of this project was 50 to 1. Another example is the project examining the use of nuclear reactors for the desalination of water. In all these subjects there is very substantial interest among governments....

The increasing shortages of fresh water in many areas, not least on the Southern and Eastern shores of the Mediterranean, mean that attention will continue to be directed to desalination by nuclear power.

Nuclear Power

....There is ... an awareness increasing that nuclear energy, though not a panacea, is one of the few options at the world's disposal for expanding energy production without significantly increasing CO₂ emissions. Nuclear power, alone, cannot solve the CO₂ problem, but the CO₂ problem cannot be solved without nuclear power.

For a rational discussion of the world's energy options, comparisons of the economics, health and environmental consequences of different energy sources will be important....the Agency is seeking to stimulate a joint project on this subject involving a number of international organizations....

While the environmental consequences of our energy/electricity sources are increasing in importance, the question of cost remains crucial. Oil is not expected to be economically attractive as a fuel for electricity generation. In contrast, gas is now being used increasingly, and its attraction seems to lie in its current capital cost advantage over oil and its environmental advantage over both oil and coal. However, a question mark hangs over future gas prices. Coal remains generally a competitive fuel for electricity generation and supplies are ample. There is an increasing concern, however, about the extra CO₂ emissions which it brings.

Nuclear power will remain costly in the capital intensive construction phase. This characteristic and the fact that it is technologically very demanding will make it less attractive to many capital-weak developing countries. The world's ample uranium resources and their geographical spread are likely to make this fuel attractively priced and easily available, even with a much larger number of nuclear power plants. Moreover, as

nuclear power is a relatively young technology, it may be expected that many cost-saving features and designs are yet to come which will reduce the cost of construction and more than offset the costs which may be incurred for extra safety devices. It can also be assumed that the regulatory process – which in some countries has led to prolonged and costly construction – will be streamlined. A revival of the nuclear option in many industrialised countries where it is now dormant would render less problematic an increased use of fossil fuels by developing countries. However, sight must not be lost of the need for simpler to operate, medium-sized nuclear power reactors for some developing countries – not least for the electricity needs of the growing number of huge cities in these countries.

The nuclear option therefore remains important for the future.

Nuclear Safety

Although nuclear safety has always been a part of the Agency's mandate, our programme in this area has grown sharply because so many of the actions which our member governments see as necessary in the area of safety are international in scope or character.

'How safe is safe enough' is not a technical question but a political one. The public answers it through movements, political parties and representative governments and the answers are influenced by people's perceived experience and feelings, opinion-formers, and political competition. The technical data which expert bodies can contribute are by no means irrelevant to this process, but they are only a part of the input.

There is no single answer to this question. It varies from country to country and from time to time, but if one were to dare state some common line it would probably be that the level of nuclear safety must be such that no significant radiological releases occur to the biosphere. If some releases occur or appear to occur or nearly occur, then nuclear activities in general are not deemed safe enough and calls come for freezes and phase-outs of nuclear power.

The achievement of a desired higher level of safety ... is complicated by the fact that the public is inclined to base its judgement of nuclear safety on worldwide performance. Thus, the weakest performance – wherever it is – affects the judgement. This is really the driving force behind the accelerated efforts that have been made in the last decade to advance from an international exchange of safety experience and compilations and codes of good practices to what is termed an 'international nuclear safety culture' from which no country or nuclear activity will be exempted. We see this most clearly illustrated in the efforts now being deployed to strengthen nuclear safety in Eastern and Central Europe. Its level must be brought to a common international standard. However, the increasing demand for minimum safety norms binding for all has to be reconciled with the diversity of national legal systems and local conditions. Even more important, there is the need to ensure that national authorities remain fully responsible for safety....

A comprehensive and complicated effort is now underway regarding safety in all types of power reactors in the former Soviet Union and in Eastern and Central Europe. The awareness has grown in these countries and outside them that these reactors and their operation have certain deficiencies, some being design deficiencies, some operational deficiencies, and some manufacturing deficiencies. The shortcomings vary with the type of reactor, its age or generation and the country it operates in.

Judgements have to be made as to how much backfitting can be made economically and when and at what stage the phasing out of some reactors may be feasible. As nuclear-generated electricity constitutes 12% of overall Russian electricity production and is up to 60% in some regions like the Kola peninsula, the question of phasing out is not an easy one. It seems that no more plants of the RBMK type will be built, but it is not equally clear how long this type will remain in operation – with added safety features.

While a major interest exists in many industrialized countries in mounting an assistance effort, we must not ignore the fact that the most knowledgeable expertise on the types of nuclear power

plants I am discussing is to be found in the countries which designed and operate these reactors. The effort must be one of co-operation in common interest and recognizing the economically precarious situation.

The international effort is being mounted largely outside the mechanisms for intergovernmental co-operation which the IAEA offers. There is, above all, co-operation between Russia and other Eastern and Central European countries on the one side and individual industrialized countries or groups of them on the other. The chief mechanism created for co-ordination is through the so-called Group of 24, assisted by a Secretariat located in the CEC. The IAEA is invited to participate in this work with technical advice. It also provides its own co-operation assistance to the East and Central European countries, which is largely financed by extrabudgetary contributions and which aims, for instance, at providing a safety review of the RBMK type of reactor. Part of the Agency's contribution to the diagnostic phase will be in the shape of expert missions to individual reactors.

A question of particular importance is assistance in creating or strengthening regulatory authorities. In view of the existence of IAEA guidelines relating to the work of such authorities, it is desirable that this assistance take place in a manner that pays full attention to the existing guidelines. The best way to achieve this would be through full participation of Agency representatives in the work.

Spent Nuclear Fuel and Waste

The question 'how safe is safe enough' applies also to safety of nuclear waste. Again the answer is political rather than technical and it is given in the last instance by the public. In a way this question is more difficult than the question of safety in nuclear power plants, because while in the latter tangible improvements can be achieved, especially in some geographical areas, the technical experts generally will say that the solutions now available for the long-term disposal of high-level radioactive waste are fully adequate and that it is the public's resistance to the use of almost any site for waste disposal that is the major problem....

There are, however, some things that can and should be done. At the level of individual States any past disposal of nuclear waste which was not done at a responsible safety level must be cleaned up. This applies in particular to waste from military nuclear activities in nuclear-weapon States. To the public of today and to succeeding generations it does not really matter whether waste results from military or peaceful nuclear activities....

International or regional efforts must also be made to promote the safe disposal of low and intermediate level radioactive wastes, eg from medical activities. These are now sometimes inadequately provided for....

The Case of Iraq

The revelation through IAEA inspection that Iraq - a part to the NPT and to a full-scope safeguards agreement - was engaged in a major, secret programme to enrich uranium and to design a nuclear weapon and that Iraq had disregarded the safeguards agreement with the Agency by successfully withholding information which should have been declared has led the Agency to a major effort to strengthen the safeguards system.

Under Resolutions 687, 707 and 715 the IAEA was given three very substantial assignments by the Security Council as part of the United Nations security system:

- The charting of Iraq's present and past nuclear activities;
- The removal, destruction or rendering harmless, as appropriate, of materials, equipment and facilities used by Iraq in activities prohibited under Resolution 687; and
- The preparation and implementation of a long-term monitoring plan to verify Iraq's compliance with the requirements of relevant Security Council resolutions.

Fourteen IAEA on-site inspections have been conducted in Iraq since May 1991, with the assistance and co-operation of the Special Commission of the United Nations. More than 2700 inspection days have been carried out in Iraq. Sixty-five sites have been inspected, most of them several times, and many hundred samples of different nature, collected by the Agency's

inspectors in Iraq, have been analysed by the Agency Laboratory in Seibersdorf. Over fifty thousand pages of documents in Arabic, taken by inspectors in Iraq, have been scrutinized and have provided confirmation of the dimensions and objectives of the Iraqi clandestine nuclear programme revealed by on-site inspections.

The picture emerging is that of a widely-based, well-funded, multi-pronged approach to the production of highly enriched uranium, combined with a parallel programme to assess the requirements and make the necessary preparations for designing and manufacturing a nuclear weapon. This comprehensive project was secret. Procurement from abroad of sensitive materials, equipment and technology was made through an elaborate network of Iraqi-owned front companies in Europe and overseas. In addition to Tuwaitha, the major Iraqi nuclear research centre, production facilities had been established at Al Qaim (production of uranium concentrate), Al Jesira (uranium purification and uranium compounds), Tarmiya and Ash Sharqat (electromagnetic enrichment of uranium isotopes), the Al Furat project site (centrifuge manufacturing) and Al Atheer-Hatteen, identified by the Agency as the intended site for weaponization activities.

The process of removal, destruction or rendering harmless of Iraqi nuclear-weapon capabilities under resolution 687 started in October last year and has continued throughout recent months. All of the highly enriched uranium contained in fresh reactor fuel has been removed from Iraq, processed and diluted to less than 20% in U-235. Negotiations are taking place about the removal of additional quantities of HEU contained in irradiated fuel. All identified calutron and centrifuge components and large stocks of materials intended for the manufacturing of centrifuges have been destroyed. Key buildings and heavy equipment of the sites of Al Atheer-Hatteen, Tarmiya and Ash Sharqat, linked to the weapon-related programme, have been destroyed.

On 11 October 1991 the Security Council adopted Resolution 715 approving inter alia the plan submitted by the Agency for future ongoing monitoring and verification of Iraq's compliance with paragraph 12 of Resolution 687 and with the requirements of paragraphs 3 and 5 of Resolution 707. In June 1992 Iraqi authorities provided the Agency with what they consider the full, final and complete description of their nuclear programme and promised to update and complete a detailed list of facilities and equipment related to their nuclear programme. This will be of use to the Agency in completing its preparations for the full implementation of the long-term plan.

The Agency's work under the three parts of the Security Council mandate is therefore continuing. Through our inspections and the arduous work by our Action Team, under the skilled, persevering and hard-working leadership of Professor Zifferero, a relatively consistent picture of Iraq's clandestine nuclear programme is emerging. However, details of varying degrees of importance are still missing and I trust will be added, eg full information about procurement and technical expert assistance.

The degree of Iraqi co-operation has varied - from zero or worse to helpful information and co-operation in the destruction of important facilities. It is a sad fact that while it takes time to build up credibility, it can be lost overnight. Thus, although much information given by Iraq has proved correct and useful, it is not relied upon without independent verification. Even though at present there are diminishing returns of new data through inspections and the Iraqi counterparts assure us that no more is to be found, we cannot exclude the possibility that some new information will prompt further investigative inspections side by side with our long-term monitoring which must given the fullest guarantees that no clandestine nuclear activities will be revived.

The Strengthening of Safeguards

... The case of Iraq demonstrated that nuclear activities which should have been declared but were kept secret, could go undetected by the safeguards system as it was designed. It was concluded that the Agency needs other sources of information notably in case the information required from a State is withheld and that in certain circumstances the Agency may need to perform special inspections at non-declared sites.

I am pleased to report that over the past year the Board has taken several steps to strengthen the information basis of the safeguards system and affirmed the Agency's right to conduct special inspections under the terms of comprehensive safeguards agreements. Should a Member State having such an agreement deny such a request, the Director General may submit the matter to the Board. If the Board so decided, the matter could go to the Security Council. The Board also decided that the requirement in safeguards agreements to provide design information on nuclear facilities 'as early as possible' includes the requirement that preliminary information shall be provided as soon as a decision has been taken to construct a new facility or to modify an existing facility. Member States have been informed of the Board's decision and existing subsidiary arrangements are currently being renegotiated to bring them in line with this decision.

The Board has also considered the question of establishing a universal reporting system on the export and import of nuclear material and relevant equipment and certain non-nuclear material and it will continue its examination of that question. For the time being, the Board has indicated that States which are in a position to do so may start reporting to the Agency on these items on a voluntary basis. The Secretariat has informed all Member States of that decision and is in the process of setting up the system.

The combination of measures to strengthen the information basis of the safeguards system and its inspection range should considerably reduce the risk of any undeclared activity that should have been declared going undetected. This capacity of the Agency will be of increasing importance in a world where accelerated nuclear disarmament and extended adherence to non-proliferation commitments call for highly reliable safeguards.

It is of course open to States to practise greater nuclear transparency than expressly required under safeguards agreements. These agreements establish a minimum, not a maximum, and it may well be in the interest of many States to practise a much greater degree of openness about their nuclear programmes. In the past year I have received with appreciation commitments by several States to open any site and any installation to Agency visits - regardless of whether these sites and installations are covered by safeguards. In some instances the Agency has made use of such commitments. For confidence building they are of high value - provided that they are fully accepted in practice....

Efforts are underway to make safeguards not only more effective but also more cost-effective. This is by no means a new idea. Over the past few years the Secretariat has been able to cut safeguards costs significantly. Some new savings have been achieved this year and have had an impact on the draft budget before you for 1993. Some others have been very actively discussed and will be the subject of close examination by outside experts in the Standing Advisory Group on Safeguards Implementation.

Safeguards Implementation

Two important new safeguards agreements are now being implemented. Following the agreement of 16 September 1991 with South Africa and the submission of its initial report on 30 September 1991, the Secretariat has carried out a total of 77 inspections of South African facilities and locations outside declared facilities. We have carried out an extensive audit of historical operating and accounting records of selected facilities and have performed a large number of destructive and non-destructive analyses. In addition, significant progress has been made in the negotiation of the subsidiary arrangements to the Agreement.

There is an inherent difficulty in verifying the completeness of an original inventory in a country in which a substantial nuclear programme has been going on for a long time. It requires much effort both by the inspectorate and much openness and co-operation by the inspected party - extending beyond declared facilities and current records. Even so, as the Agency is to report what it has actually seen and verified it is hard, even in the best case, to come to any better conclusion than that after intense

analysis and inspection, no evidence has been found suggesting that the original inventory is not complete....

Only a few months have passed since the Democratic People's Republic of Korea submitted its initial report on nuclear material subject to safeguards on 4 May 1992, but here too, much verification work has already been achieved through three ad hoc inspections.... Work on subsidiary arrangements and facility attachments has also progressed quickly with good co-operation from DPRK....

Like South Africa, DPRK has offered the Agency some original operating records and offered Agency officials to visit any place and facility regardless of whether they are on the original inventory. This commitment is helpful and is being made use of.

Safeguards and Non-Proliferation

...Through the agreement between Argentina and Brazil on a joint accounting and control system and a full-scope safeguards agreement with the IAEA the prospect for bringing the Tlatelolco Treaty fully into force increased greatly. Recently, a number of amendments to Articles of the Tlatelolco Treaty were unanimously adopted at a conference in Mexico. These amendments reinforce the role of the IAEA. It is hoped that the Treaty, with these amendments, can come fully into force for all countries in the region at an early date.

Safeguards in the Middle East

As regards safeguards in the Middle East, last year's General Conference resolution requested the Director General 'to take such measures as are necessary to facilitate an early application of full-scope Agency safeguards to all nuclear activities in the Middle East, and in particular to prepare a model agreement taking into account the views of the States in the region, as a necessary step towards the creation of a nuclear-weapon-free zone'.

As you can see from the report contained in document GC(XXXVI)/1019, I have continued my consultations with States of the region. I intend to intensify these efforts. The report also contains an inventory of undertakings that could be incorporated in a nuclear-weapon-free zone in the Middle East and a number of verification modalities that could be applied. I intend to seek the views of the States of the region on these undertakings and modalities. A model safeguards verification agreement can be drafted when the States concerned have formed views on the substantive obligations which are to be verified. As many modalities can be contemplated and the Agency's experience is extensive, the Agency could offer seminars in which interested States may share the Agency's wide experience in this area.

Extension of NPT

In 1995 the extension of the NPT is to be considered. If present trends in nuclear disarmament and non-proliferation commitments continue, the outlook will be for a successful conference. The IAEA is prepared to undertake such preparatory analytical work as governments request. A strengthened safeguards regime and effective channels for the transfer of nuclear techniques and know-how are contributions that the Agency must offer. An extension of the Treaty must be coupled with increased confidence that observance of the commitments entered into under the Treaty is being reliably verified....

f. Proposals for the Amendments of Articles, 14, 15, 16, 19 and 20 of the Treaty of Tlatelolco.

OPANAL Council — C/140, August 4, 1992

The Secretariat of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean in August 3, 1992 received a request from the Secretary for Foreign Affairs of Mexico, 'to convene, in accordance with the procedures established by the Treaty of Tlatelolco in its Rules of Procedure to an Extraordinary Session of the General Conference to study the proposals of amendments to Articles 14, 15, 16, 19 and 20, herewith enclosed'.

'The Government of Mexico as State Party of said international instrument submits such proposals which are the result of negotiations with the Governments of Argentina, Brazil and Chile who have agreed to accept the full and immediate entry into force of the Treaty for them, once such proposals be favorable

considered by the Extraordinary Session of the General Conference'.

'The Government of Mexico is convinced that such proposals do not essentially modify the spirit of the Treaty of Tlatelolco and they allow a step forward in the common end to achieve the full enforcement of it'.

'The Secretary for Foreign Affairs avails itself of the opportunity to reiterate to the General Secretariat of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean the assurances of its highest and most distinguished considerations'.

The Secretariat of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean encloses herewith the mentioned proposals for information of Member States.

Annex: Proposals of Amendment to the Treaty of Tlatelolco Presented by the Governments of Argentina, Brazil, Chile and Mexico

Article 14

[Paragraph 1 remains unchanged – ed.]

2. The Parties to the Treaty will simultaneously forward to the Agency a copy of the reports submitted to the International Atomic Energy Agency with regard to matters that are the subject of this Treaty that are relevant to the work of the Agency.
3. The information furnished by the Contracting Parties to the Treaty cannot be, totally or partially, disclosed or transmitted to the third parties, by the destinatories of the reports, except when the Contracting Parties confer their express consent.

Article 15

1. At the request of any of the Contracting Parties and with the authorization of the Council, the Secretary General may request any of the Contracting Parties to provide the Agency with complementary or supplementary information regarding any extraordinary event or circumstance connected with compliance with this Treaty, explaining his reasons. The Contracting Parties to the Treaty undertake to cooperate promptly and fully with the Secretary General.
2. The Secretary General shall immediately inform the Council and the Contracting Parties of such requests and the respective replies.

Article 16

1. The International Atomic Energy Agency has the power of carrying out special inspections subject to Article 12 and to the agreements referred to in Article 13 of this Treaty.
2. At the request of any of the Contracting Parties in accordance with the procedures established in Article 15 of this Treaty, the Council shall submit for the consideration of the International Atomic Energy Agency a request that the necessary mechanisms be put into operation to carry out a special inspection.
3. The Secretary General shall request the Director General of the IAEA to opportunely transmit to him the information forwarded for the knowledge of the Board of Governors of the IAEA with regard to the conclusion of the special inspection. The Secretary General will promptly make this information known to the Council.
4. The Council, through the Secretary General, will transmit said information to all the Contracting Parties to the Treaty.

Article 19

The Agency may conclude such agreements with the International Atomic Energy Agency as are authorized by the General Conference and as it considers likely to facilitate the efficient operation of the Control System established in the present Treaty.

Article 20

1. The Agency may also enter into relations with any international organization or body, specially any which may be established in the future, to supervise disarmament or measures for the control of armaments in any part of the world.
2. The Contracting Parties may, if they see fit, request the advice of the Inter-American Nuclear Energy Commission on all technical matters connected with the application of this Treaty with which the Commission is competent to deal under its Statute.

g. Statement by President Bush on the Purchase of Highly-Enriched Uranium from the Russian Federation

Over the past year the United States and the former Soviet Union have agreed to cut their strategic nuclear arsenals by two-thirds and to eliminate most of their tactical nuclear weapons, including all ground-launched systems. As a result of these dramatic reductions, thousands of nuclear warheads are being dismantled in Russia and the United States. The United States and Russia are cooperating closely to help ensure the safe and secure transport, storage and dismantlement of former Soviet nuclear weapons.

I am pleased to announce that the Russian Federation and the United States have now also initialed an agreement to ensure that highly-enriched uranium from dismantled nuclear weapons will be used only for peaceful purposes. Our two governments have initialed an agreement, which we expect to sign quickly, providing for the conversion of this material into civilian reactor fuel. We have also agreed to establish measures to ensure that the nonproliferation, physical security, material accounting and control, and environmental requirements covering this material are fully met.

Under the agreement, the United States and Russia would seek within the next twelve months to conclude an implementing contract, establishing the terms of the purchase of weapons-grade uranium by the U.S. Department of Energy and the dilution of that material to reactor-grade uranium for sale as commercial reactor fuel. The contract would also provide for the participation of the U.S. private sector and the use by the Russian Federation of a portion of the proceeds to increase the safety of nuclear reactors in the former Soviet Union.

Abroad, this agreement will help ensure that nuclear-weapons grade material does not fall into the wrong hands, while providing funds to promote economic reforms and the transition to a market-based economy. At home, this agreement will secure long-term supplies of less expensive fuel for U.S. nuclear power stations to the benefit of American consumers, with no adverse impact on American jobs. Thus, this U.S.-Russian agreement illustrates how foreign policy accomplishments can promote our domestic economic well-being while making the world a safer place to live.

The Programme for Promoting Nuclear Non-Proliferation and the Newsbrief

The **Newsbrief** is part of the outreach effort which constitutes a major element of the Programme for Promoting Nuclear Non-Proliferation (PPNN). It is addressed to an audience interested in the subject of nuclear (non-)proliferation, to inform and help them alert their respective environments to the issue of nuclear non-proliferation.

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