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PROGRAMME FOR PROMOTING NUCLEAR NON-PROLIFERATION

Number 16 NEWSBRIEF Winter 1991/92

Editorial note

This issue of the **Newsbrief** refers to developments related to the non-proliferation of nuclear weapons that have taken place, or have become known, during the last three months of 1991.

The quarterly **Newsbrief** is a part of the activities of the Programme for Promoting Nuclear Non-Proliferation (PPNN) that aim toward deterring the spread of nuclear-weapon capabilities. PPNN's **Newsbrief** seeks to present an accurate and balanced picture of current events relating to the spread of nuclear-weapon capabilities to additional states. At the same time it seeks to present information on moves that may inhibit that spread and on developments in international relations that tend to constrain it. The **Newsbrief** also refers to relevant developments relating to the peaceful uses of nuclear energy.

Subheadings used in the **Newsbrief** are meant to facilitate presentation; in the interest of clarity, related subjects may be treated together under a single heading. Thus, the heading 'Events in Nuclear-Weapon States' covers current developments in those states, such as matters relating to the development and production of nuclear weapons, the problems of disposing of waste and pollution arising from the nuclear arms industry and now also the question of control of nuclear weapons, installations, stockpiles and technology in the former USSR, following its political fragmentation. 'Developments of Concern to Horizontal Proliferation' covers a range of occurrences connected with the spread of nuclear-weapon capabilities. As in previous issues of the **Newsbrief**, disclosures about nuclear-weapon programmes in Iraq are presented under that heading alongside reports on actions carried out under the aegis of the UN Security Council to neutralize them. The same heading also covers events in the Korean Peninsula, such as the nuclear activities of the Democratic People's Republic of Korea; attitudes of other states in the region; proposals for a nuclear-weapon-free zone; the negotiations between the two Koreas and the withdrawal of U.S. nuclear weapons from the territory of the Republic of Korea.

PPNN's **Newsbriefs** are based on publicly available items derived from reputable and reliable sources. 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.

Readers who wish to comment on the way in which an item is presented in the **Newsbrief** or to draw attention to information they think should be included are invited to send their remarks to the editor, for possible publication.

The limited size of the **Newsbrief** makes it necessary to choose among items of information and to present them in condensed form. Much of the present issue is taken up by current events in the former Soviet Union, the Middle East and East Asia that have a bearing on nuclear non-proliferation. As a result, somewhat less space than usual can be given to such topics as the peaceful uses of nuclear energy and international cooperation in that area.

Unless otherwise stated, all sources referred to date from 1991.

I. Topical Developments

a. Background

In the past several months, the nuclear non-proliferation scene was affected by some extraordinarily important political developments. The scene is still changing. When this issue of the **Newsbrief** appears, parts of it will probably already be overtaken by events. In order to keep the **Newsbrief** up to date on the newest information, publication would have to be held up indefinitely. Yet this would still be no guarantee that it would not again be outdated once it came out. The date of 31 December 1991 is therefore kept as the last day to be covered in this issue.

Contents

Last summer's START agreement, reducing the strategic arsenals of the major powers by about one third, was followed by unilateral moves from both sides to cut their tactical nuclear forces. In line with American plans to remove battlefield nuclear weapons from Europe, NATO has decided to cut the number of air-launched tactical nuclear weapons by half.

In recent months, as the dissolution of the USSR proceeded, apprehension grew that central control over nuclear weapons and warheads, production plants and nuclear material stockpiles would be weakened or be lost. Assurances from leaders of newly independent republics about their intentions to adopt non-nuclear-weapon status, and the assumption of unified control over the former Soviet nuclear arsenals by the President of the Russian Federation, as the head of the single nuclear-weapon state in the new Commonwealth of Independent States, has gone some way to allaying this concern. The consequences of the replacement of the Soviet Union by the new Commonwealth are not at all clear. The declarations adopted in Alma-Ata on 22 December by the leaders of its constituent republics confirm that the Russian Federation will assume central control of all strategic and tactical weapons of the former USSR, and Byelorussia and Ukraine plan to accede to the NPT as non-nuclear-weapon states. Kazakhstan appears determined to retain strategic weapons on its territory, to be dismantled there, rather than removed to Russia. Destruction of tactical weapons is expected to take ten years, even with help from the United States.

Another troubling development in the former USSR is the emergence of private initiatives to export nuclear equipment, technology, and explosive services. It is not certain that such exports will meet agreed guidelines on nuclear trade. From a non-proliferation point of view, the reported availability of many unemployed nuclear-weapon specialists for work abroad also causes concern.

China has said it will accede to the NPT early in 1992, but there are still questions about the depth of its commitment to the cause of non-proliferation. These are fed by actions such as the supply of a natural-uranium reactor to Algeria and calutron technology to Iran, and its hesitation to persuade North Korea to conclude a safeguards agreement with the IAEA pursuant to the Treaty.

North Korea is said to be embarked on acquiring a plutonium-production capability; it has an operating reactor producing substantive amounts of plutonium and a reprocessing plant appears to be near completion. Although a party to the NPT, North Korea has consistently refused the IAEA access to these facilities. Latest reports indicate that negotiations between North and South have led to a reciprocal undertaking not to reprocess irradiated nuclear material, and the confirmation of the North's commitment to sign its safeguards agreement in the near future.

After eight inspections of Iraq's nuclear installations, pursuant to the UN armistice conditions and its safeguards agreement with the IAEA, the full extent of Iraq's nuclear-weapon programme may still not be known. The highly enriched uranium fuel Iraq was known to have is being removed. The UN Security Council has adopted a plan for dismantling Iraq's nuclear facilities and for long-term measures to keep it from resuming work on nuclear weapons.

The process of tightening implementation of the IAEA's safeguards system, as announced by its Director General at last September's General Conference, has begun. In early December, the Agency's Board of Governors had a first discussion on the issue of special inspections at sites where undeclared nuclear activities are thought to be going on, and on more stringent requirements for the submission of design information.

The financial crisis of the IAEA — caused by the inability of some states to pay their contributions and the delay of others in doing so — forces the Agency to reduce its programme activities by 13%. The lack of funds also affects the safeguards programme at a time when it faces significant new tasks, such as the application of full-scope safeguards in Argentina, Brazil and South Africa.

The Presidents of Argentina and Brazil have signed the safeguards agreement between their respective countries, the joint Brazilian/Argentine Agency for Accounting and Control of Nuclear Material, and the IAEA.

Safeguards are now applied to all nuclear activities of South Africa pursuant to the NPT. There is evidence that South Africa has enriched uranium to weapon grade; it had said it did not do so.

India is said to consider participating in the conference Pakistan has proposed holding, on a South Asian nuclear-weapon free zone.

b. NPT Events

- **China**'s National People's Congress, on 29th December, gave approval for that country's accession to the NPT. The delay in Congressional approval was first seen as a reaction to the turmoil in the USSR, following the coup d'etat of last August. Later, the reason was said to be the Congress' wish to await further progress in arms negotiations between the US and the USSR. During his visit to Beijing in November, US Secretary of State James Baker was told that the Government would ask the Congress to complete the ratification procedure before the end of the year and that accession formalities, including the Presidential signature, would be completed within three months thereafter (**International Herald Tribune**, October 23 and December 30; **Kyodo** [Tokyo], 28 August and 31 October, in JPRS-TND- 91-015, 27 September, and -91-017, 7 November; **Wall Street Journal**, November 18; **European Wireless File - USIA**, November 19).

c. Other Non-Proliferation Developments

- **Algeria** has completed negotiations with the IAEA on a safeguards agreement for the 15 MW(th) research reactor being constructed with help from **China**; the agreement will be submitted to the Agency's Board of Governors for its meeting in February, 1992. There was concern among US defence authorities that the reactor might be intended for an Algerian weapons programme (**NuclearFuel** October 14; **The New York Times**, November 14; **Nucleonics Week**, December 12).

- **Argentina** and **Brazil**, the joint **Agency for Accounting and Control of Nuclear Material** that was created pursuant to the agreement of 18 July 1991 at Guadalahara, Mexico, and the **IAEA** have concluded an

agreement providing for full-scope safeguards in those countries. The agreement, which is compatible with the provisions of the Tlatelolco Treaty, was signed in Vienna on 13 December by Presidents Collor de Mello and Menem, and Director General Hans Blix. **Chile** and **Uruguay** have expressed an interest in joining. There are reports about domestic opposition in Brazil, especially among the military, which may delay parliamentary procedures to bring the agreement into force. (**Nucleonics Week**, December 12; **Die Presse** [Vienna] 13 December; **The New York Times**, December 13; **The International Herald Tribune**, December 14/15).

- On 17 and 18 October, representatives of **China, France, USSR, UK** and **US** met in London to continue their review of issues related to conventional arms transfers and nuclear non-proliferation following their meeting in July [see also Newsbrief 15]. An extract from the text of the communique from this meeting is reproduced in Section VI.

- The end of the cold war may have created conditions for an improvement of relations between **India** and the **US**. While, on visits to Islamabad and New Delhi, US Under-Secretary of State Bartholomew reportedly failed to persuade Pakistan and India to join the NPT. India said afterwards that it was ready to take part in a conference with Pakistan, China, the Soviet Union and the US about the establishment of a nuclear-weapon-free zone in South Asia. At this year's General Assembly, after years of voting against the traditional Pakistani resolution calling for a South Asian nuclear-weapon-free zone, the (still) Soviet delegation abstained on the matter. **China**'s President has expressed support for the establishment of a nuclear-weapon-free zone in the area; its Prime Minister discussed the issue during his December visit to New Delhi (**Xinhua** [Beijing] 25 October, in JPRS-TND-91-017, 7 November; **The Independent**, 16 and 25 November; **The Financial Times** and **The Toronto Globe & Mail**, November 25; **The New York Times**, December 12).

- **India** and **Pakistan** have promised to inform each other before the end of the present year about the location of their nuclear facilities, in line with their agreement of 31 December 1988 prohibiting them to destroy or damage each other's nuclear facilities. They have also discussed the possibility of 'capping' their nuclear programs and arranging reciprocal site visits (**Nucleonics Week**, November 7).

- **Switzerland** will henceforth require full-scope safeguards for all its nuclear exports. In the former **USSR**, the Ministry of Atomic Energy and Industry was reported to have decided that in future, nuclear exports would only be made to nations willing to submit to full-scope safe-guards, with India as the sole exception. Subsequently the Ministry of Foreign Affairs has denied this. Given the present disarray in the central administration, a decision is not expected soon (**Nucleonics Week**, October 24 and November 7 and 14).

d. Nuclear Disarmament

- Unilateral nuclear disarmament measures announced by the President of the **United States** in late September include destruction of all land-based tactical nuclear weapons (artillery shells and short-range missile warheads); the removal and partial destruction of the navy's tactical weapons; the stand-down from alert of the strategic bomber force; the removal of 450 single-warhead missiles from alert and the cancellation of US plans to develop new short-range air-to-surface missiles and produce mobile launchers for small ICBMs. In addition, Mr. Bush proposed banning all land-based multiple-warhead ICBMs and discussions on a limitation of non-nuclear anti-aircraft systems.

- In early October, the President of the **USSR** also announced the destruction of all land-based tactical weapons; the destruction of anti-aircraft missile warheads (which the USA does not possess); the removal and partial destruction of Soviet tactical nuclear naval weapons; the removal from alert of the strategic bomber force; the cancellation of programmes to develop new short-range air-to-surface missiles and small mobile ICBMs; a stop to the construction of mobile launchers and storage of rail-mobile missiles; and the removal from alert of 503 ICBMs, including 134 with multiple warheads. While the USA's move excluded submarine-launched ballistic missiles, the USSR's plans call for the removal of three submarines from service. Further, the USSR will cut the number of strategic warheads to 5,000 rather than the 6,000 foreseen in the START Treaty. The Soviet answer to the American proposals for bilateral disarmament measures includes early talks about a cut of offensive nuclear weapons by 50% from the START limits, rather than the US-proposed total ban on multiple warhead missiles; the creation of a joint space-based system to avert nuclear attack and talks on a cut-off of nuclear-material production. Initial reactions to these proposals within the USSR and the individual republics were positive. In response to questions that have arisen in the US and in NATO member states about how these cuts will be realized after the dissolution of the USSR, the leaders of the republics on whose territories strategic nuclear weapons are deployed, Byelorussia, Kazakhstan, the Russian Federation and Ukraine, have solemnly promised to carry them out.

- On 8 October, **NATO** announced that about half of the tactical air-launched weapons now in Europe would be withdrawn. The **USSR** subsequently announced it would do likewise. The **UK** has since undertaken to withdraw its nuclear-armed depth charges from naval ships and store them ashore for emergency use; it is proceeding with plans to modernize its deterrent force with four new submarines, carrying 16 Trident missiles with seven or eight warheads each. Talks are going on in NATO about the replacement of nuclear gravity bombs by newly developed tactical air-to-surface missiles (TASMs) -this is apparently resisted by **Germany** - and there are said to be members, notably **Belgium**, who wish to see all nuclear weapons removed from their territories. (**The International Herald Tribune**, October 1 and 7; **Jane's Defence Weekly**, 5 October; **The Economist**, October 5 and 12; **The New York Times**, October 6 and 9; **Financial Times**, October 7; **Newsweek**, October 7; **The Times** [London], October 7 and 9; **Daily Telegraph**, **The Guardian**, and **The Independent**, 9 October; **International Defense Review** [USA], October; **Defense News** October 21).

- The possibility that many ex-Soviet nuclear weapons will not be withdrawn to the territory of the **Russian Federation** but will be dismantled at their present staging areas may result in deeper cuts than previously agreed. **United States** Secretary of State James Baker has said that this could open the way to further reductions in Western arsenals; he is also quoted as saying that **Russia, France,** the **UK** and the **US** should keep some nuclear arms to maintain international stability (**Financial Times** and **International Herald Tribune,** December 20; **The New York Times,** 27 December).

- The ex-**USSR**'s call for a twelve-month testing moratorium has not found a positive response in the West. It is generally believed that the former Soviet Union would in any case now be unable to conduct nuclear tests. In November the President of the **Russian Federation** decreed a twelve-month moratorium on nuclear testing on Russian territory and ordered the Novaya Zemlya testing site closed. In August 1991, the Semipalatinsk testing range in Kazakhstan was closed; French sources have revealed that an earlier Soviet investigation had indicated an exceptionally high level of irradiation among people living nearby. It is said that some senior members of the **US** Administration, including national security advisor Brent Scowcroft, favour a test ban, but the Department of Defense is opposed. It is expected that further US tests will be limited to the ostensible purposes of improving the safety and maintaining the reliability of nuclear weapons. A test of a **United Kingdom** device was recently carried out in the Nevada desert (**The International Herald Tribune** and **The Times** [London], October 7; statement by Defense Secretary Cheney, **European Wireless File,** USIA October 31; **Nucleonics Week,** November 7; Lawrence Freedman, in **The Independent,** 13 November; **Jane's Defence Weekly,** 16 and 23 November and 7 December).

e. Nuclear Trade and International Cooperation

- **Czech and Slovak Federal Republic**'s Skoda and **Germany**'s Siemens are forming a joint venture partnership in nuclear, fossil and hydroelectric generating equipment. Skoda will have a 33%-share and Siemens' 67%, of which Framatone of **France** will take 10% (**Nucleonics Week,** December 5).

- **France**'s major utility company EDF has ordered nuclear fuel for its 1,300-MW PWR reactors in **Sweden** (**NuclearFuel,** October 14).

- **Hungary,** which had expected to ship the spent fuel from its Paks power station back to the **USSR** and now does not know if it will be able to do so in the future, is talking with seven Western companies about various long-term storage schemes. Takeback schemes were part also of Soviet supplies of reactors and fuel to **Bulgaria, Cuba, Czechoslovakia, Finland** and **Poland** (**NuclearFuel,** November 11).

- **Iran** has received an offer from **India** of a natural-uranium reactor, heavy-water moderated and possibly -cooled, with a reported power rating of 10-15 MW(th). **Cuba** and Iran have signed an agreement for exchange of information in nuclear technology. Iran is said to be interested in a resumption of nuclear cooperation with Western countries, particularly **Germany,** which has so far refused to allow Siemens to complete the Bushehr power station, on which an arbitration case is pending before the International Commerce Commission. There have been discussions with and within **Brazil** about the possible sale to Iran of German-supplied components of the Angra-III PWR station which was never completed. Brazil, however, is currently seeking to be removed from the US list of countries ineligible to receive sensitive technology; a deal like the one proposed is therefore not opportune now. **France** will pay Iran $1 billion to reimburse it for a loan made by the Shah in 1974, for construction of the Eurodif gaseous diffusion enrichment plant (**NuclearFuel,** November 25 and December 9, **Nucleonics Week** October 3 and 10, December 9 and January 2 [1992]; **Financial Times,** December 5). See also below: **i. Developments of Concern for Horizontal Proliferation: Iran**

- **Pakistan:** The decision of **France** to apply full-scope safeguards on all its nuclear exports will probably prevent it from providing a power station to Pakistan. Doubts about the likelihood of that deal had already arisen when **Germany** adopted its full-scope safeguards policy, since its principal nuclear supplier, Siemens, is associated with France's Framatome. **China** and Pakistan have signed a draft agreement for the supply of a 300-MW power plant, to be built at Chasma. (**Nucleonics Week,** October 3 and January 2 [1992]).

- In the **Republic of Korea,** a 700-MWe 'Candu'-type reactor supplied by **Canada** for the Wolsong power station and reportedly completed in 61 months, has been operating during 1990 at 99.1% of capacity. A second Candu has been ordered for completion by mid-1997, and Canada hopes to supply three more. An agreement on co-operation in the peaceful uses of nuclear energy between the **Republic of Korea** and the **United Kingdom,** which will clear the way for the reprocessing of Korean spent fuel in the UK, was signed on 2 December. Among other things, the agreement provides for the two-way transfer of nuclear material, equipment and technology in reactor-development, waste management, decommissioning and nuclear safety (**Globe & Mail** [Toronto], October 8; European Nuclear Society: **EnsNucNet,** No. 281, 2 December; **NuclearFuel,** December 9).

- **Romania,** whose 'Triga' research reactor was originally run on high-enriched uranium, which the **USA** no longer wishes to supply, will now get uranium enriched to 19.9%; the reactor is being converted to use low-enriched fuel (**NuclearFuel,** October 14).

- The (former) **USSR** is offering VVER-1000 power reactors for sale through the Moscow International Stock Exchange. Delivery time is 5-6 years. Reportedly, reactions were received from **China,** the **DPRK** (North Korea), **India** and **Iran** (**Nucleonics Week,** December 19).

- United States uranium producers claim that producers in the former **USSR** are illegally dumping uranium on the

American market. If this claim is found valid by the Commerce Department (the International Trade Commission did so on 18 December), the US Administration may have to impose trade sanctions on countries whose economies it is trying to bolster (**The Washington Post**, November 13; **Wall Street Journal**, December 2; **NuclearFuel**, November 25 and December 9 and 23).

f. IAEA Developments

1. General

- Mr. Mohamed M. El-Baradei (Egypt), former Director of the Agency's Legal Division, has become Director of the Division of External Relations, succeeding Mr. Michael Wilmshurst (UK) who has retired. Mr. El-Baradei's successor at the Legal Division is Mr. Willem W. Sturms (Netherlands) (**IAEA Press Release** PR 91/45, 8 November).

- The IAEA [which for six years has been operating with a zero-growth budget — Ed.] is facing a financial crisis as the result of the Soviet Union's inability to pay its $20-million contribution for 1991, non-payment by some developing countries and the fact that the US does not pay its annual contribution until October, when its fiscal year begins. Consequently, while demands on the IAEA are growing, especially in connection with safeguards, [implementation of the new agreement with Argentina, Brazil and the joint Agency for Accounting and Control of Nuclear Materials alone is expected to require an additional $ 400,000 in 1992 and considerably more in later years, and new safeguards methods must be developed to deal with complicated facilities like the South African enrichment plant — Ed.] it will face an overall shortfall of at least 13% and will have to reduce its approved programme activities by that level. The reductions will reportedly also affect the safeguards programme. In the view of the US administration, no additional funding is necessary; the IAEA should be able to carry out its growing safeguards and safety functions within present financial constraints by 'adjusting its priorities' and discontinuing 'less valuable efforts'. Press reports in December spoke of a postponement of the ninth safeguards inspection in Iraq, as a result of the Agency's cash crisis. In fact, inspections in Iraq carried out under Resolution 687 are paid for by the United Nations, which has meanwhile provided additional funds (**Los Angeles Times**, November 7; **The Daily Telegraph**, 11 December; Nucleonics Week November 14 and 28 and December 19; **NuclearFuel**, December 23).

2. Safeguards

- At a meeting in December, the IAEA's Board of Governors deliberated on ways to strengthen the Agency's safeguards in respect of 'special inspections' and the use of 'design information'. In the former context, the Director General advised the Board that he intended to implement the authority conferred on the Agency in existing standard agreements to make special inspections, to obtain access to undeclared nuclear material or facilities, inter alia on the basis of information other than that which the state in question has submitted formally, including the IAEA's own observations, media reports and intelligence data provided by third states. The Director General also called for the submission of design information on nuclear facilities, not just - as has hitherto been the case - shortly before nuclear material subject to safeguards is to be moved into those facilities, but well before, and in principle as soon as the decision to construct a facility is taken. Press reports indicate that these ideas - which will be discussed further at the Board's next meeting, in February - were well received by many countries, including industrialized nations, but that delegates from some developing states expressed reservations (**The New York Times**, October 11 and December 7; **Nucleonics Week**, December 12).

- At the same meeting, the Board considered a request from **Syria** for assistance in providing it with a small Chinese-built reactor and highly-enriched uranium fuel. Such assistance is customarily covered by a 'project agreement' which, for non-NPT parties, provides for the appropriate safeguards. The safeguards provision in 'project agreements' with NPT parties (who are expected already to have a 'full-scope' safeguards agreement with the IAEA) consists of a simple reference to the safeguards agreement. Syria has been a party to the NPT since 1969 but has not yet concluded such an agreement. Reportedly, the Board felt unable to approve Syria's request until it concluded an NPT-type safeguards agreement with the IAEA (**The New York Times**, December 7; **Nucleonics Week**, December 12).

- On 29 October **South Africa** submitted the initial report on the nuclear material in that country, pursuant to its safeguards agreement of 16 September 1991 with the IAEA; the Agency's Director General is reported to have said that implementation of the agreement is 'proceeding well'. In January 1992, the Agency will start inspections in South Africa to verify the report. South Africa has agreed to give the IAEA the operating records of its enrichment installations, enabling it to double-check on previous production of enriched uranium. Although in the past South Africa said it did not enrich uranium above the 45%-level needed for the research reactor at Pelindaba, there are now reports that it has produced weapon-grade (more than 90% enriched) uranium. IAEA teams have gone to South Africa to work out the subsidiary arrangements (**South African Broadcasting Corporation Network**, 28 October, in JPRS-TND-91-017, 7 November; **IAEA Press Release** PR 91/44; **Nucleonics Week**, December 12; **NuclearFuel**, December 23; The agreement is reproduced in **IAEA Document INFCIRC/394**, October 1991).

g. Peaceful Nuclear Developments

- **General**: there are signs that in the medium to long term, nuclear power programmes may be relaunched in some member states of the OECD. Interest is growing in smaller reactors, generating less than 600 MW, for electric power, heat, or a combination (**IAEA Bulletin**, 3/1991; **NEA Press Release**, 13th November).

- The IAEA has reviewed the design of the first-generation VVER-440 reactors and has carried out in-depth missions to the 10 operating 230 models (4 in **Russia**, 4 in **Bulgaria** and 2 in the **Czech and Slovak Federal Republic**); it is preparing to recommend major modifications, mainly connected with their safety. WANO (the World Association of Nuclear Operators) is said to consider it no longer cost-effective to support funding to keep these plants operating beyond 1995. Many of these plants are not only badly designed and

constructed, but in several countries the lack of trained personnel is a growing problem. The Slovak electric authority is said to seek Prague's approval for changes in its 230 VVER-440 plants [Bohunice-1 and -2], hoping to keep those going until at least 2005. Upgrading the safety features of the plants will involve major modifications, but while the model 230 reactor vessel is said to suffer embrittlement, the Bohunice vessels have locally made stainless steel linings which may prolong their life. Bulgaria, whose Kozloduy station supplies more than 40% of its electric power, also hopes to go on operating its VVERs. The European Community is promoting an engineering and evaluation programme to upgrade the station. Emergency measures are being taken to enable it to operate through the winter, and it is now said to be operating at 2/3 of its 3,800 MW capacity. The IAEA, the European Commission, various intergovernmental expert groups, individual governments and industries in Europe are engaged in studies to see whether and how the whole range of Soviet-supplied nuclear power stations in Eastern Europe might be upgraded. Greenpeace has called on lenders to reconsider plans to support backfitting VVER reactors, because of inherent safety flaws. While **Cuba** is getting less oil from Russia than expected, work on its nuclear power station is stalled because the necessary equipment is not coming either (**The New York Times**, October 8 and December 5; **Nucleonics Week**, November 14 and 21 and December 12; **Financial Times**, December 12).

- In **Ukraine** the second reactor unit at Chernobyl has had to be shut down because of a fire in a turbine generator. Medical researchers in **Byelorussia** say that the effects of the 1986 nuclear accident at Chernobyl on the population of their state are worse than originally thought, but many Western authorities express doubts about these findings. The Ukranian parliament has voted to shut the two operating units of the Chernobyl nuclear station down by 1993 (**The Washington Post**, October 30; **The New York Times**, October 13 and November 3; **The Independent**, 13 October).

- In the **United States**, the operator of the 31-year old Yankee Rowe power station has shut the station down, after the Nuclear Regulatory Commission expressed concern about its safety. The operator had been seeking a licence extension and still seems to hope that the shut-down is not permanent, but opponents of its further operation, who had previously expressed concern about embrittlement of the reactor vessel, have said they will ensure it will not reopen (**International Herald Tribune** and **The New York Times**, October 2; **Financial Times**, October 3).

h. Events in Nuclear Weapons States

- The US Department of Energy is reportedly planning reductions in its weapon-production programme, limiting it to the maintenance of stockpiles and cleaning up the pollution generated in the past. Budget authorities and the Congress are questioning the need to resume tritium production in the old reactors at Savannah River, which were closed three years ago for safety reasons, or to build a new reactor for the purpose. Experts estimate that for the foreseeable future existing stocks of tritium could meet the needs of the nuclear arsenal the Administration wishes to maintain, even if there were no further arms cuts to reduce that need. There are also arguments to construct a modest-size linear accelerator for the purpose. The Department of Energy, however, seeks an early resumption of tritium production. It is expected to spend nearly $3 billion repairing the old 'K' reactor. Although the reactor will be run at 30% of capacity, there is serious concern about its safety; a court appeal against the restart, pending completion of a cooling tower, has been remanded to a federal court but does not hold up the re-start. Start-up tests in December have been interrupted by the malfunction of a control rod; also, coolant contaminated with tritium has been found to have leaked from a heat exchanger. Earlier, the Department of Energy had found that tritium was being lost through improperly maintained equipment, sloppy procedures and operation error.

  A decision on the construction of a new reactor has been put off for two years and the design teams will be cut by at least 80%. In 1990/91 $678.5 million was spent on research and development; for fiscal year 1992, $515 million had been budgeted. Completion had been planned to be in about ten years, at which time the 'K' reactor would be put on standby.

  Plans to resume producing plutonium 'pits' at Rocky Flats, Colorado, are behind schedule. The complex has been out of operation since 1989 and is reportedly far from ready to operate. One of the main production facilities has been found deteriorated to the point where it may be beyond repair.

  Contamination at the Hanford nuclear weapon complex at Richland, in Washington state, has reached such a level that, even if there is no further waste spillage and none of the holding tanks blows up — some are thought close to doing so — clean-up is expected to take at least 30 years and $30 billion. Even then, the site will not be suitable for habitation, grazing or agriculture. (**The Washington Post**, October 3; **Nucleonics Week**, October 31, December 5 and January 2 [1992]; **The New York Times**, October 4, November 2 and December 6, 22, 23 and 29; Frank Gaffney in **Defense News**, November 4; Gordon Thompson and Steven C. Sholly: 'No Restart for K Reactor', **Working Paper No. 4 of the Institute for Resource and Security Studies**, October 1991; **NuclearFuel**, November 11; **Nucleonics Week**, December 5 and 12; **The Washington Post National Weekly Edition**, December 9-15).

- The US faces the problem what to do with 50 tons of weapons-grade plutonium salvaged from scrapped warheads and produced for future use but no longer needed. Proposed solutions range from long term storage to detonation, deep-space disposal, use in mixed-oxide fuel and entombment. Most proposals would involve complex international and domestic political issues and a need for costly new facilities. The question of short-term storage of non-deployed weapons also preoccupies local and federal authorities (**Las Vegas Review-Journal**, October 4; **The Washington Post National Weekly Edition**, October 28/November 3).

- Also in the US, it was announced in October that the Department of Energy was ready to open its Waste Isolation Pilot Plant for the storage of plutonium waste, in cells carved in salt beds 2,150 feet under the desert near

Carlsbad, New Mexico. The first movement of material to the facility has run into local and state-wide resistance; the project, which was started in 1983, is said to be slowed also by management and engineering problems (**The New York Times**, October 4 and 6).

- The **United States** national laboratories Los Alamos, Livermore and Sandia, which have been working mainly on military nuclear matters, are looking for occupations in other areas and for ways to apply military technologies to civilian uses. There is talk of using the energy of multiple nuclear explosions to generate power and projects are under way to develop nuclear-powered rockets for space research as well as for military purposes. Similarly positioned, laboratories in the former **Soviet Union** are seeking to earn hard currency by exporting a range of once-secret items of defence technology, including small nuclear reactors, satellite hardware, rocket engines and compact nuclear power sources. There reportedly is interest in the United States, especially in space engine technology and compact nuclear reactors, and negotiations are going forward, against opposition from industry and from some people in the Administration, who wish preference to be given to US manufacturers; survival of General Electric's SP-100 space reactor programme may be at stake (**The Economist**, November 2nd; **The New York Times**, November 3; **The Bulletin of the Atomic Scientists**, Vol. 47, No. 9, November; **The International Herald Tribune**, November 12; **Nucleonics Week**, December 19).

- As part of the reduction of **United States** forces in Europe, the last American nuclear-missile submarine has left Holy Loch naval base in Scotland, prior to the closing of that base, in June 1992. Nine Poseidon ballistic-missile submarines (the total US ballistic-missile fleet has so far comprised 34 submarines) carrying the 4630-km range C3 missile are being decommissioned; for now, twelve of the class, modernized to carry the 7400-km Trident C4 missile, will remain in service. The US ballistic-missile submarine fleet will be reduced to a total of 18 'Ohio'-class boats, equipped with the 12000-km Trident D5 missile. The US Navy has announced that it will shut down its land-based prototype reactor at Windsor, Conn., in 1993, when it would have been due for refuelling. The reason given is 'reduced world tension'. Production of highly enriched uranium for naval vessels at the Portsmouth gaseous diffusion plant at Piketon, Ohio, will be suspended and it is expected that uranium production at plants in Idaho, Tennessee and South Carolina will also be terminated soon. The Navy is going ahead with its plans for the development of a new generation nuclear attack submarines to follow the 12 SSN-21 'Seawolf' submarines. The new boats will reportedly 'cost less than the $2 billion per vessel' of the Seawolf class. At the Hanford nuclear weapons reservation the middle sections, containing the reactors, of 21 scrapped nuclear submarines have been buried; eventually, nuclear parts of about 80 more decommissioned submarines will be disposed of there (**Atlanta Constitution**, October 3; **The New York Times**, November 9 and 10 and December 7; **Jane's Defence Weekly**, 16 and 23 November; **The Washington Post National Weekly Edition**, December 9-15).

- In the **United Kingdom** approximately 10.1 kg of highly-enriched uranium is unaccounted for at the uranium recovery plant at Dounreay. This was discovered during a routine check by European Community inspectors. The plant has been closed pending investigation. The Royal Navy has decommissioned three nuclear submarines, but the problem how to how dispose of their reactors — burying them at sea or in deep bunkers on land — has not been solved. British naval authorities have reportedly discussed the matter with their Russian counterparts, who have the same problem on a bigger scale (European Nuclear Society: **EnsNucNet**, No. 289, 5 December; **Financial Times**, the Independent and **The Daily Telegraph**, 6 December; **Nucleonics Week**, December 12; **Sunday Express** [London], September 29).

- The ex-**USSR** reputedly replaces older naval vessels so that 65% of operational warships are less than 20 years old. At present, about 50 obsolete nuclear-powered submarines are being decommissioned; 29 of them in the Pacific area. The question is what to do with them, given the apparent collapse of the technical infrastructure of the Soviet navy. Concern about this problem is fed by reports that for fifteen years or more Soviet ships have dumped radioactive waste at sea. Press reports speak of dumping, especially in Northern waters, involving such items as the reactor of the ice-breaker Lenin, which was scrapped in 1969, as well as liquid radioactive waste. According to these reports, in and around the Kola peninsula there are 238 operating nuclear reactors (in submarines, cruisers and ice-breakers), as well as stationary units on land. The disposal of the radioactive waste generated by these facilities, the question what to do with old reactors, and the risk of accidents are a growing worry for the inhabitants of the region (**Jane's Defence Weekly**, October 5; **Komsomolskaya Pravda** [Novosti Press Office, London] September 28; **Rabochaya Tribuna** [Novosti Press Office, London], November 9; **The Daily Telegraph**, 26 November).

- The consequences of the dissolution of the **USSR** for the security of its nuclear weapons, warhead stockpiles, stocks of fissionable material and production plants are a subject of great concern. While all Soviet uranium enrichment plants and other fissile material production facilities are said to be located in Russia, there are nuclear-related facilities, such as beryllium, zirconium and heavy water plants, in the republics. In all, the former Soviet Union possesses some 27,000 warheads according to Western estimates. Strategic nuclear weapons are deployed in Russia (9,650 warheads), Byelo-Russia (100), Kazakhstan (1,150) and Ukraine (1,300). Until very recently, at least, there were tactical weapons in all twelve republics; before they became independent there were also several hundred nuclear warheads each in Estonia (270), Latvia (185) and Lithuania (325). Military nuclear installations are supposedly heavily guarded and weapons are subject to controls that should make access virtually impossible and prevent unauthorized persons from activating them. There are reports, however, that battlefield nuclear weapons are less strictly guarded than strategic warheads, and that bars on tampering are less secure than generally supposed.

  The thought that individual republics might take hold of tactical weapons and bypass the 'permissive action links'

that should prevent their use has caused concern about a possible slackening of central control over such weapons. That concern may have been eased by the establishment of the Commonwealth of Independent States, composed of all but one of the constituent republics of the former USSR, and its obvious intention to ensure single control over nuclear weapons. The current conflict within Georgia, however — which has not joined the Commonwealth — keeps alive anxiety about the risk of armed conflict among individual republics and ethnic groups, in which nuclear weapons might play a part. The thought that nuclear weapons might end up in the possession of third countries is a further source of concern.

There has also been concern that the situation might impair the realization of the undertakings given by the former USSR with regard to nuclear disarmament. At its November meeting, NATO called on the Soviet Union and the individual republics to 'take all necessary actions to ensure that all international agreements signed by the USSR are respected, ratified and implemented'.

During recent visits to various parts of the former USSR, US Secretary of State Baker received assurances from leaders of republics on whose territories strategic nuclear weapons are deployed (Byelorussia, Kazakhstan, the Russian Federation and Ukraine) that they would do their part in carrying out these undertakings and the President has confirmed that he expected the republics to abide by their pledges. However, the situation is not entirely clear. The declaration on nuclear arms adopted at Alma-Ata on 22 December by the four republics where strategic nuclear weapons are located, would seem to confirm those republics' intention to see to it that nuclear weapons are eliminated in accordance with international undertakings. On the other hand, statements reportedly made to Secretary Baker by the heads of some republics indicate that they hope to use the removal of nuclear weapons from their soil to get territorial and financial advantages. Also, while the Alma-Ata declaration makes clear that the Russian Federation will eventually be the single nuclear state in the Commonwealth (with any decision about the use of nuclear weapons being taken jointly with the leaders of other republics as confirmed at Minsk on 30 December), and the nuclear launching codes were passed, on 25 December, from the President of the Union of Soviet Socialist Republics to the President of the Russian Soviet Federated Socialist Republic, the President of Kazakhstan is quoted as saying that his state will give up the weapons on its territory only if Russia does likewise. Another explanation of Kazakhstan's position is that, rather than having nuclear weapons moved to a central staging area in Russia, it wants them dismantled or destroyed at their present locations.

In November and early December it was reported that Western Governments were making the establishment of effective, single, central control over nuclear weapons a condition of the diplomatic recognition of the new republics. Statements from many of those Governments about the prospects of early recognition, made at the time of the resignation of Soviet President Gorbachov and his handing over of nuclear command codes to the President of Russia, would indicate that those Governments are, by and large, satisfied that this condition has been met. US President Bush has expressed satisfaction with assurances on nuclear control from the heads of the republics, and announced that the US will recognize the independence of the 11 member republics of the Commonwealth of Independent States and of Georgia.

During the recent visit the US Secretary of State carried proposals for assistance in inventorizing, storing, neutralizing and dismantling nuclear weapons on the territory of the former USSR, for which $400-million has been set aside from the US defence budget. The four republics where strategic nuclear weapons are deployed have accepted his offer to send them, in January 1992, American experts to help with the control and elimination of those weapons. The US Senate's Act on this matter also permits reimbursement with natural or enriched uranium. The head of the defence programme of the Soviet Ministry of Atomic Power and Industry - which, together with the Ministry of Defence, should continue to function as a joint Commonwealth institution - is quoted as saying that US funds will be used to build one of two storage sites for material from retired nuclear warheads, and that this will be under joint Russian/American control. The same official has said that the destruction of tactical weapons would cost $2 billion and take ten years. There is a plan to decommission three plutonium production reactors at Krasnoyarsk in Siberia over a period of several years.

(**The Guardian**, October 4 and December 17 and 18; Arjun Makhijani and Milton Hoenig, 'A New Black Market in Nuclear Terror?' in **The Washington Post National Weekly Edition**, October 7-13, and David Hoffman, 'Independent Republic is Another Word for Nuclear Proliferation', **The Washington Post National Weekly Edition**, December 23-29 ; **Izvestia** [Novosti Press Office, London], October 29; **The Bulletin of the Atomic Scientists**, Vol. 47, No. 9, November 1991 [data on warhead numbers in the USSR]; **NuclearFuel**, November 11 and 25 and December 9; **Nucleonics Week**, November 28; CIA Director Gates, quoted in **European Wireless File** [USIA], November 12; **The Sunday Times**, November 24; **Defense News**, December 9; **The Times** [London], 3 and 10 December; **The Daily Telegraph**, 10 December; **Jane's Defence Weekly**, 14 December; **The Independent**, 5, 16, 17 and 19 December; **The International Herald Tribune**, November 23/24 and December 16,17 and 20; **Financial Times**, December 13 and 20; **The New York Times**, November 9 and December 6, 9, 12, 18, 20, 23, 24, 26 and 27).

The texts of the Alma Ata Declaration on Nuclear Arms and the Minsk Agreement on Strategic Forces are reproduced in **Section V: Documentation**

- In the past several months, attention has focused in particular on the nuclear policy of **Ukraine** which, with 176 ICBMs, including 130 SS-19s and 46 SS-24s in silos, and with over 2,500 tactical weapons, is host to at least 25% of the total nuclear weaponry of the new Commonwealth of Independent States. It also has powerful conventional forces, which it has put under its sole control. Ukraine has repeatedly declared that it opts for non-nuclear-weapon status, but has also said that it wants to negotiate with Russia conditions for the removal of the strategic nuclear weapons now on its territory; allegedly it seeks assurances that Russia will pay for that removal and it also wants to use the nuclear weapons as bargaining chips for a territorial settlement. It is reported

that Ukraine might seek to treat directly with the US about the disposal of the nuclear weapons on its territory; at his swearing-in ceremony on 5 December, Ukraine's new President, Leonid Kravchuk, stated that Ukraine would seek the elimination of all nuclear weapons on its own territory, through negotiations with the United States. A statement of 24 October of Ukraine's Parliament, confirming its intention not to receive, manufacture or acquire nuclear weapons; the need to observe the provisions of the NPT; and the intention to contribute to the non-proliferation regime, preceded a similar declaration made at Alma-Ata on 22 December by Byeolorussia, Kazakhstan, the Russian Federation and Ukraine. In its earlier statement, the Parliament called the presence of nuclear weapons on the territory of Ukraine temporary, confirmed that these weapons were under central control and demanded the right to check that they are not used. There are reports that a first agreement has meanwhile been reached with the Russian Federation, about the removal of nuclear weapons. Ukraine has stated that once nuclear weapons are removed from its territory, it will renounce the co-control now exercised jointly by the four major republics. (**Tass-Ukrinform** [through Novosti Press Office, London], October 24; **The International Herald Tribune**, October 24 and 25; **The Sunday Times**, 27 October; **The Times** [London], 24 October and 3 December; **The Independent**, 5 December; **Financial Times**, December 13; **The New York Times**, October 25 and December 3, 6, 19 and 21; **Nucleonics Week**, December 5).

- A newly created private trading company in **Russia**, 'Chetek', acting in cooperation with several government agencies, is offering to conduct nuclear explosions for underground use in disposing of radioactive waste, decommissioned reactors and nuclear weapons. This development is causing alarm both for its potential dangers to the environment and because it might contribute to nuclear proliferation if the devices or the technology were to get into the wrong hands. [Chetek had announced a plan to test an underground thermo-nuclear device at the Novaya Zemlya test site in 1992, but since it announced its intention to do so, President Yeltsin has decreed that the site will be closed — Ed.] Some other export-oriented enterprises are said to be seeking outlets for various nuclear technologies, including the conversion of weapon-grade nuclear material into reactor fuel. At present the USSR's nuclear exports are centrally controlled through an inter-ministerial National Committee on Export Controls, but it is to be feared that with the ongoing political fragmentation of the country, the authority of this body might be in jeopardy. The possible unauthorized foreign sale of weapons-grade material recovered from stolen nuclear weapons, and the export of technology through wide-spread emigration of technical personnel thrown out of work by cuts in the production of nuclear weapons, are further causes of anxiety about ways in which current developments might contribute to nuclear proliferation. There are reportedly 3,000–5,000 persons holding sensitive information on design and operation of installations for plutonium production and uranium enrichment. By international standards these are already very badly paid; few of them will be able to find alternative employment in their home country (**The Washington Post National Weekly Edition**, cited above; **The Barometer**, Canadian Centre for Arms Control and Disarmament, Fall 1991; **Nucleonics Week**, October 24; **NuclearFuel**, October 28; William C. Potter, 'Russia's Nuclear Entrepreneurs', in **The New York Times**, November 7; William J. Broad, 'A Soviet Company Offers Nuclear Blasts For Sale To Anyone With The Cash', **Ibid.**; Tariq Rauf, 'Soviet Nuclear Deals: A New Time-Bomb?' in **The Toronto Star**, November 8;).

i. Developments of Concern for Horizontal Proliferation

- The **Democratic People's Republic of Korea** (North Korea) acceded to the NPT in December 1985; by mid-1987 it should have concluded an agreement with the IAEA, for safeguards on all its nuclear activities. So far it has not done so, giving as its reason that the American nuclear armory (reportedly made up of 40 nuclear-tipped artillery shells and 60 gravity bombs) should first be removed, and, once this seemed to become reality, making more demands, such as inspections to check on the actual removal of those weapons, the renunciation by South Korea of US nuclear protection and the prohibition of all US overflights and of the use of Korean ports by American vessels carrying nuclear weapons.

The lack of IAEA safeguards on North Korea's most important nuclear activities [some minor facilities are under safeguards — Ed.] is a source of international concern. Intelligence data indicate that at Yong-byon, 55 miles north of Pyongyang, there is a 30-MW natural-uranium fuelled and graphite-moderated reactor reminiscent of the British Calder Hall (magnox) reactor of the Fifties. Begun in 1980, this is reported to have been operating at low power since 1987 and to be capable of producing five to seven kilograms of weapons-grade plutonium a year if run at the present level for 70 % of the time. Another, more powerful, reactor is said to be under construction. A facility for the extraction of plutonium from irradiated fuel is said to be near completion. If that plant starts operating around 1993, as experts predict, it could provide North Korea with enough extracted plutonium to produce several bombs by the second half of the present decennium. It is alleged to have received assistance in the past from the USSR, several other East European countries and Germany. It may also employ Soviet weapons experts who have lost their jobs at home.

International pressure, such as Japan's decision to withhold full diplomatic and trade relations until North Korea accepts IAEA safeguards, does not seem to have dented its intransigence. Many attempts have been made to find a diplomatic solution. In early October, South Korea announced that it would declare itself a nuclear-weapon-free nation, and would permit international inspection if North Korea did the same; there were indications that the US might allow inspection of its bases in the South as part of a reciprocal arrangement. At that time, North Korea said that it welcomed the expected withdrawal of US nuclear weapons, but the apparent failure of a meeting on a plan of reconciliation raised tension in the region. There was once again talk in Seoul about military action against the North's nuclear installations; the planned reduction of US ground forces in the South was suspended. On 13 December, however, the two Koreas said that they would conclude a non-aggression pact and a formal peace agreement. On 18 December the President of the Republic of Korea stated that all US nuclear weapons had

been withdrawn, that South Korea was now 'nuclear-weapon free' and that North Korea would be allowed to carry out on-site inspections to verify the absence of nuclear weapons. On 21 December the two sides met at Panmunjon for talks about the nuclear issue and on 26 December it was announced in Seoul that North Korea had undertaken to sign and carry out the safeguards agreement with the IAEA 'at an early date'. The South Korean report said that North Korea had offered some important concessions, including a prohibition of reprocessing and enrichment plants; it would also drop its insistence on South Korea's renouncing all US nuclear protection. Reportedly, North Korea now accepts the South Korean declaration that there are no nuclear weapons on its soil, and, while still demanding US confirmation of the withdrawal of the nuclear weapons, no longer makes this a condition for signing the safeguards agreement. On 31 December it was announced that there was agreement to denuclearize the Korean Peninsula and that both sides had undertaken not to have reprocessing plants. The agreement was said to lack both clarity as to the way in which either side would ascertain whether the other complied with its obligations and a confirmation by North Korea when it would sign its agreement with the IAEA. There is a report that South Korea might cancel its military manoeuvres with the US if North Korea accepts safeguards.

(**The Washington Post**, October 3; **The Times** [London], 11 November; David Albright and Mark Hibbs, 'What's North Korea up to anyway', in **The Bulletin of the Atomic Scientists**, Vol. 47, No. 10, December 1991; **The International Herald Tribune**, October 3, 23 and 24, November 16 and 25 and December 14/15 and 20; **Defense News**, October 28 and December 2 and 9; **Nucleonics Week**, November 28 and January 2 [1992]; **Jane's Defence Weekly**, 7 December; **Newsweek**, December 9; **Financial Times**, November 14 and 23-24 and December 13; **The Independent**, 22 and 22 November and 13 and 19 December; **The New York Times**, October 6, 20, 24 and 27, November 9, 10 and 14, December 11, 12, 13, 19, 27 and 29, and January 1 [1992]).

- Iran's obvious interest in expanding its nuclear activities is raising some concern among Western observers. In an interview with the Persian daily newspaper **Abrar**, at the time of a conference held in Teheran on Palestinian rights, Vice-President Ayatollah Mohajerani, said that if Israel is allowed to be nuclear, Muslim states should also have nuclear weapons [using terms like 'the Muslim states', 'all Muslim states' and 'the entirety of the Muslim states', speaker did not refer to Iran specifically - Ed.] Recurrent rumours that Iran seeks to acquire a nuclear-weapon capability have not so far been substantiated. Press reports cite a US National Intelligence Estimate as saying that Iran's nuclear weapon programme is in an initial stage, but some officials and independent analysts say that this underestimates the scope of Iran's intentions and that a number of possible undeclared nuclear facilities may exist. When US Under-Secretary of State Bartholomew was in New Delhi in November he reportedly asked the Indian authorities to cancel its plan to supply Iran with a 10-15-MW natural-uranium reactor. There is as yet no publicly available evidence for the allegations of the existence of a clandestine programme and of Iranian purchases of nuclear technology and equipment for the production of nuclear-weapon material from China, Pakistan and various West European countries. In light of a growing interest among Western nuclear exporters in a resumption of nuclear trade with Iran, the US is reportedly asking countries to delay cooperation until more is known about Iran's nuclear activities. There is an unconfirmed report that the possibility of an IAEA special inspection to help disarm suspicion and remove objections to a resumption of nuclear trade is being considered (**Teheran Radio**, 23 October, in JPRS-TND-91-017, 7 November; **The Guardian**, 31 October; **International Herald Tribune**, October 31 and November 16; **The New York Times**, October 31 and November 1; **Middle East International**, 8 and 22 November; **NuclearFuel**, November 25 and December 9; **Nucleonics Week** October 3 and 10 and November 21; Leonard S. Spector, 'Is Iran Building a Bomb', in **The Christian Science Monitor**, December 31).

- In **Iraq**, operations continue along the four general lines set out in Security Council Resolution 687 with regard to nuclear matters. This involves collecting information on Iraq's efforts to develop nuclear weapons or nuclear-weapons-usable material, related subsystems and components and research, development, support and manufacturing facilities; taking control 'for custody or removal' of the nuclear material in question; destroying, removing or rendering harmless, as appropriate, the items listed; and developing a plan for the future ongoing monitoring and verification of Iraq's compliance with its obligations under the resolution. Through eight inspections made since May 1991, analyses of documents and samples obtained on-site, and intelligence from other sources, it has been established beyond a doubt that Iraq had an ambitious, multi-billion dollar, nuclear-weapon programme and was following several parallel approaches to develop a sophisticated weapons capability. The Iraqi authorities have acknowledged the existence of the programme. Estimates as to the time Iraq would have needed to achieve its goal vary from six months to several years; they depend on assumptions about such factors as the time needed to solve outstanding technical problems and then to produce enough weapons-grade material; the ability to manufacture the necessary components for the enrichment installations or to obtain them abroad; the number and nature of the weapons Iraq intended to make; and the means of delivery to which these were to be married.

  Notwithstanding persistent Iraqi efforts to conceal installations, equipment and records, which were often hidden or removed just before the inspection teams arrived, ample evidence has been obtained of the extent and nature of the programme. The evidence obtained shows the existence of a broad-based uranium-enrichment effort using several technologies. Four enrichment sites have been identified; three for electromagnetic isotope separation (EMIS) and one for centrifuge enrichment. There are also indications of an abandoned gaseous-diffusion effort. Reports that there is yet another uranium-enrichment plant have not been confirmed; Iraq maintains that it has divulged its entire enrichment programme. Conclusive evidence has been obtained that Iraq was developing an implosion-type nuclear weapon and had been testing a highly sophisticated detonator. It is also thought to have

imported heavy water (reputedly from France) and to have been engaged in the production of lithium-6. This would point to the production of boosted weapons and eventually also hydrogen weapons, a supposition apparently confirmed by the discovery of computer software designed to predict the likelihood of thermonuclear reactions. There is also evidence that Iraq has tested a surface-to-surface missile suitable for the delivery of nuclear weapons. Much of the information regarding the weapons programme was obtained at the Al Atheer complex, 40 miles south of Baghdad. While there were other development and testing sites, Al Atheer is thought to have been the central point for the production and testing of weapon components. American intelligence was apparently unaware of this and the facility was only slightly damaged during last January's hostilities. A centrifuge-construction facility at Furât, near Baghdad, was not targeted at all (**The New York Times**, October 3, 5, 8, 10, 14, 15, 20 and 22; **IAEA Press Releases**, P.R. 91/42, 4 October; **European Wireless File**, USIA, October 9; **Security Council Documents**, S-23122, 8 October and S-23165, 25 October; **IAEA Newsbriefs**, vol. 6, No. 5 (52) October-November; **The Economist**, October 5 and 19; **The Financial Times**, 2, 4 and 5-6 October; **The Daily Telegraph**, 1, 4, 5 and 9 October; **The Times** [London], 5 October; **International Herald Tribune**, October 5-6, 15 and 16; **Jane's Defence Weekly**, 5 October; **Newsweek**, October 7; **NuclearFuel**, October 14; David Albright and Mark Hibbs, 'News The Front Page Missed', in **The Bulletin of the Atomic Scientists**, Vol. 47, No. 8, October; **The Sunday Times**, November 17; **Defense News**, November 4; **The Independent**, 5 October; **U.S. News & World Report**, November 25; **Nucleonics Week**, December 12).

Generally, inspectors were impressed with the quality of the work done in Iraq. At first, investigators thought that the weaponization effort must have been guided by a foreign scientist experienced in the production of weapon-grade nuclear material and the design of nuclear weapons. It is now believed that Dr. Jaffar Dhia Jaffar, the British-trained Vice President of Iraq's Nuclear Energy Commission, had over-all technical and administrative responsibility for the programme. He was assisted by several thousand Iraqi engineers and scientists, many of them trained in the West or the Soviet Union, and reputedly also some Palestinians and Egyptians. The fact that, but for some important technical items acquired abroad, the programme came so close to success through what seems to have been mainly indigenous efforts, prompts concern that, even after removal and destruction of equipment and material, it would take Iraq a relatively short time to resume its efforts and rebuild its nuclear weapon capability unless its efforts are closely monitored. According to Middle Eastern sources Iraq may have flown some equipment for safekeeping to Algeria, Iran and the Sudan; Algeria and Iran have denied involvement (**The Guardian**, 3 October; **The Daily Telegraph**, October 3 and 4; **The Economist**, October 5; **The International Herald Tribune**, October 2; **The Washington Post National Weekly Edition**, October 21-27; **Financial Times**, October 2; **Washington Post**, October 3; **NuclearFuel**, October 14).

Although the Iraqi authorities have gone to great lengths to prevent discovery of procurement data, documents recovered during inspections, including procurement records relating to the enrichment programme, reveal the existence of a large, secure and highly successful procurement network involving many foreign sources of materials, components, instruments and technology. While many of the items listed could also be used for non-nuclear purposes, much of the equipment was reportedly highly specialized and its export would have needed government licenses and in many cases manufacturers must have suspected what the equipment was to be used for. At first, the IAEA gave governments which asked for them names of companies from their countries whose equipment was found in Iraq, leaving it up to those governments to release the names. More recently, the Agency gave the UN Secretary General a (reportedly non-exhaustive) list of 13 companies whose products were used in the programme. The exports concerned are said to have all been nuclear-related; most of the firms involved were German, but firms from Japan, Sweden, Switzerland and the United States were also implicated. There had been media reports before of exports of equipment and material not only from these countries, but from Finland, France, the Netherlands, South Africa and the United Kingdom; some of the items involved were said to have been dual-use, but many were of a highly specialized and sensitive nature. It is alleged that Pakistan may have re-exported uranium smelting know-how that was purloined from Urenco in the Netherlands. Some West-German equipment may have reached Iraq through the former GDR. The source of trace amounts of highly-enriched uranium, which were neither part of the fuel supplied by France for the Osirak reactor, nor produced by Iraq, is being investigated; concern that these samples might point to the presence in Iraq of yet undisclosed amounts of highly-enriched uranium is largely discounted (**The Times [London]**, October 3; **The Washington Post National Weekly Edition**, October 21-27; **Nucleonics Week**, October 3, 10, and 24, November 28 and December 5 and 12 ; **New York Times**, December 11; **IAEA Press Release** PR 91/47, 11 December).

The Security Council has endorsed a plan for the destruction, removal or rendering harmless of proscribed items, including plant and equipment associated with Iraq's nuclear-weapon programme. The IAEA has started the process of destroying and rendering harmless equipment found for uranium enrichment and plutonium work. Removal of its highly-enriched uranium pursuant to Resolution 687 began on 15 November when 42 fuel elements from the Soviet-supplied IRT-5000 reactor were flown to Moscow; the rest of the non-irradiated HEU fuel was shipped two days later. After the isotopic composition of the fuel is diluted, it will be returned into the IAEA's custody. Conditions for the job of removing, decladding, reprocessing and diluting the irradiated reactor fuel are being negotiated with a consortium of British and French companies. The IAEA lacks the funds to pay for this (the Agency estimate a cost of $20-million; the companies concerned give a higher assessment) and may have to seek donations. A plan for the ongoing verification of Iraq's compliance with the armistice conditions, to prevent it from resuming its nuclear-weapons programme, has been approved by the Security Council. The plan, which sets no time limit, foresees a stringent monitoring system which provides, among other things, for extensive access rights for international inspectors, who shall have the right to go

anywhere, search anywhere and impound any documents and materials they consider relevant. Inspections may be carried out at any time and without hindrance, and need not be announced beforehand. The plan includes lists of items of equipment and material Iraq will not be allowed to have. Exceptions may be made for dual-use items that are shown to be used for peaceful purposes only and are placed under international supervision (**The Independent**, 2 October; **Financial Times**, October 3 and 5-6; **The Guardian**; October 4 and 8; **The Daily Telegraph**, 7 October; **IAEA Press Release**, PR/46, 15 November; **The New York Times**, October 9 and 24; **NuclearFuel**, December 23).

- **Israel** is said to have a nuclear arsenal much larger than US intelligence suspected and to have tested a weapon in 1979, with South African assistance. Of the 21 tons of heavy water it received from Norway in 1959 it has returned 11 tons. It claims the rest evaporated during use at Dimona but has rejected Norway's request for admission to that facility to check that claim (Seymour M. Hersh, **The Sampson Option** [for details see below: **IV. Publications**]; references in **The New York Times**, October 20, ditto: **New York Times Book Review**, November 17, **The Economist**, October 26th and **The Independent**, 11 November; **Jane's Defence Weekly**, 14 December).

- Dual-use furnace equipment reportedly on its way to **Libya** was stopped by **German** Customs recently. An Indian source has revealed that in the late 1970's Libya offered **India** a large amount of money in exchange for nuclear weapons technology, but was refused (**Nucleonics Week**, November 28; **The New York Times**, October 10).

- **South Africa** has denied having been involved in an offer of 6 kilograms of 92% enriched uranium to the former **German Democratic Republic**, through **Botswana** and **Mozambique**. The GDR is also believed to have been instrumental in clandestine transfers of sensitive equipment, among others to **Iraq** (**Nucleonics Week**, November 28; **NuclearFuel**, December 23).

- Police in **Switzerland** have seized 65 lbs of 1.2%-enriched uranium, allegedly of **USSR** origin. According to some experts this event and the earlier capture by **Italian** authorities of a sub-milligram sample of almost pure plutonium, shows there exists a European black market in fissile material (**Newsday** [Washington], November 21 and 23).

- Following **Syria**'s deal with **China** for the supply of a small research reactor through the IAEA (see above, subsection c. 2) and an unconfirmed report that **India** has offered Syria a 5-MW natural-uranium reactor, that country's nuclear activities are attracting media interest (**NuclearFuel**, November 25; **The Times** [London], 30 November).

II. PPNN Activities

- The PPNN Core Group held its tenth semi-annual meeting at Princeton University, New Jersey, United States from 8-10 November 1991. Local assistance was provided by the Centre for Energy and Environmental Studies at the University. All members of the Core group attended. Substantive discussions were divided into the four traditional categories: reports on current developments and situations; NPT issues; functional questions; and issues connected with a specific country or region.

The main business of the meeting concerned NPT issues. These were addressed through a one day seminar on 'Nuclear Non-Proliferation, the NPT and a CTBT' attended by eighteen invited representatives from national delegations to the UN General Assembly. The seminar was divided into sessions on nuclear testing and the existing nuclear-weapon states; nuclear testing and potential proliferators; alternative approaches to a ban on nuclear testing; and the links between a CTBT and the NPT.

Under nuclear testing and the existing nuclear weapon states, a presentation was made by Dr Paul White [US] on the technical reasons for existing nuclear-weapon states to continue nuclear-weapon testing and a paper was presented by Peter Jones [UK] on the ability of the present nuclear-weapon states to modernise their arsenals and sustain the nuclear arms race if they were prevented from testing [2CGP4]. Under nuclear testing and potential proliferators, papers were presented by Dr Carson Mark (US)[2CGP5] and Dr Jan Prawitz (Sweden) [2CGP6] on the technical effects of a comprehensive test ban on a first generation nuclear-weapon programme. Under alternative approaches to a ban on nuclear testing a paper was introduced by Dr Paul Brown (US) on quota/yield limitations [2CGP7]; a presentation was made on the creation of a PTBT/CTBT verification system and negotiation of a CTBT by Dr Greg Van der Vink (US) and a paper on voluntary moratoria was presented by Dr Yuri Pinchukov (USSR)[2CGP8]. Finally, two papers were presented on links between a CTBT and the NPT by Ambassador Miguel Marin Bosch (Mexico)[2CGP9] and Olivier Debouzy (France)[2CGP10].

The Chairman of the Conference was Ben Sanders and the chairmen and discussants for sessions included, in addition to members of the PPNN Core Group, Prof Harold Feiverson (US) and Dr Ray Kidder (US). Observers from the IAEA, UN Disarmament Affairs Department, ACDA, Los Alamos and Lawrence Livermore National Laboratories and several funding organisations also attended.

A PPNN Conference Report, reflecting key points of the papers and the seminar discussion, will be circulated early in 1992. Papers from the conference may also be published in an edited volume towards the end of the year. Any reader wishing to have copies of papers presented at the seminar should contact PPNN's Southampton Office.

The Core Group also received reports on many aspects of the contemporary non-proliferation situation, in particular events in the USSR, and a paper on the present status of nuclear non-proliferation from Ambassador Roland Timerbaev [2CGP11]. Under functional questions, the Group discussed the UN Special Commission/IAEA activities in Iraq and their implications for the nuclear non-proliferation regime on the basis of a presentation by Ambassador Rolf Ekeus

(Sweden), the Chairman of the Special Commission. It then addressed developments in the IAEA Safeguards System on the basis of a presentation by Lawrence Scheinman. Finally, under issues connected with a specific region, the Group discussed the nature of a Middle Eastern Nuclear-Weapon-Free Zone and the prospects for its creation on the basis of a presentation by Ambassador James Leonard(US).

- The next meeting of the PPNN Core Group will take place at the Sporthotel Erbismühle, Hochtaunus, near Frankfurt, from 22-24 May 1992. The meeting will focus upon the New Europe and Nuclear Non-Proliferation, and the intention is to invite representatives from the majority of European foreign ministries, including states which previously formed part of the USSR, to attend.

- The first two products in the new PPNN Studies Series have now been published and distributed. PPNN Study 1, **Germany, Europe and Non-Proliferation** written by Wolfgang Kötter and Harald Müller was published and distributed in October. PPNN Study 2, **Options and Opportunities: The NPT Extension Conference of 1995** written by George Bunn, Charles N. van Doren and David Fischer was published and distributed in November. This latter study, which offers authoritative analyses of many of the procedural complications of the 1995 NPT extension conference, was launched on November 6 at a Press Conference in the UN building in New York sponsored by the UN Disarmament Affairs Department.

- The next PPNN Study, which it is hoped will be ready for publication in June 1992, will address future options for change in the IAEA Safeguards System.

- On 1 October Ben Sanders lectured at the Institute of World Affairs in Salisbury, Connecticut, on Progress in Nuclear Non-Proliferation. On 2 October he took part in a meeting of the Washington Council for Non-Proliferation and on 3 October in a meeting on non-proliferation at the Atlantic Council of the United States, also in Washington, D.C.. On 22 October he attended a 'Face-to-Face' dinner meeting with Dr. Hans Blix, organized by the Carnegie Endowment for International Peace, in Washington, D.C. On 30 October he participated in a luncheon meeting of the Washington Council for Non-Proliferation, with US Non-Proliferation Ambassador Richard Kennedy.

  Ben Sanders presented two papers and acted as a respondent at the Conference held in Buffalo on 1 and 2 November, on Nuclear Proliferation and the Security Imperative, co-sponsored by the State University of New York and Cornell University. After PPNN's Tenth Core Group meeting and the associated briefing meeting for UN Diplomats, held at Princeton University on 8-10 November, John Simpson lectured on the current state of the nuclear non-proliferation regime at the University of Virginia on 11 November, and Ben Sanders and he then attended the CNSN Conference on Nuclear Proliferation Contingency Planning, held at Airlie House, in Warrenton, Virginia from 11-14 November [see below]. On 21-22nd November they both made presentations at a seminar on non-proliferation organised by the Peace Research Institute Frankfurt and the Hungarian Foreign Ministry in Budapest. Ben Sanders spoke on the Purposes, Achievements, and Operation of the NPT and the Prospects for the Extension, while John Simpson spoke on Measures to Strengthen the Non-Proliferation Regime [see below]. On 25 November, they visited the Peace Research Institute Frankfurt, to discuss arrangements for the Eleventh Core Group meeting in May 1992. On 14-16 December Ben Sanders participated in a Pugwash Working Group meeting in London.

III. Other Non-Governmental Groups Active in Related Areas

- A meeting was held in Moscow on 4 October, attended by about 30 experts, to take the initiative of forming an **Association for Non-Proliferation.** The initial objective of this association is to co-ordinate non-proliferation studies in work by interested experts from all Republics. General coordination of the effort is being undertaken by the Centre of International Studies at the Moscow State Institute of International Relations. For further Information contact the Vice Director of the Centre, Dr.Andrei V. Zagorski, at 76, Vernadsky av.,117454, Moscow, Russia [Tel.434.20.44].

- **The Centre for Arms Control and Strategic Stability** has been formed in Moscow as a department of the Foreign Policy Association, headed by E. A. Shevardnadze. It incorporates elements of the military-political and disarmament departments of the Institute of World Economy and International Relations [IMEMO] and the Institute of the United States and Canada. Its President is Dr. A. M. Rogov and Director Dr A. G. Arbatov. It hopes to carry out research projects on a contractual basis and conduct research seminars. For further Information contact IMEMO, Profsoyuznaja 23, Moscow 117418, Russia [Tel. 120.74.92, Fax 310.70.27] or the Foreign Policy Association, Elizarovoy 10,Moscow 103064, Russia [Tel. 928.05.57, Fax 975.21.90].

- Also established in Moscow in October was an **Institute of National Security and Strategic Studies,** headed by Professor S Blagovolin, the Head of the IMEMO defence policy and defence economy department.

- The **Monterey Institute of International Studies Information Network** has incorporated the content of **PPNN Newsbriefs** within its Emerging Nuclear Suppliers Project Database. The **Information Network** also contains an International Missile Proliferation Project Database. These may be accessed on-line. Contact: Roger Haney, Database Manager, Monterey Institute of International Studies Information Network, 425 Van Buren Street, Monterey, CA. 93940, US (Tel. (408) 647-3515; Fax. (408) 647-4199).

- The **Monterey Institute of International Studies,** in cooperation with the **Centre of International Studies at the Moscow State Institute of International Relations** held a training seminar on 'Building a Community of Non-Proliferation Specialists in the Soviet Union' in Moscow from 11-17 October 1991. Some 27 Soviet and 12 international experts attended. A further meeting of

the seminar is to be held in Monterey from 6-9 April 1992.

- A Conference was held at Mosbach, Germany from 24-27 October on 'Controlling Military Research & Development and Exports of Dual Use Technologies as a Problem of Disarmament and Arms Control Policy in the 1990s', organised by **AFES-PRESS** [Peace Research and European Security Studies]. Some 50 experts attended. For further information contact: Dr. Hans Günter Brauch, Alte Bergsteige 47, D-6950 Mosbach, Germany. Tel.: 06261-12912.

- The **Centre for National Security Negotiations**, McLean, Virginia held a seminar on 'Containing Nuclear Proliferation: Contingency Planning for the Challenges Ahead' from 11-14 November 1991 at Airlie House. Some 70 experts attended.

- The European Non-Proliferation Project of the **Peace Research Institute Frankfurt** and the Hungarian Foreign Ministry held a two day seminar on non-proliferation in Budapest from 21-22 November 1991.

- The **UK National Non-Proliferation Study Group**, sponsored jointly by the Mountbatten Centre for International Studies, Southampton and the Non-Proliferation and Defence Department of the Foreign and Commonwealth Office, held its eighth meeting on December 6 1991. Among subject discussed were the consequences of the Iraqi nuclear weapon programme for the nuclear non-proliferation regime; feasible reforms of the IAEA safeguards system prior to 1995; the Soviet Union and non-proliferation: future challenges and the impact of nuclear-weapon state disarmament initiatives upon the Article VI debate at the 1995 NPT extension conference

- The **Non-Proliferation Project** of the **Carnegie Endowment for International Peace** is holding a Conference in Washington on 'Strengthening the Non-Proliferation Regime' on 18-19 March 1992. Attendance will be by invitation only.

IV. Some Recent Books, Articles and Other Materials on Nuclear Non-Proliferation

- Books:

Kathleen C. Bailey, **Doomsday Weapons in the Hands of Many**, (Champaign, Il.: University of Illinois Press, 1991) 160 pp.

Bibliography on Arms Control Verification, (Ottawa: Department of External Affairs, October 1991), 250 pp.

Seymour M. Hersh, **The Sampson Option: Israel's Nuclear Arsenal And American Foreign Policy** (New York: Random House, and London: Faber, 1991), 356 pp. [British title: **The Sampson Option: Israel, America And The Bomb**]

Geoffrey Kemp, with the assistance of Shelley A. Stahl, **The Control Of The Middle East Arms Race** (Washington: Carnegie Endowment For International Peace, 1991), 232 pp.

The United Nations, **Disarmament Yearbook**, Volume 15, 1990, (New York: Department for Disarmament Affairs, United Nations, 1991), 549 pp.

- Articles and Other Materials:

Dasari Shyam Babu, 'France and the NPT: Return of the Prodigal', **Strategic Analysis**, October 1991, Volume XIV, Number 7, pp. 865-878.

Dasari Shyam Babu, 'China's Nuclear U-Turn', **Strategic Analysis**, December 1991, Volume XIV, Number 9, pp. 1131-1143.

Kurt Cambell, Ashton Carter, Steven Miller and Charles Zraket, 'Soviet Nuclear Fission. Control of the Nuclear Arsenal in a Disintegrating Soviet Union', (Cambridge, Mass.: Harvard University, **CSIA Studies in International Security**, Number 1, November 1991), pp. 129.

Scilla Elworthy and Paul Ingram, 'Defence and Security in the New Europe: Who Will Decide?', **Current Decisions Report**, Number 7, (Oxford: Oxford Research Group, November 1991), pp. 50.

Darryl Howlett and John Simpson, 'Dangers in the 1990s: Nuclear, Chemical and Biological Weapons and Missile Proliferation', in Confidence-building Measures in the Asia-Pacific Region, **Disarmament - Topical Papers 6**, (New York: United Nations, Department for Disarmament Affairs, 1991), pp. 24-48.

Rodney W. Jones, 'Southern Asia After the Cold War', **The Washington Quarterly**, Winter 1992

Takis Papadimitropoulos, 'Stopping the Spread of Nuclear Weapons in the Middle East: The Components of a Post War Nuclear-Weapon-Free Zone', **Research Notes 2**, (Athens: Greek Institute for International and Strategic Studies, 1991).

George Perkovich, 'Counting the costs of the arms race', **Foreign Policy**, Winter 1991-92, Number 85, pp. 83-105.

Tariq Rauf, 'Who Controls Nuclear Weapons', **The Arms Control Centre BAROMETER**, Ottawa, Fall 1991

Tariq Rauf, 'Controlling Soviet Nuclear Exports', **The Arms Control Centre BAROMETER**, Ottawa, Fall 1991

Jennifer Scarlott, 'A Merry-go-round of Mayhem', **World Policy Journal**, New York, Fall 1991

John Simpson and Darryl Howlett, 'Nuclear non-proliferation: the way forward', **SURVIVAL**, November/December 1991, Volume XXXIII, Number 6, pp. 483-499

Special Section - 'Hi-tech Weapons and Proliferation Concerns' - articles by Serguei Batsanov, Janne Nolan, Andrew Pierre, and John Simpson, **Disarmament**, Volume XIV, Number 4, 1991, pp. 1-57.

William Walker, 'Nuclear Weapons and the Soviet Republics', **International Security Information Service**, (London: ISIS Briefing Number 23, 18.12.91).

V. Comments From Readers

The Editor has obtained an expert assessment of the way the findings of the inspections of Iraq's nuclear activities were presented in **Newsbrief** 15. The review concludes that three points might have been more accurately stated:

(a) page 8, column 2, 3 lines from the bottom. The evidence yielded more than an ambitious clandestine uranium-enrichment effort. It would be true to have said '...ambitious clandestine nuclear-weapons development effort.'

(b) page 9, column 1 para 2, Line 12. Again, Iraq's effort was wider than implied. It would have been truer to say '...pursuing several uranium-enrichment technologies as part of its nuclear-weapon development effort; had mastered..:'

(c) page 10, para 1, final sentence. The evidence is firmer than indicated. It would have been true to say '...The several carbon fibre centrifuge rotors discovered to date were apparently foreign-made.'

VI. Documentation

a. Alma-Ata Declaration

The following is a translation issued by **Tass Press Agency** of the *Declaration on Nuclear Arms, adopted at Alma-Ata (Kazakhstan) on 22 December 1991.*

Byelorussia, Kazakhstan, the Russian Federation and Ukraine, called henceforth member states,

CONFIRMING their adherence to the non-proliferation of nuclear armaments;

STRIVING for the elimination of all nuclear armaments, and

WISHING to strengthen international stability, have agreed on the following:

Article 1

The nuclear armaments that are part of the unified strategic armed forces insure the collective security of all members of the Commonwealth of Independent States.

Article 2

The member states of this agreement confirm the obligation not to be the first to use nuclear weapons.

Article 3

The member states of this agreement are jointly drawing up a policy on nuclear matters.

Article 4

Until nuclear weapons have been completely eliminated on the territory of the Republic of Byelorussia and Ukraine, decisions on the need to use them are taken, by agreement with the heads of the member states of the agreement, by the R.S.F.S.R. [Russian Soviet Federated Socialist Republic] President, on the basis of procedures drawn up jointly by the member states.

Article 5

1. The republics of Byelorussia and Ukraine undertake to join the 1968 nuclear non-proliferation treaty as non-nuclear states and to conclude with the International Atomic Energy Agency the appropriate agreements-guarantees (sic).
2. The member states of this agreement undertake not to transfer to anyone nuclear weapons or other triggering devices and technologies, or control over such nuclear triggering devices, either directly or indirectly, as well as not in any way to help, encourage and prompt any state not possessing nuclear weapons to produce nuclear weapons or other nuclear triggering devices, and also control over such weapons or triggering devices.
3. The provisions of paragraph 2 of this article do not stand in the way of transferring nuclear weapons from Byelorussia, Kazakhstan and Ukraine to R.S.F.S.R. territory with a view to destroying them.

Article 6

The member states of this agreement, in accordance with the international treaty, will assist in the eliminating of nuclear weapons. By July 1, 1992 Byelorussia, Kazakhstan and Ukraine will insure the withdrawal of tactical nuclear weapons to central factory premises for dismantling under joint supervision.

Article 7

The Governments of Byelorussia, Kazakhstan, the Russian Federation and Ukraine undertake to submit a treaty on strategic offensive arms to the Supreme Soviets of their states.

Article 8

This agreement requires ratification. It will come into force on the 30th day after the handing over of all ratification papers to the government of the R.S.F.S.R. for safekeeping.

Done in Alma-Ata in one certified copy in Byelorussian, Kazakh, Russian and Ukrainian languages, all texts being equally authentic.

b. Minsk Conference : Agreement on Strategic Forces

The following is an unofficial translation of the text of the *Agreement on Strategic Forces* signed in Minsk on 30 December by the leaders of Azerbaijan, Armenia, Belarus, Kazakhstan, Kirgizia, Moldova, Russian Federation, Tadzhikstan, Turkmenistan, Uzbekistan and Ukraine.

Preamble

Guided by the need for a co-ordinated and organised solution to questions in the sphere of command of strategic forces and single control of nuclear weapons....The Member States of the Commonwealth have agreed on the following:

Article 1

The term 'strategic forces' means: Formations, groupings, units, institutions, military training establishments of strategic rocket forces, airforce, navy and air defence: Directorates of the Chief of the Space Directorate, (parachute troops, strategic and operational intelligence: Nuclear technical units and also forces, equipment and other military establishments intended for the command and supply of the strategic forces of the former USSR (the list is determined for each Member State of the Commonwealth by a separate protocol).

Article 2

The Member States of the Commonwealth undertake to observe international agreements of the USSR and to carry out a co-ordinated policy in the field of international security, disarmament and arms control, to participate in the preparation and implementation of programmes for reducing armaments and armed forces. The Member States of the Commonwealth shall immediately enter into negotiations between themselves and also with other states formerly part of the USSR which have not joined the Commonwealth with the aim of securing guarantees and working out mechanisms for implementing the above mentioned treaties.

Article 3

The Member States of the Commonwealth recognise the need for united command of strategic forces and the preservation of unified control over nuclear weapons and other weapons of mass destruction of the armed forces of the former USSR.

Article 4

Until the complete elimination of nuclear weapons a decision on the need for their use is taken by the President of the Russian Federation by agreement with the Heads of State of Belarus, Kazakhstan and Ukraine and in consultation with the Heads of other Member States of the Commonwealth.

Until their complete elimination nuclear weapons on the territory of Ukraine are under the control of the United Command of the Strategic Forces for the purpose of their non-use and dismantling by the end of 1994 including tactical nuclear weapons by 1 July 1992.

The process of destroying nuclear weapons located on the territory of Belarus and Ukraine is carried out with the participation of Belorussia, the Russian Federation and Ukraine under the joint control of the States of the Commonwealth.

Article 5

The status of the strategic forces and the terms of service in them shall be defined by a special agreement.

Article 6

The present agreement comes into force from the moment of its signing and ceases to be operative by a decision of the Member States or the Council of Heads of State of the Commonwealth.

The operation of this agreement ceases in regard to a Member State from whose territory strategic forces shall be withdrawn or nuclear weapons removed.

c. Meeting of the Five on Arms Transfers and Non-proliferation: London 17/18 October 1991. (Extract)

1. In accordance with their agreement in Paris on 8 and 9 July 1991, representatives of the United States of America, the People's Republic of China, France, the United Kingdom of Great Britain and Northern Ireland and the Union of Soviet Socialist Republics met in London on 17 and 18 October to take forward their discussions on issues related to conventional arms transfers and to the non-proliferation of weapons of mass destruction.
2. Recalling the statement which was issued in Paris on 9 July, they;
   - agreed common guidelines for the export of conventional weapons. They expressed the hope that other arms exporting countries will adopt similar guidelines of restraint;
   - noted the threats to peace and stability posed by the proliferation of nuclear weapons, chemical and biological weapons, missiles etc, and undertook to seek effective measures of non-proliferation and arms control in a fair, reasonable, comprehensive and balanced manner on a global as well as on a regional basis. They reaffirmed the importance of maintaining stringent and, so far as possible, harmonised guidelines for exports in this area. They embarked on a comparison of their national export controls on equipment related to weapons of mass destruction and agreed to examine the scope for further harmonisation of those controls. They agreed to pursue discussions at their next meeting on these subjects;
   - agreed to continue discussing the possibilities for lowering tension and arms levels, including the development of further measures of restraint concerning arms transfers and ways of encouraging regional and global efforts towards arms control and disarmament;
   - agreed to continue to give these efforts high priority and meet again in the new year in the United States to take forward their discussions, and to meet regularly thereafter at least once a year.

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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