July 1996
Programme for Promoting Nuclear Non-Proliferation, Newsbrief, Number 34

Citation:

Summary:

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

Credits:

This document was made possible with support from Carnegie Corporation of New York (CCNY)

Original Language:

English

Contents:

PROGRAMME FOR PROMOTING NUCLEAR NON-PROLIFERATION

Number 34 NEWSBRIEF 2nd Quarter 1996

Editorial Note

The **Newsbrief** is a quarterly publication of the Programme for Promoting Nuclear Non-Proliferation (PPNN) which contains information about the actual or potential spread of nuclear weapons and about moves to prevent it. It also refers to developments relating to the peaceful uses of nuclear energy. Its contents are based mostly on publicly available material, selected and presented so as to give an accurate and balanced depiction of pertinent developments.

The present issue of the **Newsbrief** covers events that occurred, or that came to the editor's attention, in the period 27 March–30 June 1996.

The limited size of the **Newsbrief** makes it necessary to choose among items of information and to present them in condensed form. Many press organs take their information from the same sources and news items often duplicate each other, which adds to the need for careful selection from among available material.

Once again the editor wishes to point out that subheadings are used in the **Newsbrief** for convenience of presentation and do not necessarily imply a judgment as to the nature of the events referred to.

PPNN's Executive Chairman, Ben Sanders, is editor of the **Newsbrief**. He produces it and takes sole responsibility for its contents. The inclusion of an item does not necessarily imply the concurrence by the members of PPNN's Core Group, collectively or individually, either with its substance or with its relevance to PPNN's activities.

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

Unless otherwise stated, sources referred to in this issue, and publications listed, date from 1996.

I. Topical Developments

a. Moscow Summit

- On 19 and 20 April, the Group of Seven (G-7) most advanced industrial countries and Russia held a summit meeting in Moscow, to discuss the safety of Soviet-designed nuclear power reactors and the disposal of nuclear material from dismantled nuclear warheads. The leaders of the eight states also discussed the issue of the Comprehensive Nuclear Test Ban, and met with President Kuchma of Ukraine. Some specific aspects of the discussions are referred to below. The declaration issued at the conclusion of the summit meeting, a 'Statement on Complete [*sic*] Test Ban Treaty' and a 'Statement on Ukraine' are reproduced in section **IV. Documentation**.

According to the American trade publication *Nucleonics Week* of 25 April, the concessions made by the G-7 will bring significant advantages for Russia's nuclear programme. In particular, the apparent shift from exclusively bilateral Russo–American arrangements for the disposal of weapons-grade material to the involvement of the nuclear industries in France, Germany, Japan and the UK is seen as an attempt to reestablish the primacy of a closed nuclear fuel cycle and a move towards multilateralism. Rather than concentrating on efforts to remove surplus nuclear material from Russia, or to have Russia vitrify and bury it, as the US initially wanted it to, there are clear indications that the way is now paved for cooperative ventures that may result in the transfer of western mixed-oxide fuel (MOX) technology to Russia and the use there of the surplus material. Furthermore, it now seems that Ukraine will finally acquiesce in the insistent demand of the G-7 that the Chernobyl nuclear power station should be shut down by the year 2000, but also that the industrialised western nations have accepted that other graphite-moderated RBMK power reactors will have to remain in operation for the foreseeable future, with upgrading assistance from G-7 and other industrial states. One of the reactors concerned, Leningrad-1, has already undergone extensive safety upgrades and is expected to be back in operation within several months. An IAEA-sponsored review of the four-unit Leningrad power station is said to have found great improvements to have been made there since a similar group visited the plant in 1993. It is said that the US no longer expects Russia to shut down its remaining three plutonium production reactors at Krasnoyarsk-26 and Tomsk-7. Instead, it is expected that the US will assist in upgrading the safety of these reactors on condition that the fuel irradiated in them will not be reprocessed.

Contents

(Some sources selected from the extensive media coverage of the event are: **Reuter's**, 20/4; **Financial Times**, 20/4; **Frankfurter Allgemeine Zeitung**, 20/4; **Süddeutsche Zeitung**, 20/4, 22/4; **Le Monde**, 21-22/4; **New York Times**, 21/4, 22/4; **Neue Zürcher Zeitung**, 22/4; **Nucleonics Week**, 16/5, 23/5, 20/6)

b. NPT Events

- **Andorra** deposited its instrument of ratification of the NPT with the United Kingdom on 7 June. The NPT now has 183 parties.

- During a visit to Japan, **Brazil**'s President Fernando Cardoso said that his country does not intend to join the NPT. The reason he is reported to have given was that the Treaty is a hindrance to the development of a civil nuclear programme. (**Disarmament Diplomacy/Dfax**, March)

c. Further Non-Proliferation Developments

- On 11 April, in Cairo, the **African Nuclear-Weapon-Free Zone Treaty** (known as the Pelindaba Treaty) was opened for signature. On that occasion a Declaration was adopted, as reproduced in section **IV. Documentation**. Of the 53 states of the region, 43 signed the Treaty. China, France, the UK and the US, among the nuclear-weapon states, signed Protocols in which, respectively, they give negative security assurances to the parties to the Treaty; undertake not to test any nuclear explosive device within the zone, or otherwise violate the Treaty. France, the UK and the US also undertake to apply for the territories for which they are internationally responsible, the provisions of the Treaty. The Russian representative announced that his government was thoroughly examining the question of signing Protocols I and II '. . . bearing in mind their multi-faceted and long-term implications for [his] country and in particular given the on-going existence in the region of military bases of other nuclear powers.' The latter remark is understood to refer to declarations made and understandings expressed on behalf of the US and a statement made by the UK, according to which territories in the Indian Ocean, in particular Diego Garcia, would be excluded from the Treaty and from Protocol III. The statements by the UK and the US are reproduced in section **IV. Documentation**. Spain did not sign Protocol III on 11 April, reportedly for internal political reasons, but it is understood to have done so since. The full text of the Treaty and the Protocols is reproduced in **Newsbrief** 32. (**News Report from the Embassy of the Arab Republic of Egypt, London**, undated; **International Herald Tribune**, 5/4; **Financial Times**, 9/4; **Letter from High Commissioner of Papua New Guinea, conveying Message from the Chairman of the South Pacific Forum and Prime Minister of Papua New Guinea**, 9/4; **al-Gomhuria** [Cairo], 10/4; **Text of Speech by the Russian Deputy Foreign Minister Victor Fossouvaliouk**, 10/4; **Independent**, 11/4; **Letter from Minister of Foreign Affairs of Spain**, 11/4; **Financial Times**, 12/4)

- In February, **Australia**'s Minister of Foreign Affairs, Gareth Evans, called for the establishment of a nuclear-free block in the Southern Hemisphere. The proposal was for a link between the nuclear-weapon-free zones in the South Pacific, Latin America and Africa, under the Treaties of Rarotonga, Tlatelolco and Pelindaba, respectively, so as to create a 'super nuclear-weapons-free zone'. [In the elections that were held since, the government of which Mr Evans was a member was defeated and it is not known if the present government will maintain this position, Ed.] (**Melbourne Radio Australia**, 7/2 in **FBIS-TAC**-96-003, 5/3)

- The **United States** has decided to take back almost twenty tons of spent high-enriched uranium (HEU) fuel which it had supplied to a total of 41 states, for use in research reactors. The programme is seen as part of the American policy of removing HEU from civilian use; its implementation is to take thirteen years. So-called 'high income' countries are expected to pay $4.5-thousand per kilogramme, plus preparation and transportation costs. For low-income nations the US will pay the costs. Most of the material is to be stored at Savannah River, South Carolina; one ton will be deposited at the Idaho National Engineering Laboratory. Plans call for shipment of the material through ports in South Carolina and California; the (Republican) governor of California has criticised the decision to use a port in his state for the purpose. South Carolina has demanded that before any fuel is accepted there for storage a study must be made about seismic aspects of the programme. The state's governor wants the material reprocessed before storage but the US government is committed to develop non-reprocessing technologies to deal with the material. There is a report that in discussions with the US, German authorities have expressed a preference to send the spent HEU fuel to the UK for reprocessing rather than returning it to the US. This would presumably be more expensive than sending the material back but is said to be the result in part of German doubt that the US will be able to live up to its take-back offer. (**Record of Decision – US Department of Energy**, 13/5; **Reuter's**, 15/5; **Neue Zürcher Zeitung**, 15/5; **Süddeutsche Zeitung**, 15-16/5; **SpentFUEL**, 3/6; **NuclearFuel**, 3/6)

- The **Nuclear Suppliers Group** (NSG) held its 1996 plenary meeting in Buenos Aires on 25 and 26 April. It was the first plenary meeting of the Group in Latin America and was attended by representatives of the 34 member states; Brazil, the Republic of Korea and Ukraine, attended for the first time as members. Responding to the Decision on 'Principles and Objectives for Nuclear Non-Proliferation and Disarmament' adopted at the 1995 NPT Review and Extension Conference, the Group agreed to promote openness and transparency through further dialogue and cooperation with non-member countries and established a working group to advance this objective, of which Ms. Martine Letts, Australia [a member of PPNN's Core Group, Ed.] is the co-ordinator for. The Group noted a number of recent positive developments with respect to nuclear-weapon-free zones. It welcomed the endorsement by the 1995 NPT Conference of the requirement for IAEA full-scope safeguards as a precondition for new supply arrangements. It also welcomed the decision on 20 April at the Moscow Nuclear Safety and Security Summit regarding the commitment to conclude and sign a truly Comprehensive Test Ban Treaty by September 1996, as well as the adoption of a programme for preventing and combatting illicit trafficking in nuclear material. The 1997 NSG plenary will be held in Canada. (**Press Statement** by the NSG, 26/4; Direct Information)

- The first plenary session of the parties to the **Wassenaar Arrangement on Export Controls for Conventional Weapons and Dual-Use Goods and Technologies** was held in Vienna, Austria, on 2 and 3 April. As reported in **Newsbrief** 33, page 1, the meeting was convened to formally launch the new organisation and set up a secretariat. However, disagreement in particular between Russia and

the US prevented the meeting from doing so. Reportedly, the principal argument was over the point at which a party to the Arrangement would have to notify other parties of supplies to a state which those other parties had put on a restricted list. According to the US position, if, for instance, Russia sold weapons to a state which is on the US restricted list it would have to notify the US at the time it issued the relevant export license. Russia is said to oppose such restrictions, which reportedly are aimed in particular at DPRK, Libya, Iran and Iraq, because they are potentially lucrative export markets. Some observers interpret Russia's objections as also inspired by fear that its interests are being subordinated to those of NATO. But there are reports, that several other parties, including France, while in favour of a reasonable degree of transparency, also oppose the imposition of restrictions that could form an unwarranted impediment to their exports. The next meeting of the parties to the Wassenaar Arrangement is scheduled for 11–12 July, by which time it is hoped that agreement may be reached on the issue of notification. According to an Austrian source, Vienna has been chosen as the headquarters of the organisation. (**Arms Control Today**, April; **Financial Times**, 3/4; **Die Presse**, 4/4; **Süddeutsche Zeitung**, 4/4; **New York Times**, 5/4; **Guardian**, 5/4; **International Herald Tribune**, 5/4)

- There are reports from **East Asia** that a number of states in that region, apparently in response to an initiative by the Philippines, are considering the formation of a regional organisation to supervise nuclear power programmes and ensure that they are not used for military purposes. The organisation, already referred to as **Asiatom**, would have functions similar to those of Euratom. As suggested, its members would include Brunei, China, the DPRK, Indonesia, Japan, Malaysia, the Philippines, the Republic of Korea, Singapore, Taiwan, Thailand, Vietnam, as well as Australia, Canada, New Zealand, Russia and the US. (**International Herald Tribune**, 27/6)

d. Nuclear Disarmament and Arms Limitation

- On 17 June, the **Conference on Disarmament** (CD) unanimously decided to admit 23 new members, putting into effect a decision made by it in September 1995 and endorsed by the General Assembly. Membership of the CD now stands at 61 and consists of the following states — the names of the states newly admitted are underlined: Algeria, Argentina, Australia, Austria, Bangladesh, Belarus, Belgium, Brazil, Bulgaria, Cameroon, Canada, Chile, China, Colombia, Cuba, Democratic People's Republic of Korea, Egypt, Ethiopia, Finland, France, Germany, Hungary, India, Indonesia, Iran, Iraq, Israel, Italy, Japan, Kenya, Mexico, Mongolia, Morocco, Myanmar, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Poland, Republic of Korea, Romania, Russian Federation, Senegal, Slovak Republic, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria, Turkey, Ukraine, United Kingdom, United States, Venezuela, Viet Nam, Yugoslavia, Zaire, Zimbabwe. (**UN Information Service**, Press Release DCF/266, 17/6)

- Shortly before the G-7 summit on nuclear safety held in Moscow on 19 and 20 April, **Russia**'s President Yeltsin confirmed that the last nuclear weapons still in Belarus and Ukraine would be withdrawn to Russian territory in the course of the current year. In what was seen as an attempt to keep NATO from moving eastward, he urged western countries in their turn, to keep their nuclear missiles on their own territories. On 1 June, **Ukraine**'s President Leonid Kuchma announced that the last of the strategic nuclear warheads still in his country had been transferred to Russia on that day. According to the Monterey Institute of International Studies, in 1990 there were 1,828 operational Soviet strategic nuclear warheads in Ukraine; there were also over 2,500 tactical weapons. Ukraine is the second of the former Soviet republics to transfer all its nuclear warheads to Russia, after **Kazakhstan**. At a ceremony at a large former missile base at Pervomaisk, Ukraine, the defence ministers of Russia, Ukraine and the US marked the event. The number of nuclear warheads remaining in **Belarus** is reported to be 18, mounted on single-warhead SS-25 mobile missiles. Minsk has confirmed that it is adhering to the schedule for the removal of the missiles by 31 December. (**Independent**, 11/4; **Monterey Institute of International Studies**, May; **Reuters**, 1/6; **New York Times**, 2/6, 5/6; **National Public Radio News** [Washington, D.C], 2/6; **Neue Zürcher Zeitung**, 3/6; **Interfax News Agency** [Moscow], 4/6, in **BBC Monitoring Service**, 4/6; **Jane's Defence Weekly**, 12/6)

e. Nuclear Testing

- The arduous efforts made in the CD to achieve a **Comprehensive Test Ban Treaty** (CTBT) before adjournment, on 28 June, have not so far led to agreement on a text. At the beginning of the three-month period covered by this issue of the **Newsbrief**, one of the most controversial issues in the CD was the demand by **India** that the Treaty should include an undertaking by the five declared nuclear-weapon states to eliminate their nuclear arsenals within a time-bound framework. The scope of the prohibitions included in the Treaty was subject to intense discussion. The **United States** rejected non-aligned demands that the Treaty should prohibit all experiments that could lead to the development of new nuclear weapons, including non-explosive laboratory tests. As reported in **Newsbrief** 32, page 6, the US had planned during the current year to start a series of subcritical nuclear experiments which, according to some critics, were intended not only to ensure safety and reliability of warheads, as claimed by the US, but also to help weapons laboratories design new warheads. According to the Viennese daily *Die Presse*, a recent report of the US Department of Energy (DoE) on Internet indicates that this is indeed a primary purpose of these experiments. DoE has denied this, claiming that all programmes for the development of new warheads ceased in 1992, and that the report was outdated. *Die Presse* maintains, however, that the references in the report to a number of more recent items contradict this contention.

  Also at the beginning of the quarter it was not clear whether the **Russian Federation** had indeed committed itself to a zero-yield test ban, but when President Yeltsin opened the summit meeting of the Group of Seven (G-7), in Moscow on 19 April, he endorsed a CTBT that would prohibit all nuclear tests and other nuclear explosions. He added, however, that Russia intended to maintain the ability to resume testing if necessary. Until almost the end of the period, **China** held to its demand that the Treaty should provide for the right of parties to carry out 'peaceful nuclear explosions'. There were several reports that it was considering the use of nuclear explosions to irrigate a desert in the north-west of the country. Chinese scientists had also suggested the use of nuclear devices against asteroids. In early June, however, China's CD delegate announced that his country was ready to go along with 'a temporary ban' on peaceful nuclear explosions, adding that the issue should be reconsidered in ten years at a conference to review the Treaty — this is now expressly men-

tioned in draft article VIII, on treaty review. China also expressed its opposition to the use of intrusive methods of verification which, it contended, would give unfair advantage to the most developed countries; in this, it was said to have the support of India and other developing states. The US, on the other hand, held that China's demand could cripple the verification system and would favour states trying to conduct clandestine nuclear tests.

On 28 May, the Chairman of the CTBT negotiations, Netherlands Ambassador Jaap Ramaker, submitted to the CD a draft of a comprehensive test ban treaty, reflecting his attempt to present options able to command wide support. With respect to the scope of the treaty, the draft provided for a ban on all nuclear explosions ('zero yield'). While not expressly referring to vertical proliferation and not containing a timetable for nuclear disarmament, as demanded by India and other non-aligned nations, the preamble referred to the ultimate goal of eliminating nuclear weapons globally and indicated the need to constrain the development and qualitative improvement of nuclear weapons and ending the development of advanced new types of such weapons. The draft provided for the creation of a CTBT Organization (CTBTO), located in Vienna, with a Conference of States Parties, a 45-member Executive Council (since raised to 51), and a Technical Secretariat, headed by a Director-General. With regard to verification, the draft treaty referred to four basic technologies: seismic, hydroacoustic, infrasound and radionuclide monitoring. It provided for the possibility of on-site inspections to be set in motion by any relevant information but did not allow the unqualified use of information obtained by national technical means. Provision was included for the execution of on-site inspections if a simple majority of the Executive Council approves. This, reportedly, would take the place of the US' approach under which the CTBTO would be authorised to make on-site inspections unless the Executive Council decides otherwise. On the other hand, a number of delegations, including those of China, India and Pakistan, held out for a qualified majority vote by the Executive Council as a condition for on-site inspections.

Reportedly, while much of the text received wide support in the CD, the formulation of the entry-into-force clause was a subject of particular controversy. The Chairman proposed a formula designed to ensure that before it could enter into force the Treaty would have to be ratified by the eight states currently deemed capable of staging a nuclear test (i.e., the five recognised nuclear-weapon states, India, Israel and Pakistan) — a point on which the five nuclear-weapon states in particular had different views. While France and the US were understood to be flexible, the UK was seen as adamant in its demand that entry-into-force would require ratification by all eight nations; China and Russia were said to have a similar position. India reportedly made clear that it would not sign the Treaty if entry into force depended on its adherence; its stance was seen as affecting Pakistan's attitude as well.

On 28 June, as it became clear that the initial deadline for agreement could not be met, Ambassador Ramaker presented the CD with a revised draft containing a number of new compromises. One of these is a revised formula for entry-into-force, requiring ratification by 45 member states of the CD, whose names also appear on IAEA lists of states with power or research reactors. The text is also said to contain proposals for compromises on open issues such as the process of triggering on-site inspections and the role of national technical means for verification purposes. A point of contention that did not seem to be newly addressed in the revised draft, and on which a number of states are said to seek more clarity, is the scope of the activities to be banned by the Treaty.

At the time this issue of the **Newsbrief** went to press, the revised draft was being referred to the respective capitals for consideration and consultation, in the hope that when the CD reconvenes, in late July, agreement may be achieved. It was not clear at the time, if the negotiations would be continued and, if so, what new deadline would apply.

On 7 June, **China** confirmed the announcement of the Australian Seismological Centre that a test had taken place in the area of Lop Nor; the yield was estimated to be between 20 and 80 kilotons. Beijing also said that it would conduct one final nuclear test, by September. The June test, reportedly the 44th to have been detected at Lop Nor, was widely expected; Japanese authorities are said to have been advised in advance. According to a Japanese source, it involved the simultaneous detonation of at least two nuclear devices. It was noted that reactions from governments to the news of the test were relatively muted.

(**Reuter's**, 29/3, 9/6; **Die Presse**, 29/3, 4/4; **New York Times**, 31/3, 7/6, 8/6; **Washington Post**, 20/4; **Jane's Defence Weekly**, 24/4; **Disarmament Diplomacy**, May; **Guardian**, 15/5; **Neue Zürcher Zeitung**, 10/6; **Süddeutsche Zeitung**, 10/6; **International Herald Tribune**, 13/6, 27/6, 28/6, 29-30/6, 1/7; **Documents CD/NTB/WP. 330** and ditto **Rev.1**)

- There are reports in the western press that **France** has entered into a secret agreement with the **United States** under which it will share nuclear-weapons test and research data, including results from computer simulations of nuclear explosions, to help maintain the French nuclear arsenal without explosive testing and avoid accidental detonation. A similar agreement is in force between the US and the UK. The deal is said to have been concluded in the first place to ease France's acceptance of a CTBT and increase the safety and reliability of its nuclear arsenal. Some observers are concerned that the agreement will be seen as introducing a new element of discrimination among nuclear- and non-nuclear-weapon states. Reportedly, the US Administration has also told China that it would be willing to share computer simulation techniques with that country. However, Republican members of the US House of Representatives have introduced into the 1997 Defense Authorization Bill a prohibition against sharing nuclear information with a number of countries, including China. (**Washington Post**, 17/6; **Times** [London], 18/6; **International Herald Tribune**, 18/6)

  In the **United States** the first of two 'subcritical tests' initially scheduled to be conducted in Nevada on 18 June and 12 September is said to have been postponed for several months. Delegates to the CTBT negotiations in Geneva, as well as four Senators and 21 members of the House of Representatives, had urged the postponement in the interest of the conclusion of the Treaty. The US Department of Energy has given as reasons for the postponement the need to fully address potential environmental impacts and provide an opportunity for public comment, rather than the CTBT negotiations. (**NuclearFuel**, 17/6; **DoE News**, 17/6)

f. Nuclear Trade and International Co-operation

- On 1 June, **Algeria** and **China** signed an agreement for nuclear co-operation, described in a Chinese news report as a 'document on examination and acceptance of the

second-phase project of a nuclear facility and the summary of talks on the peaceful use of nuclear energy'. Algeria, which is a party to the NPT, already has a heavy-water research reactor supplied by China. (**New York Times**, 3/6; **Xinhua News Agency** [Beijing], 3/6, in **BBC Monitoring Service**, 5/6)

- **Brazil** and **India** have signed a memorandum of understanding on cooperation in the peaceful applications of nuclear energy. During his visit to Brazil in late January, India's Prime Minister Narasimha Rao joined President Fernando Cardoso in proposing multilateral negotiations for a disarmament programme to eliminate all nuclear weapons. (**Agencia Estado** [Sao Paulo], 25/1, 27/1 in **FBIS-TAC**-96-003, 5/3)

- The **EURATOM/US** agreement entered into force on 12 April, with the formal exchange of diplomatic notes testifying to the completion of each side's constitutional procedures. (**SpentFUEL**, 1/4, 8/4, 22/4)

- It appears that for the timely completion of the first 1000 MW power reactor at Bushehr, in **Iran**, **Russia** needs technical documentation from Siemens AG, of **Germany**, the firm that started building the plant in the 1970s but withdrew from the project after the Islamic Revolution of 1980. Reportedly, Iran particularly needs the technical specifications for components supplied by Siemens, lacking which the equivalent would have to be replaced by components of Russian manufacture, which might delay the project. Siemens is said to be generally unwilling to release specifications for reactor components and there is great doubt that it will release this information to Iran. German officials are quoted as saying that Iran has not yet made an official request for Siemens' design specifications but that such a request would be carefully weighed. One question appears to be whether suppliers are obliged to provide data for equipment already installed at Bushehr.

  The contract between Iran and Russia went into effect on 12 January. It provides for the completion of the first VVER-1000 reactor within 55 months, at a reported cost of $800-million. In all, Bushehr is to have four reactor units: one of 1000 MW, and two of 440 MW each. The capacity of one of the units has not yet been established.

  (**Interfax** [Moscow], 6/2 in **FBIS-TAC**-96-003; **Nucleonics Week**, 28/3)

- **Japan** has asked the **United States** to add to the list of facilities for which it has given programmatic approval under the 1988 agreement for nuclear co-operation to reprocess US material, five European MOX fuel fabrication facilities listed in an annex to the new EURATOM/US agreement. A response to this request will reportedly entail a determination that the addition is not inimicable to US common defence and security and will require the approval of a 'subsequent arrangement'; this is a complicated procedure, involving a number of government departments, as well as the US Congress which, for a 15-day period will have the opportunity to adopt a resolution of disapproval. Three antinuclear groups: *Greenpeace*, the *Natural Resources Defense Council* and the *Nuclear Control Institute*, have asked the US Administration to reject the Japanese request because they say Japan does not need the plutonium at present, given the shutdown of the Monju fast-breeder reactor. There have been several reports of disagreements on this matter between the US Department of Energy (DoE) and the State Department. The Office of Arms Control and Nonproliferation in DoE was said to feel that there was no need for urgency in responding to the Japanese request while the State Department held that the Japanese request posed no proliferation problems, as the European facilities have already been approved as meeting safeguards requirements and are included in the annex of the agreement with EURATOM. The latter view now seems to prevail: the request is being circulated among the US agencies involved and is likely to be approved by Congress in early August. (**SpentFUEL**, 29/4, 6/5, 3/6, 24/6; **NuclearFuel**, 6/5, 17/6)

- In the **United States**, some utilities that are interested in using reactor (MOX) fuel containing plutonium from the approximately 50 MT of surplus stocks now held by DoE are said to look to European facilities to have that fuel fabricated — an option which DoE reportedly does not seriously consider. In the **UK**, British Nuclear Fuels plc (BNFL) is said to have submitted an expression of interest to DoE about the disposition of excess weapons plutonium as MOX. There is also interest among American utilities in cooperating with **Russia** on the production of MOX fuel from surplus plutonium and on cooperation with **Canada** on the use of MOX in Candu reactors. Reportedly, Canada would also be ready to buy surplus plutonium from Russia, for use in Candu fuel; Prime Minister Chrétien discussed the possibility with Presidents Clinton and Yeltsin, at the G-7 summit meeting in Moscow. A Memorandum of Understanding on cooperation in the area of nuclear safety and waste disposal projects was signed by Canada and Russia on 18 April. This provides, among other things, for co-operation in 'the analysis of various variants of utilisation of weapons grade plutonium in fast neutron reactors and CANDU reactors in particular, with high priority on the use of Canadian nuclear power stations for the utilisation of weapons grade plutonium'. A preliminary study on the technical and economic feasibility of a joint MOX fuel project was funded by Canada's International Development Agency. A **French**-Russian project for a demonstration plant for MOX fuel fabrication has been under way for some time. This should lead up to the construction of a larger plant in Russia. Further, **Japan** is said to be exploring with the **European Commission** an agreement under which MOX fuel would be fabricated in the **UK** and in **Belgium** for Japanese reactors. It is noted in the latter connection that, following a finding by the Belgian Advocate General that an error has been made in the licensing procedure for Belgonucleaire's new MOX fabrication facility, *Greenpeace* is seeking to challenge the government authorisation for that plant. Reportedly, no decision has yet been made whether to build the new facility, which would be an extension of an existing plant. Meanwhile, Russia is still said to have some interest in getting at least part of the Siemens MOX fuel fabrication plant at Hanau shipped to Russia. A joint German-Russian study recommended first building a pilot facility; the next stage would be building a facility in Russia using Siemens' technology and some of the hardware of the Hanau plant.

  (**SpentFUEL**, 25/3, 8/4, 22/4, 6/5; **Atoms in Japan**, April; **Financial Times**, 2/4; **NuclearFuel**, 8/4; **Nucleonics Week**; 11/4; **Jane's Defence Weekly**, 17/4; **Release from the Office of the Prime Minister of Canada**, 18/4)

g. IAEA Developments

i. General

- Kaluba Chitumbo, of Zambia, has succeeded Hiroshi Tani as Director of the Division of Safeguards Information

Treatment. Dr. Chitumbo joined the Department of Safeguards in 1984 and since 1993 has been Section Head in Division of Operations (C). At the 1995 NPT Review and Extension Conference he served as Secretary of Main Committee III. (**IAEA Press Release** PR96/6, 3/4; Direct Information)

ii. Safeguards

- At its session in June, the IAEA's Board of Governors established a Committee to prepare a model for a protocol that will supplement existing safeguards agreements by providing the basis for additional rights for the Agency with respect to access to information and to nuclear-related locations. The Board's move gives effect to its earlier decision regarding the need to create a legal mechanism that would enable the Agency to apply certain additional measures under the 'Programme 93+2' for strengthening of the Agency's safeguards. The Committee, which will be presided over by the Board's Chairman, will start its work during the current month.

  By the end of 1995, there were safeguards agreements in force between the IAEA and 125 states. Of these, 66 states had nuclear activities. Of the 885 nuclear facilities and other locations with nuclear material that were subject to safeguards, 554 were inspected in 1995, involving 2,285 inspections. Reportedly, the Agency did not find any indication that nuclear material that had been put under safeguards was diverted for any military purpose or purposes unknown. (See **Newsbrief** 31, pp. 11 and 12; **IAEA Press Release PR 96/10**, 14/6; Direct Information)

- The **Japan** Atomic Energy Research Institute says that it has developed a safeguards seal that can be easily and quickly verified on-site; the IAEA is expected to order the new seal for use in its safeguards activities, by the end of the current year. Canada and Sweden have developed, through the Safeguards Support Programmes, an ultraviolet-sensitive telephoto lens for the Cerenkov Viewing Device. With advanced light-gathering capabilities and high resolution the lens is said to be able to provide a larger image and more detailed Cerenkov characteristics of light-water reactor fuel. (**JAIF Shimbun**, 4/4; **IAEA Newsbriefs**, April/May)

- A technical team of the IAEA has studied an American gaseous diffusion plant at Portsmouth, Ohio, with a view to applying safeguards to the downblending of surplus US weapons material (HEU). Reportedly, the IAEA applies safeguards at three former nuclear weapon facilities in the US: Rocky Flats, Colorado, (plutonium processing); Hanford, Washington (plutonium production); and Oak Ridge, Tennessee, (storage). (**NuclearFuel**, 20/5)

h. Peaceful Nuclear Developments

- There are plans in **Brazil** for a centrifuge enrichment facility at Resende, in Rio de Janeiro State, to start producing part of the three per cent-enriched fuel for the Angra-1 power reactor. The centrifuges are being manufactured at the navy's Aramar Experimental Centre at Ipero (Sao Paulo State). So far, uranium processed in Brazil was sent to Urenco for conversion into hexafluoride and enrichment; the fuel elements themselves are understood to have been manufactured at Resende. As reported, the director of the Navy Technological Centre has said that initially the locally enriched fuel will be used in research reactors at Sao Paulo, Rio de Janeiro and Belo Horizonte [which raises a question as to the enrichment level of the uranium produced — Ed.]. (**Jornal do Brasil**, [Rio de Janeiro], 19/4)

- On 15 May, **Bulgaria**'s oldest power reactor, Kozloduy-1, which dates from 1974, was shut down for safety tests, particularly on the pressure vessel which western safety experts fear might not be able to withstand excessive cooling. (See **Newsbrief** 32, page 8.) A sampling-and-analysis exercise, financed by the European Union, will begin in early July. Sampling will be done by specialists from Croatia under sub-contract to Westinghouse; the analyses will be made by Siemens with Russian and Bulgarian participation. A decision on the permanent shut-down of the plant is said to depend on the results of the tests; if those are satisfactory, it might be possible to keep the plant in service until the end of its design-life, in 2004. Meanwhile it has been reported that talks have started with French, German, Russian and US companies about further construction work on the Belene-1 VVER 1000 reactor, which is said to be 65 per cent complete. Finishing this unit with western control and safety systems will, reportedly, cost about $1.4-billion. Once completed, Belene would replace the two oldest units at Kozloduy. (**NucNet News**, 17/5, 7/6; **Nucleonics Week**, 23/5, 13/6; **Kontinent** [Sofia] 2/5; **BTA News Agency** [Sofia], 6/5, in **BBC Summary of World Broadcasts** , 9/5, and 13/5, in ditto, 15/5; **Reuter's**, 13/5, 14/5, 16/5)

- **Germany**: The Technical University of Munich has received initial approval from the environmental authorities of Bavaria to start construction of the 20 MW FRM-2 research reactor at Garching. The authorisation pertains exclusively to the start of civil engineering work at the site. Construction is planned to start this August and the reactor should be completed in 2001. The fact that the reactor is designed to operate on highly-enriched uranium (HEU) has caused concern in the US, as well as in Germany itself, where anti-nuclear and environmental groups have begun protest actions against its construction and have announced that they will continue to demonstrate until the plans are dropped. With the exception of reactors built in China and Libya, the Garching reactor is said to be the first new facility to use HEU since the US started its programme to deter the use of HEU in reactors, in 1978. There has been talk about the possibility that, following a recent agreement between **France** and **Russia** which, among other things, provides for co-operation in nuclear research and the supply of HEU for the research reactors at Grenoble and Saclay, France would be able to supply Germany with US-origin HEU fuel for the FRM-2 reactor. According to EURATOM officials, however, the report that this was the main aim of the agreement was not accurate. In any case, according to the European Supply Agency, a new source of supply would still be needed for the long-term operation of the other European reactors that operate on HEU, including the one at Garching. European officials also point out that the HEU to be provided by Russia to France is subject to Russian prior consent and may not be transferred to any other EU state. There are also reports that EURATOM is itself negotiating with Russia for HEU to fuel the Garching reactor.

  The transport of 28 canisters of vitrified radioactive waste from German spent fuel reprocessed in France to interim storage at Gorleben in Lower Saxony, north-central Germany, in early May, has been the occasion of large peaceful demonstrations by anti-nuclear groups, as well as widespread use of force by smaller groups of violent protesters. Partly in response to calls from opposition members of the German federal parliament, acts of

sabotage had begun a month earlier, on the occasion of a shipment of spent fuel from the Phillipsburg power station, when demonstrators destroyed railway lines in the area, set fires, blocked roads, cut power lines, and fought police and firefighters who attempted to contain the damage. On 8 May, when the first transport took place, notwithstanding the promise of organisers to refrain from violence, fierce battles erupted between large mobs of demonstrators and an extensive police force. The shipment arrived at its destination with considerable delay, in line with the expressed wish of some of the opponents, 'to make it as costly as possible'. The fact that the protest led to what is said to have been the largest engagement of German police forces since World War II, several hundred arrests, and costs estimated at $33 million — not counting damage caused by indiscriminate sabotage acts involving railway tracks, signal boxes, rolling stock, roads and power lines — raises concern about the problems that may be expected in connection with future shipments of this kind, of which reportedly more than 100 had been planned initially. German politicians obviously see the need to reach a consensus on the country's future energy policy as more urgent than ever, but pro- and anti-nuclear factions are seen as so far apart that an early solution is considered unlikely. The Interior Minister of Lower Saxony, where Gorleben is situated, says that further transports of vitrified high-level waste will not be tolerated. The German federal minister for the environment has said that spent nuclear fuel should be kept in interim storage in the country, rather than being sent to France long before reprocessing; the French firm Cogema has denied a report in the German weekly *Welt am Sontag* that it was negotiating about the storage of German spent fuel in France for 20–30 years.

In response to suggestions that more spent fuel should be retained at reactor sites, speakers for the nuclear industry express doubts that enough dry storage facilities could be set up at reactor sites. One reason for the industry's doubt is said to be that licensing such facilities involves public hearings at which opponents would probably block all progress, thus forcing waste to be held indefinitely at the reactors themselves. There is a report that the Bonn government is now considering to look for a single site in Germany to dispose of all nuclear waste, in a drastic departure from previous policy, which was based on the construction and operation of two repositories: one, at Gorleben for high-level waste and another for low- and medium-level waste. The latter repository, the former Konrad iron mine, which is also located in lower Saxony, would be investigated for its suitability also to accept high-level waste. Initial reactions from the utilities to the suggestion to have only one repository are said to be negative, however.

(**Die Welt**, 6/4, 9/4, 13/4, 15/4, 18/4, 4/5, 6/5, 7/5; **Observer**, 7/4; **Reuters**, 9/4, 25/5; **Süddeutsche Zeitung**, 6-8/4, 9/4, 10/4, 11/4, 15/4, 16/4, 18/4, 19/4, 29/4, 4/5, 6/5, 7/5, 8/5; **Frankfurter Allgemeine Zeitung**, 6/4, 10/4, 18/4, 4/5, 6/5, 7/5; **NuclearFuel**, 6/5, 20/5, 3/6, 17/6; **Libération**, 8/5; **New York Times**, 9/5; **Guardian**, 9/5; **Financial Times**, 9/5; **Kurier**, 7/5, 9/5; **Standard** [Vienna], 7/5; **Nucleonics Week**, 9/5, 16/5, 6/6, 13/6, 20/6; **SpentFUEL**, 13/5, 17/6; **NucNet News** 21/5)

- **India** is reported to have completed its third reprocessing facility, at Kalpakkam. The facility is now undergoing 'cold commissioning' and testing. (**NucNet News**, 27/3)

- In **Indonesia** discussions continue about the construction of an extensive nuclear-power station at Mount Muria, in Java. According to the country's Foreign Minister, a final decision has not yet been taken. The Minister for Science and Technology has been quoted as saying that nuclear power is an unwelcome option for Indonesia, but that given its enormous population growth and energy need, it is the only one. (**Reuter's**, 22/4; **Nucleonics Week**, 16/5)

- At **Japan**'s prototype fast-breeder reactor Monju, the tip of the sodium temperature gauge or thermocouple thimble, which broke off and is thought to have caused the sodium leak last December, was finally located inside a distributor below the steam generator and has been recovered. It is now undergoing metallurgical analysis. An interim investigation report by Japan's Science & Technology Agency says that the break in the thermocouple sheath was the result of incorrect design, in which inadequate account was taken of the high-frequency vibration caused by stress and drag of the coolant flow. Small cracks have been found in the sheath of a second thermocouple among the 48 in the reactor's secondary heat transport system. Estimates as to when it would be possible to start the facility up again, recently set at a minimum of three years, have become even less certain as a result of a laboratory simulation of a sodium leak, in which unexpectedly liquid sodium burnt holes through carbon steel six millimetres thick. The steel used in the experiment is said to be the same as is used to line the floor beneath Monju's secondary heat transport system, but in the December accident no such damage was found. Reportedly this might imply that the floor lining may need to be replaced with more resistant material.

  Hiroshi Oishi has been replaced as President of the Power Reactor & Nuclear Fuel Development Corp. (PNC), which owns Monju, by Toshiyuki Kondoh; PNC's Vice President, Mitsuo Taguchi, has been replaced by Kunihiko Uematsu, hitherto Director General of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development (OECD/NEA). The companies that supplied the thermocouple sheath, Toshiba and Ishikawajima-Harima Heavy Industries, have publicly apologised for the erroneous design and have admitted that another thermocouple at the same spot had earlier been found faulty and been replaced. Campaigners for a petition to the country's authorities, to order the definitive shut-down of Monju, claim that they have already collected more than one million signatures. The appointment of Mr. Uematsu, who is known as an expert in plutonium and fast-breeder reactors, is seen as a sign that the Japanese government is determined to repair and restart the facility.

  (**Nucleonics Week**, 4/4, 2/5, 16/5, 23/5, 30/5, 6/6, 13/6, 20/6; **Atoms in Japan**, May; **NucNet News**, 28/5)

- **Kazakhstan** has announced that it intends to seek tenders for the design and construction of a nuclear power station at the former nuclear weapon test site at Semipalatinsk. (**NucNet News**, 9/4, 15/4)

- **Romania**'s first nuclear reactor, the 700 MWe Candu pressurised heavy-water unit Cernavoda-1 has begun operating and was scheduled to be connected to the grid in late May. (**Enerpresse**, 21/3; **NucNet News**, 17/4)

- The Prime Minister of the **Slovak Republic** has confirmed that the first of the two 408 MW VVER-440/213 power reactors being completed at Mochovce should be operational in mid-1998 and the second one in early 1999. The

third and fourth reactor of this type would be completed after the year 2000. A French-German joint venture called European Consortium Mochovce, formed by the firms Framatome and Siemens, and Electicité de France, will carry out the safety upgrades at the first two units. On 16 April the major contractor, Slovenske Elektrarne, formally signed contracts for the job with primary suppliers from eastern, central and western Europe — an occasion characterised by Premier Meciar as a litmus test of East-West cooperation. Credit guarantees for a total of $856-million have been extended by the Slovak government. The sum is said to be sufficient to cover loans and interest for the final completion contracts. Contrary to earlier reports from Slovak sources that the older-model VVER-440/230 reactors at Jaslovske Bohunice would be upgraded and be kept on line for at least the first decade of the next century (see **Newsbrief** 33, page 9), Prime Minister Mečiar has said that the oldest of these reactors will be closed down one year after the first two Mochovce units are in operation. Reportedly, two reactor units at Bohunice have been upgraded. A $180-million backfit programme to be carried out by Siemens over the next three years should allow the reactors to operate safely for several years into the next millennium; according to Prime Minister Meciar, the station's life cannot stretch beyond 2005. The Austrian government, which has long resisted the completion of the Mochovce power plant, has taken the occasion of the signature of the contracts to publicly express doubt that even western help will be able to ensure the safety of Russian-design reactors. Reportedly, Vienna is now putting its hopes on its ability to convince the European Commission that the entry of the Slovak Republic into the European Union should be conditioned upon the termination of the plans to complete the Mochovce station. (**TASR News Agency**, 16/3; **Sme** [Bratislava], 23/3; **Nucleonics Week**, 4/4, 18/4, 23/5; **NucNet News**, 15/4, 16/4, 17/4, 15/5; **Reuter's**, 16/4; **Die Presse**, 17/4; **Standard** [Vienna], 17/4, 26/4; **Enerpresse**, 17/4; **Süddeutsche Zeitung**, 17/4; **Frankfurter Allgemeine Zeitung**, 17/4, 18/4; **TASR News Agency** [Bratislava], 22/4, in **BBC Monitoring Service**, 25/4)

- In **Sweden** during 1995 almost half of the electricity generated was produced by nuclear power. As part of its budget proposals, Sweden's government has proposed raising taxes on nuclear generation from the present 1.2 oere per kilowatt to 2.2 oere in September and by 3.2 oere in July 1997. This would represent an increase of 1,500 per cent from the 1995 level. While the government still plans to decommission one reactor before September 1998, it is not thought practicable to decommission all twelve existing reactors by 2010, as decided in a referendum of 1980, especially if Sweden is also to maintain its schedule for reducing carbon dioxide emissions. An inter-party committee has now been set up for the purpose of deciding, by the end of the current year, when decommissioning should begin, when it should be completed, and what alternative energy sources should be chosen. It is noted that for decommissioning to start a change is needed in the pertinent legislation, and to obtain this the Social Democrat government, which does not have a parliamentary majority, is understood to need support from other parties. A recent report made for the Swedish Nuclear Power Inspectorate is said to have seriously underestimated the cost of decommissioning Sweden's nuclear power stations. (**NucNet News**, 21/3; **Economist**, 20/4; **Nucleonics Week**, 25/4, 2/5, 30/5, 20/6; **Financial Times**, 24/5)

- The tenth anniversary of the accident at the Chernobyl nuclear power plant in **Ukraine** has been the occasion for reflection on the causes and on the effects of the event and for extensive coverage by the media. In the country itself and in neighbouring states, particularly **Belarus**, it is becoming increasingly obvious that, while the full impact of the accident is not yet known and may not be completely known for many years, some of the worst consequences of the event arise from a widespread fear of unknown, lingering or delayed effects. Under the title *One Decade After Chernobyl: Summing up the Radiological Consequences*, an international conference was held in Vienna from 8 to 12 April, sponsored jointly by the IAEA, the European Commission and the World Health Organization (WHO), and held in co-operation with the United Nations Department of Humanitarian Affairs (UNDHA), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Environment Programme, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the Food and Agriculture Organization of the United Nations (FAO) and the Nuclear Energy Agency of the Organisation for Economic Cooperation and Development (NEA/OECD). The conference was chaired by the German Environment Minister Angela Merkel, and was attended by participants from the three states most affected by the disaster: Belarus, the Russian Federation and Ukraine, and observers from 68 other states and from 20 intergovernmental organisations, as well as by over 200 journalists. Its purpose was to review scientific, medical, environmental, social and political issues, in an attempt to clarify the nature and magnitude of the effects that should be attributed to the accident.

  Reportedly, one conclusion to be drawn from the meeting is that the major consequences of the disaster are the psychological, social and economic impact it has had in Belarus, Russia and Ukraine. Moreover, according to the WHO, the accident has led to a great rise in thyroid cancers among children and workers who dealt with the emergency, and there has been a notable incidence of leukaemia among the latter. Many people were reported to suffer from stress symptoms such as tension, heart and circulation problems, stomach complaints, ulcers and depression. The suicide rate is reported to have quadrupled in the year after the accident, and there has been a considerable increase in psychosomatic illnesses. There was said not to be an increase in congenital deformities, but a team of researchers from Belarus, Russia and the UK have now apparently found a twofold increase in mutation frequency — inherited genetic changes, so-called germline mutations — in children born in 1994 to parents who had lived in the Mogilev region of Belarus, about 250 kilometres from Chernobyl, at the time of the accident. The consequences of these mutations, which are understood not to have occurred among the children of survivors of the atomic bombings in Japan, are not yet clear. Scientists say that they may not be biologically important and that there has so far not been evidence of damage to the genetic material that builds or controls cells.

  There is still no agreement on the number of fatalities caused by the accident. The Deputy Minister of Health of Ukraine has put the death toll at 4,229, including 2,929 liquidators, who worked in the clean-up. A joint statement presented at the conference by the competent authorities of the three countries most directly affected would seem to indicate that total mortality among liquidators was not that high; the number of deaths directly ascribed in this report to the event totalled 44. The report of the OECD/NEA

working group mentioned below maintains that the deaths directly resulting from the accident total 31.

Recent reports on the ecosystem in the area indicate that this may not have been as badly damaged by the 1986 event as initially feared. There have been some malformed farm animals and reportedly there were noticeable changes in some smaller species of animals, but no significant increase has been observed in birth defects in larger animals. With regard to trees and plants, the rate of recovery is compared to that occurring after a forest fire.

A working group of the Nuclear Energy Agency of the OECD has updated the estimates of the size of the release of radioactive material resulting from the 1986 accident and has found no grounds for modifying the essence of earlier conclusions.

Just before the Chernobyl conference was held, the IAEA had organised a forum on the safety of RBMK reactors. On both occasions there were calls for the shut-down of all Soviet-designed RBMK power reactors, although the safety features of most of the 15 facilities of this type that are still in operation have been upgraded and according to a report of the German nuclear safety agency, a repetition of the 1986 Chernobyl accident is virtually impossible. Western experts are said to agree that if an early shut-down is not possible, significant further upgrades should be applied. According to a poll conducted by a British market research organisation, one in every three persons in Ukraine believes that the risk of another Ukraine-type accident is more than 50 per cent.

At the G-7 summit in Moscow, in April, Ukraine's President, who attended part of the session, was reported to have once again 'reluctantly confirmed' his country's commitment to close the remaining reactors at the Chernobyl power station by the year 2000. Elsewhere, however, he has let it be known that this would be possible only with additional financial assistance from the G-7. The latter have promised Ukraine $3.1 billion, but it seems that this amount will not suffice to cover the total cost of the shut-down of the station, its decommissioning, the erection of a new 'sarcophagus' around the remnants of the ruined reactor unit-4, cleaning up the site and the completion of two new power reactors to make up for the loss of energy resulting from the closure of the Chernobyl station; Russia's deputy minister for emergency situations has been quoted as saying that closing the station will cost Ukraine and the aid-providing countries $4.5 billion. Meanwhile, it has been reported that Ukraine's environment minister, Yuriy Kostenko, has confirmed that, contrary to earlier plans, the fuel channels of Chernobyl's unit-1 will not be replaced and that the plant will be closed down before the end of this year, preparatory to its decommissioning.

The integrity of the sarcophagus over reactor unit-4 is a source of growing worry. Reportedly, as a result of radiation and damp the steel beams that support the structure are said to be growing brittle and there is fear that if there was an earthquake in the area, it might collapse and cause radioactive dust to escape. The structure was designed to last for thirty years. Estimates of the time for which it is still likely to hold vary, but there seems to be wide agreement that it should be replaced within about ten years even if no disastrous events intervene. So far, none of the bids made in response to Ukraine's request for proposals for the construction of a replacement shell built to last 100 years has been found acceptable. The biggest current hazard is said to be the escape of radioactive particles into ground water that might seep into the Dnieper River. The European Union has commissioned studies on the situation, but it seems that no western organisation or individual country has committed any funds towards the replacement of the sarcophagus or the massive clean-up job that needs to be done at Chernobyl.

In April, fires broke out in a deserted village inside the exclusion zone around the Chernobyl power station and spread rapidly over an area of 5,000 acres (2,000 hectares). The fire was said to have been caused by people entering the area to visit the graves of relatives on the tenth anniversary of the disaster. It was quickly put out. Notwithstanding some press reports to the contrary, the fear that it would lead to renewed dispersal of radioactive particles in smoke and dust beyond the immediate area has apparently not been borne out.

(Editor's note: the following references represent a small selection of items from the vast media coverage of the tenth anniversary of the Chernobyl disaster: **IAEA Press Release** PR 96/4, 19/3, PR 96/5, 21/3, PR 96/7, 17/4, **INFCIRC/510**, 7/6, *The International Conference 'One Decade After Chernobyl: Summing Up the Consequences of the Accident'*; **INFCIRC/511**, 11/6, *Material Relating to the Chernobyl Accident Submitted by Belarus*; **NucNet News**, 27/3, 22/4, 23/4, 25/4; **New York Times**, 31/3, 25/4; **UIC Newsletter** [Melbourne], March/April; **Nuclear Europe Worldscan**, March/April; **Reuter's**, 2/4, 10/4, 20/4, 24/4, 25/4; **Daily Telegraph**, 9/4; **Agence France Presse**, 9/4; **International Herald Tribune**, 10/4, 11/4, 24/4, 25/4, 26/4; **Süddeutsche Zeitung,** 10/4; **Standard** [Vienna], 10/4, 25/4; **Die Presse**, 10/4, 24/4, 26/4; **Neue Zürcher Zeitung**, 10/4, 24/4; **Independent**, 11/4; **Nucleonics Week**, 11/4, 18/4, 25/4 — the latter two issues with **Nuclear Safety Since Chernobyl**, Special Report to the Readers of Nucleonics Week, 2/5; **Washington Post**, 18/4, 19/4, 24/4; **Interfax News Agency**, [Moscow], 19/4; **Le Monde**, 20/4; **Associated Press**, 22/4; **Wall Street Journal**, 24/4; **Nature**, 25/4; **Times** [London], 25/4; **Washington Post National Weekly Edition**, 6-12/5)

i. Weapons-related Developments in Nuclear-Weapon States

- The release by the government of **France** of figures for the amount of civilian plutonium it currently holds has led to some controversy. Reportedly, Jean Syrota, Chairman of Cogema, the country's major reprocessing company, has said that weapons cannot be made with civilian plutonium, whereas electricity can be made with military plutonium. Other experts point out that this contradicts conclusions reached in the US where, in 1962, a nuclear device made with reactor-grade plutonium is said to have been successfully detonated. Yet other specialists point out that this was produced with low-burnup plutonium from a British magnox reactor, with isotopic characteristics close to military-grade plutonium.

  According to the figures published by the French Ministry of Industry, Post and Telecommunications, on 31 December 1995 France had 231.9 metric tons (MT) of civilian plutonium, of which it owned 206 MT. Of this amount, 36.1 MT was separated plutonium in storage at reprocessing plants; 5.5 MT was separated plutonium stored elsewhere; 10.1 MT was in unirradiated MOX fuel or in fabrication; and 3.6 MT in fresh MOX fuel at reactors. Further, there were 25.7 MT of plutonium belonging to 'foreign organizations' and 0.2 MT held abroad. It was estimated that 63.6 MT was contained in spent fuel in wet storage at reactors, and 87.1 either stored at reprocessing

plants or in the process of being separated. The information comes from the second edition of the government publication *113 Questions About Nuclear Energy*. (**NuclearFuel**, 8/4; **SpentFUEL**, 15/4)

- The last of the **United Kingdom**'s four nuclear submarines that carried 'Polaris' missiles, HMS *Repulse*, is being decommissioned. They are replaced by *Vanguard*-class boats, carrying 'Trident' missiles. According to reports in the British press, a draft report by the IAEA of 1991 on radioactive wastes entering the marine environment contains an unconfirmed report that HMS *Sheffield*, which was sunk during the 1982 war between Argentina and the UK over the Falkland Islands/Malvinas, may have had two nuclear depth charges on board. The disclosure, which contradicts an earlier denial by the British Government would, if proven true, Gindicate that the UK may have violated its obligations under the Tlatelolco Treaty, has angered Opposition politicians and environmentalists. (**Reuter's**, 13/5; **Scotsman**, 14/5)

- In the **United States**, thirteen utility companies are understood to have told the Department of Energy (DoE) that they would be interested in producing tritium in one or more of their reactors, and fifteen have said they are interested in burning excess weapons plutonium as MOX fuel. (See under section **f. Nuclear Trade and International Cooperation**.) Some of the utility companies involved would have misgivings against combining the two activities as they would wish to continue separating the military and civilian sides of the production of nuclear energy. Among these are Duke Power Co. and Commonwealth Edison Co., which are interested in the suggestion to burn MOX but not in producing tritium. Other companies, including Houston Lighting and Power Co., are said to be only interested in producing tritium. On the other hand, only one utility has expressed interest in participating in DoE's effort to test how tritium-producing target rods might affect an operating commercial reactor core. Most American non-proliferation advocates express concern at any blurring of the lines between civilian and military nuclear activities; one, the Nuclear Control Institute of Washington, would support tritium production in a commercial reactor in a national emergency but opposes MOX use as a legitimation of the commercial plutonium fuel cycle. Meanwhile, the idea of constructing a multi-purpose ('triple-play') reactor that would burn plutonium, supply electricity and produce tritium is apparently also still under consideration; this seems to be the approach favoured by conservative members of Congress. One major nuclear firm, ABB-Combustion Engineering, has expressed strong criticism of the support DoE seems to give to the use of a particle accelerator for the production of tritium. According to the American trade journal *Nucleonics Week*, the accelerator option would require almost $5 billion for research, development and construction through fiscal year 2007. Reportedly, the Department of Defense (DoD) is uneasy about a possible dearth of tritium, particularly if Russia does not ratify the START II Treaty and consequently, the nuclear arsenals of the two major powers would not be reduced as hoped, as a result of which the demand for tritium would be greater and would arise earlier than foreseen in previous planning. Consequently, there is said to be a high probability that DoE will be compelled after all to have recourse to the use of commercial reactors, at least to meet short-term tritium needs or to arrange for the completion and use of unfinished nuclear power reactors for this purpose. On the other hand, some experts believe that it would also be possible to start producing tritium in an accelerator by the year 2007 rather than in 2011, as previously estimated. (**SpentFUEL**, 25/3, 1/4; **Nucleonics Week**, 28/3, 4/4, 16/5, 30/5, 6/6, 13/6; **NuclearFuel**, 17/6)

j. Proliferation-Related Developments

- The **Democratic People's Republic of Korea** (DPRK) has publicly stated that it has renounced its obligations under its armistice agreement of 1953 with the UN and will no longer respect the demilitarised zone (DMZ) between the two Korean states that was established as part of that agreement. In Seoul, the move is seen less as an attempt to dismantle the agreement as such than as yet another step towards a situation where bilateral discussions with the US will be called for and the Republic of Korea (RoK) will be side-lined. For three consecutive days and nights in early April several hundred heavily armed infantry soldiers from the North entered the DMZ; under the armistice agreement military patrols entering the DMZ must consist of no more than five officers and 35 men. The DPRK soldiers also did not wear the armbands prescribed in the agreement. In May, a small group of Northern soldiers briefly crossed the DMZ into Southern territory and fired shots — another act prohibited by the armistice agreement. Responding to the earlier action, the RoK had put its armed forces on a slightly increased level of alert. Amidst speculation about the grounds for Pyongyang's move US sources, noting that no signs had been detected of a build-up of Northern forces, have said that DPRK intrusions into the demilitarised zone are not unprecedented and that, while the situation has to be carefully monitored, it should not give rise to undue concern. The assertion of a North Korean pilot who defected to the South, that the DPRK has a war plan that would enable it to capture South Korea within a week, has been received with scepticism Seoul and Washington. However, the RoK government has asked states in the area, including China, Japan and Russia, to caution the DPRK against imprudent moves that might destabilise the situation in the Korean peninsula. China has called for the conclusion of a peace agreement between the two Koreas but has urged Pyongyang in the meantime to respect the existing armistice agreement.

  During a visit to the Republic of Korea in April, US President Clinton called for talks between China, the DPRK, the RoK and the US, for the early conclusion of a formal peace treaty between the DPRK and the RoK. The initial reaction from the North was that it did not need any mediators and was prepared to negotiate with the US alone; subsequently it said that the plan was unclear and asked for more information. China let it be known that it saw little advantage in a four-nation conference, and urged the two Koreas to settle their differences first. Nevertheless, there was still said to be some hope in Washington that the DPRK might eventually accept the US proposal.

  Meanwhile, negotiations were conducted between the Korean Peninsula Energy Development Organization (KEDO) and the DPRK, on the legal status, privileges immunities and consular protection of personnel associated with the provision of the two light-water power reactors KEDO is supplying to the North, and on transportation and communication. While so far no agreement seems to have been reached on privileges for employees of the contractors, protocols on transportation and communication were reportedly agreed upon in June, after eight weeks of talks. Talks on protocols regarding the project site and the use of DPRK labour, goods and services are expected to start in the course of the summer. Meanwhile, KEDO has solicited

bids from US firms to serve as technical advisors; it is quoted as saying that on-site work for the reactors may begin by the end of the year but that it is not likely that the target completion date of 2003 can be met.

There is a report that Pyongyang has demanded an additional $2 billion for the reactor project.

The IAEA has confirmed that a start has been made with the movement of the 8,000 spent fuel rods from the DPRK's 5-MW research reactor from the cooling pond where they have been stored for the past several years, to dry storage. Under the supervision of representatives of the DoE the material, which reportedly has been badly corroded in the cooling pond, is dried and then sealed in stainless steel canisters filled with inert gas. The canisters will be placed back in the pond for eventual removal from the country. DoE has asked the US Congress for approval to allocate an additional $4 million for the job. Reputedly, however, because the Republican chairman of the House appropriations subcommittee involved is a critic of DoE, of the DPRK (which apparently refused him a visa) and of House Speaker Gingrich, in whose district the company is located that has contracted for the disposal of the fuel, approval for the transfer of the additional funds has run into difficulties. Reportedly, Pyongyang still has not allowed the IAEA to sample the irradiated fuel to determine its plutonium content and the IAEA has noted that once again an opportunity to do so has been lost. Reputedly, in its latest annual Safeguards Implementation Report the Agency states that, while its safeguards agreement with the DPRK remains in force, it has still not been able to verify the correctness of the DPRK's initial declaration of nuclear material and it is therefore still unable to conclude there has been no diversion of such material.

In Berlin, on 20 and 21 April, senior officials from the DPRK and the US held a first round of talks on the former's ballistic missile programme, particularly the exports of medium-range missiles to the Middle East. Reportedly, Washington hopes to persuade Pyongyang to close down its missile programme, possibly in exchange for a relaxation of US restrictions on trade and on investments in the DPRK. American officials said afterwards that the talks had been 'a good beginning'. Both sides said that further talks would be held.

In May, the DPRK and the US reached agreement on joint efforts to recover remains of American soldiers missing in action during the Korean War, in the 1950s; Pyongyang has been paid $2 million for past assistance. The agreement is seen as a step in the improvement of relations between the two countries. A report that the North may still be holding 15 American prisoners-of-war has been rejected by the Department of Defense (DoD) as 'hearsay' and has also been strongly denied by Pyongyang, but the DoD analyst who prepared the report insists on its validity.

Having initially rejected further foreign food assistance, Pyongyang has once again appealed for international help, particularly in the form of grain supplies, for victims of last year's devastating floods. The UN World Food Program and the Food and Agriculture Organization have warned that food supply in the DPRK 'is becoming increasingly desperate' and that the shortages are likely to worsen. Japan, South Korea and the US are said to have discussed making food assistance to the DPRK dependent on that country joining the four-party talks proposed by President Clinton in April. However, on 12 June Washington announced that it had decided to extend $6.2 million in assistance, through the World Food Program, apparently without preconditions.

(**New York Times**, 2/4, 5/4, 6/4, 7/4, 8/4, 9/4, 17/4, 19/4, 22/4, 3/5, 9/5, 14/5, 15/5, 18/5, 21/5, 29/5, 13/6, 15/6, 18/6, 21/6; **National Public Radio** [Washington, DC] Weekend Edition, 6/4, **NPR News**, 8/4; **Financial Times**, 7/4; **Standard** [London], 7/4; **Frankfurter Allgemeine Zeitung**, 9/4; **International Herald Tribune**, 10/4, 22/4, 24/4, 27/4; **Nucleonics Week**, 11/4, 20/6; **Nautilus Institute** on Internet, 12/4; **Economist**, 13/4; **Sunday Times**, 14/4; **BBC Monitoring Summary of World Broadcasts**, 16/4, in **UI News Briefing**, 96.15; **Independent**, 17/4; **Washington Post**, 19/4, 22/4, 28/4; **Choson Ilbo** [Seoul], 1/5; **Reuter's**, 2/5, 31/5; **Nuclear-Fuel**, 6/5, 20/5; **Le Monde**, 7/5)

- **India** is reported to plan the construction of nuclear-propelled submarines. Construction would start in 1997 and submarines should be in service by 2004. Russia is said to provide design assistance. (**International Herald Tribune**, 23/5)

- **Iran**'s Atomic Energy Organisation has once again stated that the country's nuclear activities are exclusively peaceful. Reportedly, the statement followed remarks by officials in the United Arab Emirates that cast doubt on the peaceful nature of Iran's nuclear activities. US sources remain concerned about Iran's pursuit of plutonium separation and gas centrifuge enrichment technologies. A British newspaper has reported that Iran has bought enriched uranium of Kazakh origin in Afghanistan. (See also section **k., Illicit Nuclear Trafficking**.) American suspicion of Iran's motives was reinforced recently by reports of the smuggling by Iranian nationals of a large mortar into Germany, allegedly intended for attacks on Israeli targets there. According to a US naval source quoted in the American press, Iran is building tunnels along its Persian Gulf coast for the storage of ballistic missiles. This would confirm an earlier report in the British periodical *Jane's Defence Weekly*. (**Independent**, 28/3; **Iranian Radio**, 28/3 in **BBC Monitoring Service**, 29/3; **Iran: Current Developments and U.S. Policy**, CRS Issue Brief, 2/4; **New York Times**, 30/4, 1/5)

- In May, after a fourth round of negotiations between representatives of **Iraq** and the United Nations, agreement was reached on the conditions on which Iraq would be enabled to sell up to $1 billion worth of oil every three months, to pay for food and medicine. During the third round of talks, in April, Iraq was said to have agreed to a set of conditions under which it would be able to do so, which reportedly were acceptable to the UN Secretary-General and some Security Council members, but not to the UK and the US, who objected to Iraq's choosing the bank into which oil payments would be made, as a possible way to circumvent the economic embargo, and had insisted that funds intended for relief supplies to the Kurds in Iraq's three northern provinces should be distributed direct to the intended recipients through UN channels. Iraq was said to have objected to these conditions because it felt them to be contrary to its integrity and sovereignty; it blamed in particular the US for putting obstacles in the way of agreement. The May talks followed a decision of the Security Council to extend the general embargo on Iraq for another sixty days. While that decision was not directly linked to the issue of oil-for-food, Iraq's acceptance of conditions to which it had earlier objected was seen as a result of the unanimity with which the Security Council took its decision. One third of the proceeds from the sale of Iraqi oil is supposed to be used as compensation for claims against Iraq arising from the occupation of

Kuwait; $130–150 million is reserved for the Kurdish minority in northern Iraq. The agreement provides for strict UN controls on compliance.

It is understood that the latest periodic report by the Director General of the IAEA to the Security Council under the relevant resolutions includes the statement that it is prudent to assume that Iraq retains the theoretical capability to produce weapons-usable material, fabricate nuclear weapons and develop and produce missiles with which to deliver them. This assumption is said to form the basis for the IAEA's plan for its ongoing monitoring and verification work in Iraq. According to press reports, US and UN officials suspect that Iraq may still have between six and sixteen intact 'Scud' missiles armed with warheads containing nerve or germ agents. In May a start was made with the demolition under UN supervision of an important biological-weapons plant 50 miles southwest of Baghdad, of which the existence had been confirmed in information disclosed by a son-in-law of President Saddam Hussein, Gen. Husein Kamal al-Majid.

In June, Iraq refused UN inspectors access to five sites suspected of containing materials and equipment related to clandestine programmes for the production of weapons of mass destruction. The reason given for the refusal was 'national security considerations', i.e., the fear that the inspection would be used for intelligence gathering purposes. After the Security Council, in a special meeting, adopted a resolution calling on Iraq to permit unrestricted access to the inspection teams, Baghdad set conditions for entry which, however, were not accepted. On 16 June the inspection team left the country. Shortly after it was announced that Iraq had made an agreement with the UN which included the unequivocal promise to allow UN inspectors 'immediate, unconditional and unrestricted access' to sites where they suspect evidence of illegitimate weapons production may be present. Iraq has also consented to a schedule for the transfer of documentation.

In the UK, further papers relating to the *Report of the Inquiry into the export of Defence Equipment and Dual Use Goods to Iraq and Related Prosecutions*, known as the 'Scott Report', after the leader of the inquiry, Sir Richard Scott, have now been released. They indicate that Britain's intelligence services were aware of Iraq's attempts to acquire nuclear weapons.

A South African court has ordered the release of British arms dealer Paul Grecian, who was held in South Africa pending extradition to the US for illegal trading with Iraq. In Britain Grecian had been acquitted from the same accusation, on the grounds that the UK government had permitted him to deal with Iraq in return for information on that country's weapons programmes.

(**Trust and Verify**, February/March; **Washington Post**, 21/3, 21/5; **New York Times**, 5/4, 9/4, 16/4, 24/4, 25/4, 28/4, 3/5, 7/5, 16/5, 18/5, 21/5, 10/6, 12/6, 13/6, 14/6, 15/6, 16/6, 23/6, 25/6; **Wall Street Journal**, 21/5; **Daily Telegraph**, 21/5)

- **Israel** has denied Egyptian press allegations of radioactive leaks at the Dimona reactor. The reports apparently followed an Israeli television programme aired in March which spoke about the possibility and risks of the escape of radioactivity from the reactor. The situation has caused concern in neighbouring Arab states and the Arab League was reported to plan an investigation of allegations that radioactive waste from the reactor had already leaked into the Negev Desert. Responding to a communication received from Saudi Arabia the Director General of the IAEA has stated that the Agency had earlier addressed the issue with the competent authorities of Israel and had been advised by the latter that 'no radioactive leakage endangering the population has been detected'.

There have been new calls by foreign scientists and intellectuals for the release of Mordechai Vanunu, the Israeli nuclear technician convicted in 1986 of espionage and treason, for having revealed information about Israel's presumed nuclear-weapon programme. In response, the Israeli Minister of Justice has said that Vanunu had told him he still had classified information which he would publicise if he had the opportunity to do so. Vanunu also claims that the woman who is supposed to have helped to abduct him to Israel has been killed.

(**Reuter's**, 27/3, 1/4, 3/6; **Syrian Radio** in **BBC Monitoring Service**, 27/3; **Mena News Agency** [Cairo], 28/3, 1/4; **BBC Monitoring of World Broadcasts** in **UI News Briefing**, 29/3; **Die Presse**, 4/4; **Financial Times**, 9/4; **Frankfurter Allgemeine Zeitung**, 10/4; **IAEA Documents INFCIRC/507**, 8/5 and **INFCIRC/507/Add.1**, 5/6)

- The **United States** has warned the **Libyan Arab Jamahiriya** that it will not allow it to complete the large chemical plant which it says that country is constructing near the town of Tarhuna, about 35 miles from Tripoli, and which American intelligence sources allege is designed to produce chemical weapons. Basing themselves in part on information from Austrian and German companies that have worked on the project, these sources are said to expect that the facility will be finished by the end of the current decade and possibly already in 1997, by which time it should be able to produce tons of poison gas a day. Late in April, there were reports that Libya had halted construction of the plant. Libya has formally denied that the structure is a chemical facility and has declared itself ready to permit international experts to examine the site, under certain conditions, which were not specified. Egypt's President Mubarak is quoted as having said that Egyptian weapons experts who recently toured the facility had only found empty tunnels and no evidence to support the American claim. During a visit to Cairo the American Defense Secretary Perry warned that the US might use force against the installation if it was completed. Later, Perry denied that the US would be prepared to use nuclear means to destroy the installation, as some US media sources maintained, but he did not rule out the possibility that it might do so in case of war. A Pentagon spokesman stated that there was 'no consideration [given] to using nuclear weapons, and any implication that we would use nuclear weapons preemptively against this plan is just wrong'. (**New York Times**, 4/4; **Times** [London], 5/4; **Standard** [Vienna], 6-8/4, 20/4; **Neue Zürcher Zeitung**, 6/4; **National Public Radio**: Weekend Edition, 7/4; **Independent**, 17/4; **International Herald Tribune**, 20/4; **Statement of Defense Secretary William Perry at US Air War College**, Montgomery, Alabama, 26/4; **Washington Post**, 8/5, 30/5)

- According to US press reports, the President of **Pakistan**, Farooq Leghari, stated on 23 March that his country must ensure its own self-defence and deterrent capability, and on 31 March Prime Minister Bhutto said that if India resumed nuclear testing Pakistan would have to retaliate. Concern that the right-wing Bharatiya Janata Party (BJP), which in May gained a plurality of seats in the Indian Parliament, might manage to form a government and proclaim India's status as a nuclear-weapon power

diminished when Hindu party leader Atal Bihari Vajpayee was unable to obtain parliamentary approval of his government and resigned after thirteen days in office. Vajpayee had reiterated before reporters that India should openly declare itself to be a nuclear-weapon state and should deploy nuclear armed missiles unless the world's major nuclear powers agreed to eliminate their own nuclear weapons. Other members of the Indian cabinet had also expressed the view that once they had gained parliamentary support, they would have to re-evaluate the country's nuclear policy. In June, after a centre-left 'United Front' government took office in India, there were signs that a dialogue with Pakistan might be opened, at senior diplomatic level. However, the new Indian government has announced that it will retain the option to build nuclear weapons until universal nuclear disarmament has been achieved.

Pakistan has denied as 'inaccurate and baseless' that it has built a 50 MW 'multipurpose' nuclear reactor at Khusab, in the Punjab. According to Pakistani sources there is a small experimental reactor at Khusab, which is associated with the 300 MW power reactor that is being constructed at Chasma, with help from China. According to a report from New Delhi, however, Pakistan has received 40 metric tons of heavy water from China, for use in the reactor at Khusab, which is understood to be a 50–100 MW natural-uranium reactor, well suited, reportedly, to plutonium production. Allegedly, also, Pakistan has constructed, for 'experimental purposes', a plutonium extraction facility. Neither facility is under IAEA safeguards.

Pakistani authorities have also dismissed as 'a concoction' a report in the *Washington Post* that in the early 1980s US intelligence officials found a Chinese blueprint for the construction of a nuclear bomb in the luggage of Doctor Abdul Qadeer Khan, the scientist said to be responsible for the development of Pakistan's nuclear programme. According to the report, the design served as the basis for the construction of a model of a nuclear weapon by scientists at the US Lawrence Livermore National Laboratory. More recently, according to some western analysts, China might have helped Pakistan adapt the original warhead design for use in the Haft-1 short-range missile. Allegedly, China is also helping with the completion of a reprocessing plant which France began constructing in Pakistan in the 1970s, but which it never completed due mainly to US pressure. Pakistan's quest for plutonium is seen as part of its policy to produce a more compact warhead for use on a longer-range missile.

The reported export from China to Pakistan of ring magnets used in gas centrifuges to enrich uranium has been the subject of protracted high-level discussions between Beijing and Washington. Reportedly, Beijing maintained that it had been unaware of the transfer and felt it had done nothing to violate its non-proliferation obligations. The US Administration is said to have accepted this statement in the absence of hard evidence to the contrary, and has decided against the imposition of sanctions. As announced in Washington on 10 May, China had promised not to make such transfers in future or provide any other assistance to unsafeguarded nuclear facilities; had confirmed its commitment to non-proliferation; and had agreed to consult with the US on export control policies and other non-proliferation issues. A public statement by the Chinese government later the same day, however, contained none of these public pledges. In response to critical questioning by members of the Congress, the Administration said that while China did not wish to make these pledges publicly, the absence of denial from Beijing of the US statement could be taken as assent. The US Secretary of State subsequently also confirmed that he had accepted an oral pledge by China's Foreign Minister to this effect. Many members of Congress believe, however, that the Administration may have been misled and has in any case been too quick to accept China's good intentions. In mid-May the House of Representatives adopted an amendment to the 1997 Defense Authorization Bill expressing the 'sense of Congress' that the President should have imposed sanctions on China. The amendment also requires the President to submit a report to Congress within 60 days on China's transfer of the equipment to Pakistan and to submit a detailed justification of the Presidential decision not to impose sanctions.

With respect to Pakistan, meanwhile, the US Administration has decided to implement the 'Brown Amendment', which allows a one-time exemption from legislation prohibiting such transfers on condition that Pakistan takes no further steps to develop nuclear weapons. In consequence, $368-million worth of military equipment that had been held up will be transferred, based on 'a continuation of Pakistan's current restraint in its nuclear missile activities'.

Since then, various American intelligence sources are understood to have concluded that, with Chinese help, Pakistan should now be judged capable of launching nuclear armed missiles. The State Department was said to have expressed doubt about the evidence produced. Reportedly, if the US Central Intelligence Agency backs the assessment, the Administration will have to decide whether it should impose sanctions.

(**NucNet News**, 28/3; **Reuter's**, 2/4, 5/6; **Standard** [Vienna], 2/4; **Frankfurter Allgemeine Zeitung**, 3/4; **Washington Post**, 27/3, 1/4, 6/4, 20/4; **Sankei Shimbun**, 8/4; **Defense News**, 15-21/4, 20-26/5; **New York Times**, 18/4, 11/5, 16/5, 18/5, 29/5, 10/6, 13/6; **All-India Radio**, 19/4, in **BBC Monitoring Service**, 22/4; **Economist**, 4/5, 18/5; **NuclearFuel**, 20/5; **Washington Post National Weekly Edition**, 20-26/5; **PTI News Agency**, [New Delhi] 21/5, in **BBC Monitoring Service** , 23/5; **Daily Telegraph**, 6/6)

- In **Switzerland**, a report has been published, authorised by the Swiss Federal Government, which confirms that at one time serious consideration was given in that country to the construction of nuclear weapons. Studies are said to have begun in 1945 and to have intensified around the year 1965, when senior Swiss military officers felt that a viable national defence would require the possession of nuclear weapons. According to the report, in the late 1960s, when Switzerland signed the NPT, Bern may still have intended to keep its nuclear options open, but this approach was dropped when, in 1976, it ratified the Treaty. During much of this time, a secret stockpile of uranium was maintained. There had been plans to enrich this material in ultra-centrifuges, but this apparently was never realised. In 1988, the interdepartmental working group that had dealt with the issue was disbanded. As reported, the Swiss Federal Government has favoured publicity in this old affair, as a signal that it is now definitely past history. (**Times** [London], 23/5; **Neue Zürcher Zeitung**, 26/5; **Die Welt**, 26/5; **International Herald Tribune**, 26/5; **Nucleonics Week**, 2/6)

k. Illicit Nuclear Trafficking

- In **Germany**, police impounded 2.7 kg of low-enriched uranium which had been deposited in a bank safety deposit

box by an engineer from the Slovak Republic, who was offering it for sale for $1 million. (**Washington Post**, 6/6; **Süddeutsche Zeitung**, 8-9/6

- **Iran** is alleged to have bought from Russian diplomats enriched uranium of Kazakh origin that was smuggled into **Afghanistan** and **Pakistan**. No details were given about the degree of enrichment of the material or the quantity involved. (**Independent**, 28/3)

- Police in **Lithuania** are reported to have arrested six persons who were trying to sell a total of 13 kg of uranium. The degree of enrichment of the material was not specified. (**Süddeutsche Zeitung**, 25/5)

- The Institute for Physics and Power Engineering (IPPE) at Obninsk, **Russia**, is reported to be taking measures to get firm control of its entire inventory of fissile materials, with American help. Apparently this move has been triggered by reports from the Russian counter-intelligence agency FSB that contraband plutonium seized at Munich airport in 1994 was likely to have come from Obninsk. In the **Czech Republic**, investigations into the source of the 2.7 kg of highly-enriched uranium (HEU) that was seized there in December 1994 (see **Newsbrief** 29, page 9) have come to the preliminary conclusion that this material also originated at IPPE.

  There have been reports of talks between Russian naval authorities and the US Department of Energy (DoE) about American assistance to the Russian navy in upgrading the security of its fissile material inventories, as well as of spent fuel stored on board of decommissioned nuclear submarines and naval bases. The US would in particular help provide containment and surveillance systems for stored fissile materials and assist in transport logistics for removal of spent fuel from submarine yards to reprocessing facilities. Reportedly, the US Department of Defense was not particularly interested in joining a co-operative effort with Russia on management of propulsion reactor fuel inventories.

  A report of early May, that a scientist of the Krasnoyarsk nuclear centre had been apprehended removing a kilogram of weapons-grade nuclear material is now claimed to be incorrect; instead, according to Kremlin sources, a technician was detained in connection with a discrepancy found in the inventory of zirconium. There is no confirmation that the material was actually taken out of Krasnoyarsk.

  (**NuclearFuel**, 6/5; **Reuter's**, 7/5; **Interfax** [Moscow], 7/5, 8/5; **Frankfurter Allgemeine Zeitung**, 9/5; **Nucleonics Week**, 16/5)

- A committee of the European Parliament has recommended that in the interest of deterring illegal nuclear trafficking, **Euratom** should have the power to monitor all stocks of civil and military nuclear material and all shipments of radioactive material across Europe. The proposal is expected to meet with considerable opposition. (**Defense News**, 24-30/6)

I. Environmental Issues

- During President Yeltsin's visit to **Norway**, a demonstration was held to protest the arrest of former Soviet naval officer Alexandr Nikitin, who is accused of treason for allegedly having given the Norwegian government-supported Bellona Foundation, which is involved in the issue of the nuclear clean-up in the Kola peninsula and the surrounding area, information about the Soviet submarine propulsion reactor programme, including a series of accidents that occurred since 1960. A Russian military court is scheduled to start hearing the case in July, on grounds of disclosure of classified information. Reportedly, the Russian head of Bellona's Murmansk office and a member of his staff have also been harassed by Russian security officials. However, while Russian authorities maintain that all information involved is classified, the report issued by the Bellona Foundation in April is understood to be based exclusively on publicly available data, pieced together from books, newspaper reports, information published by the US government, and public statements by Russian nuclear and naval sources and government officials. The issue was said to have put into question further Norwegian co-operation in the clean-up effort, but as of late June it was still expected that a formal agreement on the subject would be concluded soon between Norway and the Russian Federation. The urgent need for the clean-up of nuclear waste in the Kola area was raised at the summit meeting in Moscow. Reportedly, the fact that no western government saw fit to make forceful representations there with regard to the Nikitin case is ascribed to unwillingness to be seen as interfering in internal Russian affairs during the run-up to the Russian presidential elections.

  Russian naval authorities themselves publicly underline the seriousness of the situation. One admiral in Russia's Northern Fleet has spoken of 87 decommissioned nuclear submarines having to be disposed of (another figure quoted is 89), many of them (some say 52, others 56) with intact reactors on board, a huge amount of solid waste that must be shipped out for reprocessing (the admiral mentioned the equivalent of 80 trainloads; another estimate speaks of 21,000 cubic metres of solid waste). It is reported that Russia currently has only two facilities where submarines can be decommissioned: one near Murmansk, and one in the area of Vladivostok. These are said so far to have been able to dispose of two submarines a year, while reportedly a total of 170 Russian submarines are due to be scrapped, including those that were part of the Pacific fleet. In late April, there was an item in the British press according to which western officials were concerned by reports that Russia was planning to dispose of twenty old nuclear submarines at sea. It is not clear if there is any connection between that report and the announcement that following discussions held at the Moscow summit conference that took place earlier in April, Norway, Russia and the US had decided jointly to construct a low-level waste treatment plant at Murmansk. Decisions are also said to have been taken regarding foreign assistance in nuclear-waste storage there.

  On the other hand, reports from the headquarters of Russia's Pacific Fleet at Vladivostok express the expectation that it will be possible shortly to decommission ten nuclear submarines there each year. Reportedly, agreement has been reached among Japan, Russia and the US, to embark on a joint project for a heavy-duty floating waste-processing facility for the disposal of 7,000 cubic metres of solid nuclear waste per annum. The vessel is to be built by Russia, which is contributing $9 million to this end; Japan will provide $25 million towards the processing installation and the plant itself will be constructed in the US.

  (**Nucleonics Week**, 11/4, 25/4, 9/5; **NTV** [Moscow], 12/4, in **BBC Monitoring Service**, 16/4; **Reuter's**, 18/4; **Le Monde**, 19/4; **Interfax News Agency** [Moscow], 19/4, in **BBC Monitoring Service**, 22/4; **New Scientist**, 20/4; **Libération**, 21/4, 22/4; **Sunday Telegraph**, 28/4)

- In **Russia**, spent fuel from nuclear icebreakers is regularly reprocessed by the RT-1 reprocessing plant at Chelyabinsk-65 in the Ural mountains. It is reported that this plant has an excess reprocessing capacity and officials of the company that operates the icebreaker fleet in the Arctic Ocean have said that they will propose to the competent authorities a plan to transport up to 100 spent fuel cores from nuclear submarines to Chelyabinsk-65 for reprocessing. The material to be shipped is said to involve 21,000 spent fuel assemblies and 14,000 cubic metres of low- and medium-level waste. It would be transported by special ship through the Sevmorput naval yard at Murmansk, where it would be transferred to trains. Rolling stock is said to be scarce, however, and it seems that the defence authorities do not support the allocation of railroad cars for the purpose. Meanwhile, large quantities of spent fuel from Soviet icebreakers are stored on board a ship, *Lepse*, which is moored near Murmansk naval base. Of the 643 spent fuel assemblies from decommissioned icebreakers said to be on board some, which were subject to a loss-of-coolant-accident in 1996, aboard the icebreaker *Lenin*, are said to have swollen so that they no longer fit the storage space. Russian officials are quoted as saying that new fuel casks are needed before any transport can take place. Reportedly, the $175 million needed for this purpose are not available at present. (**NuclearFuel**, 22/4, 6/5, 20/5)

- In the **United States**, plans for the permanent disposal of commercial spent fuel and of nuclear waste generated in federal weapons establishments are still said to be far from realisation, while the development of disposal facilities for commercially generated low-level waste also seems to have been delayed. Serious concern was raised among the nuclear industry at the cuts made by Congress in the funding for nuclear waste disposal, from $530 million in fiscal year 1995, to $400 million in 1996. This, reportedly, prompted the nuclear industry and state utility regulators to urge Congress to give priority to interim storage solutions.

  As required by the 1982 nuclear waste law, the federal government should meet its responsibility for the permanent disposal of high-level waste by having at least one deep repository available by 31 January 1988; a subsequent change in the law singled out the Yucca Mountain site in Nevada for the purpose. The planned date for the completion of the repository has slipped by twelve years, to 2010, but reportedly as a result of the spending cuts made by the US Congress even this date seems no longer feasible. There has also been no final decision as to whether the project is feasible, particularly from the point of view of geology and seismicity as well as hydrology. Most experts are said to believe that the site is devoid of subterranean water, but the President has threatened to veto the nuclear-waste bill that is now stalled in both Houses of the Congress, if it designates an interim storage site (i.e. Yucca Mountain) before the viability of a permanent geologic repository has been determined. The Administration's stand is harshly criticised by US nuclear industry, but a newly released report by a committee of the US Nuclear Regulatory Commission even questions whether the time span of ten thousand years set for a high-level repository for compliance with health and safety requirements is sufficient.

  Meanwhile, as of March 1996, more than half of the drilling work at Yucca Mountain had been completed and the operation was 57 per cent ahead of schedule. Drilling is expected to be completed in 1997. So far, it seems that no water flow has been observed but recently tunnelling crews have come across areas of what is said to be 'intensely fractured rock' of which the cause does not seem to be immediately clear, but which might have technical significance in the prediction of future geologic behaviour. While this disclosure does not seem to cause immediate concern, more importance is attached to the fact that the isotope chlorine-36 has been found in rock six hundred feet below the surface. While, reportedly, this isotope can be produced naturally in the atmosphere by cosmic radiation, it might have been caused by nuclear weapons tests in the Pacific. If so, the fact that it would have penetrated Yucca Mountain to its present level might be an argument against continuing with the project. The state of Nevada is opposed to the project, and many environmentalists also resist it, both for environmental reasons and because they believe that the use of a single central repository will add to the risks created by shipping dangerous nuclear material all over the country. If Yucca Mountain is not found to be a suitable site, a new Congressional decision will be needed.

  Given the lack of a permanent disposal site and the prospect that there would be none in the foreseeable future, in 1987 the waste law was revised to permit the federal government to construct a central, temporary, 'monitored retrievable storage' (MRS) facility. Apparently, however, no site could be found. In 1994, a consortium of utilities started discussions with the Mescalero Apache tribe in New Mexico, about the construction of a private interim storage facility for spent fuel on tribal land (see **Newsbrief** 31, page 20). Recently, however, these discussions were broken off following disagreement about the terms of the contract. The utilities say that they will pursue options with other parties to find a site for the dry storage of spent fuel; meanwhile they continue to prepare their application for a license for transportation, which is said to be the largest part of the project. The facility itself would be so designed that it would be acceptable to a range of other sites. The Mescalero tribe say that they will continue to develop the storage facility. It is not clear, however, where the funds for such a project would come from.

  DoE has confirmed that construction of an interim storage site for spent fuel will not begin before the year 2000, although the federal government is legally held to accept spent fuel as of 1998. The lack of permanent storage facilities for spent fuel is forcing utilities to store more waste at reactor sites for longer periods than initially foreseen, compelling many to construct additional on-site storage spaces. Given the absence of federal disposal facilities as provided by the 1982 law, in February 1994, 20 states and 14 utilities filed lawsuits against DoE, to force it to begin accepting waste by 1998.

  (**Nuclear Energy Policy**, CRS Issue Brief, 1/4; **Economist**, 20/4; **SpentFUEL**, 22/4, 29/4, 20/5, 24/6; **NuclearFuel**, 22/4, 6/5, 17/6; **Nuclear Energy Institute Infowire**, 24/4; **NucNet News**, 13/6)

m. Miscellaneous

- According to earlier reports from **Brazil**, that country has given up its plan to build a nuclear submarine, at least for the present. The reason for suspending the project, which was started in 1979 and has so far cost $670 million, is said to be lack of funds; reportedly another $500 million would be needed to build a prototype of the submarine. (**O Estada de Sao Paulo**, 7/2 in **FBIS-TAC**-96-003, 5/3)

- An American press report quotes the US Administration as its source for a report that **Russia** is constructing a huge secret underground military complex in the southern Ural Mountains. Speculation about the purpose of the installation, of which construction is said to have started during the Brezhnev era, includes the suggestion that it is intended to serve as a command and control centre for nuclear weapons. No formal reactions from Moscow have been reported. (**New York Times**, 16/4; **Times** [London], 17/4; **Independent**, 17/4)

- The Foreign Affairs and Security Committee of the **European Parliament** is said to have produced a report in which it calls for a deterrent to be provided by British and French nuclear weapons which would be taken over by the European Union. Reportedly, British members of the Committee have pointed out that the establishment of a European nuclear deterrent would violate the NPT. Both the French and the British governments are said to be opposed to the suggestion and even if the report were to be approved in a full session of the European Parliament it is expected to have little chance of implementation. (**Sunday Telegraph**, 2/6)

II. PPNN Activities

- On 19–20 April PPNN's Core Group held its Semi-annual meeting at the Wye River Conference Center, Queenstown, Maryland, US. It discussed four categories of issues: the evolution of the nuclear non-proliferation system over the previous six months; the functioning of specific elements of the nuclear non-proliferation system and developments in the peaceful uses of nuclear energy; matters relating to the strengthened NPT review system; and PPNN's future activities.

  Under the second heading, members were briefed by officials from the Power Reactor & Nuclear Fuel Development Corp. (PNC) in Japan on the leak of sodium coolant from the Monju fast-breeder reactor and its political and other consequences. Harald Müller presented a paper on *National and International Export Control Systems and Supplier States' Commitments under the NPT* (PPNN/CGIII/1), and Lewis Dunn introduced a discussion on *Compliance with the NPT: Problems of Evaluation and Enforcement* (PPNN/CGIII/2). Under the third heading, Jayantha Dhanapala made a presentation on the implications of the NPT *Principles and Objectives* document, and Ben Sanders introduced his paper entitled *A New View of Review* (PPNN/CGIII/3). Updated versions of the papers presented will shortly be published as PPNN **Issue Reviews**.

  It was agreed to hold two briefing conferences for senior officials prior to the 1997 NPT PrepCom meeting. The first will be held at the Chauncey Conference Center near Princeton, New Jersey on 25–27 October 1996, aimed at representatives attending the 51st United Nations General Assembly. The second will be held at the Arden House Conference Center, Harriman, New York on 7 and 9 March 1997. Both Conferences will be combined with PPNN Core Group meetings.

III. Recent Publications

Books:

David Cortright and Amitabh Mattoo (eds.), *India and the Bomb: Public Opinion and Nuclear Options*, University of Notre Dame Press, 153 pp.

Harald Müller/Annette Schaper (eds.), *Fatale Versuche. Zur Wiederaufnahme der französischen Kernwaffentests*, Bonn, Holos-Verlag 1995.

Reports, articles and other materials:

Olu Adeniji, 'The Pelindaba Text and Its Provisions', *Disarmament*, Vol. XIX, No. 1, pp. 1-12.

Benson N.C. Agu, 'Denuclearization: Enhancing African Regional Cooperation in Peaceful Nuclear Applications', *Disarmament*, Vol. XIX, No. 1, pp. 21-38.

'An Evolving US Nuclear Posture', Second Report of the Steering Committee Project on Eliminating Weapons of Mass Destruction, *Henry L. Stimson Center*, Report No. 19, December 1995, 39 pp.

Jonathan Benjamin-Alvarado, 'Cuban Nuclear Developments', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 2, No. 1-2, Winter-Spring, pp. 1, 5-7.

John Arquilla, 'Between a Rock and a Hard-Drive: Export Controls on Supercomputers', *The Nonproliferation Review*, Vol. 3, No. 2, Winter, pp. 55-61.

Evelyne Bertel and Joop Van de Vate, 'Nuclear Energy and the Environmental Debate: The Context of Choices', *IAEA Bulletin*, Vol. 37, No. 4, December 1995, pp. 2-7.

Frank Blackaby, 'French Testing: The British Campaign', *Pacific Research*, Vol. 8, No. 4, November 1995/February 1996, pp. 26-28.

Nicola Butler and Stephen Young, 'New Text for a Comprehensive Test Ban Treaty', *Basic Papers*, No. 18, 30 May 1996, pp. 1-3.

Oleg Bukharin, 'Problems of Nuclear Terrorism', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 2, No. 1-2, Winter-Spring, pp. 1, 3-4.

Paul M. Cole, 'Atomic Bombast: Nuclear Weapon Decisionmaking in Sweden 1945-1972, *Henry L. Stimson Center*, Occasional Paper, April 1996, No. 26, 37 pp.

Malcolm Crick, 'Nuclear and Radiation Safety: Guidance for Emergency Response', *IAEA Bulletin*, Vol. 38, No. 1, March, pp. 23-27.

Richard T. Cupitt, 'Target Rogue *Behavior*, Not Rogue States', *The Nonproliferation Review*, Vol. 3, No. 2, Winter, pp. 46-54.

Zachary Davis, 'Nuclear Nonproliferation Policy Issues in the 104th Congress', *CRS Issue Brief*, April 2, 14 pp.

Zachary S. Davis, 'The Spread of Nuclear-Weapon-Free Zones: Building a New Nuclear Bargain', *Arms Control Today*, Vol. 26, No. 1, February, pp. 15-19.

William J. Dircks, 'International Civil Nuclear Reprocessing: A More Realistic U.S. Policy is Needed', Atlantic Council *Bulletin*, Vol. VII, No. 4, April 8, 6 pp.

T.J. Dolan, P. Jackson, B.A. Kouvshinnikov, and D.L. Banner, 'Global co-operation in Nuclear Fusion: Record of Steady Progress', *IAEA Bulletin*, Vol. 37, No. 4, December 1995, pp. 16-21.

'L'Europe et le Defi de la Proliferation', *Cahiers de Chaillot*, with articles by Yves Boyer, Christophe Carle, Joachim Krause, Harald Müller and Geoffrey Van Orden, No. 24, May, 76 pp.

Richard A. Falkenrath, 'The HEU Deal and the U.S. Enrichment Program, *The Nonproliferation Review*, Vol. 3, No. 2, Winter, pp. 62-66.

David A.V. Fischer, 'New Directions and Tools for Strengthening IAEA Safeguards', *The Nonproliferation Review*, Vol. 3, No. 2, Winter, pp. 69-76.

Franz-Nikolaus Flakus, John C. Cleveland, and T.J. Dolan, 'Nuclear fusion: Targeting safety and environmental goals', *IAEA Bulletin*, Vol. 37, No. 4, December 1995, pp. 22-25.

James L. Ford, 'Nuclear Smuggling: How Serious a Threat?', *Strategic Forum*, No. 59, January 1996, pp. 1-4.

Rob Green, 'Questioning Nuclear Deterrence: The Military Point of View', *Pacific Research*, Vol. 8, No. 4, November 1995/February 1996, pp. 29-31.

Keith Hide, 'Nuclear power plant safety: Steps toward better performance', *IAEA Bulletin*, Vol. 37, No. 4, December 1995, pp. 8-11.

John P. Holdren, 'Reducing the Treat of Nuclear Theft In the Former Soviet Union', *Arms Control Today*, Vol. 26, No. 2, March, pp. 14-20.

Mark Holt and Zachary Davis, 'Nuclear Energy Policy', *CRS Issue Brief*, April 1, 13 pp.

John D. Holum, 'The Administration's Arms Control Agenda: Gaining Ground Under Fire', *Arms Control Today*, Vol. 26, No. 2, March, pp. 3-6.

Christopher W. Hughes, 'The North Korean Nuclear Crisis and Japanese Security', *Survival,* Vol. 38, No. 2, Summer 1996, pp. 79-103.

Katsuhisa Ida, 'On the Sodium Leakage Accident of "Monju"', *Plutonium,* No. 13, Spring, pp. 7-11.

Rebecca Johnson, 'Endgame Issues in Geneva: Can the CD Deliver the CTBT in 1996?', *Arms Control Today,* Vol. 26, No. 3, April, pp. 12-18.

Rebecca Johnson, 'Comprehensive Test Ban Treaty: The Endgame', *Acronym,* April 1996, No. 9, 40 pp.

Russell Johnston, *Resumption of French Nuclear Tests in the Pacific: Report Submitted on Behalf of the Defence Committee,* Assembly of Western European Union, 7 November 1995, 21 pp.

Poong Eil Juhn and Jürgen Kupitz, 'Nuclear power beyond Chernobyl: A Changing International Perspective', *IAEA Bulletin,* Vol. 38, No. 1, March, pp. 2-9.

Leonid Kabanov, 'Future Nuclear Power Plants: Harmonizing Safety Objectives', *IAEA Bulletin,* Vol. 37, No. 4, December 1995, pp. 12-15.

Ashok Kapur, 'The CTBT and the Security of South Asia', *Disarmament Diplomacy,* No. 4, April, pp. 2-5.

B.L.N. Kennett, 'Verifying a Comprehensive Test Ban Treaty', *Pacific Research,* Vol. 8, No. 4, November 1995/February 1996, pp. 33-37.

Kenneth Katzman, 'Iran: Developments and U.S. Policy', *CRS Issue Brief,* April 2, 16 pp.

Barry Kellman and David S. Gualtieri, 'Barricading the Nuclear Window — A Legal Regime to Curtail Nuclear Smuggling', *University of Illinois Law Review,* Vol. 1996, No. 3, pp. 667-741.

Motoya Kitamura, 'Japan's Plutonium Program: A Proliferation Threat?', *The Nonproliferation Review,* Vol. 3, No. 2, Winter, pp. 1-16.

Susanne Kopte, Michael Renner, and Peter Wilke, 'The Cost of Disarmament: Dismantlement of Weapons and the Disposal of Military Surplus', *The Nonproliferation Review,* Vol. 3, No. 2, Winter, pp. 33-45.

Richard Latter, 'Preventing Nuclear Proliferation', *Wilton Park Paper 112,* Report based on Wilton Park Conference 454: 20-24 November 1995: 'Nuclear Policy Implications of the NPT Review Conference', January, 35 pp.

Richard Latter, 'Technology Diffusion and Proliferation', *Wilton Park Paper 114,* Report based on Wilton Park Conference 95/7: 8-10 December 1995 on 'Rethinking Proliferation in the Post-Cold War Era: Managing the Challenge of Technology Diffusion', February, 21 pp.

Luis Lederman, 'Safety of RBMK reactors: Setting the Technical Framework', *IAEA Bulletin,* Vol. 38, No. 1, March, pp. 10-17.

E. Lengfelder, E. Demidchik, J. Demidchik, K. Becker, H. Rabes, and L. Birukowa, '10 Years after the Chernobyl Reactor Accident: Thyroid Cancer and other Consequences for the Public Health in the CIS', *INESAP,* No. 9, May, pp. 1, 3-6.

Miguel Marin-Bosch, 'The Struggle for the Multilateral Disarmament Agenda', *Disarmament Diplomacy,* No. 4, April, pp. 5-7.

David R. Marples, 'The Decade of Despair', *The Bulletin of the Atomic Scientists,* Vol. 52, No. 3, May/June, pp. 22-31.

'Material Protection, Control, and Accounting Upgrades at the Latvian Academy of Sciences Nuclear Research Center', US Department of Energy, 30 pp.

Robert S. McNamara, 'The Conference on Disarmament Should Focus on Steps to Move Toward a 'Nuclear Free World', *Disarmament Diplomacy,* No. 4, April, pp. 8-10.

Saul Mendlovitz and Peter Weiss, 'Judging the Illegality of Nuclear Weapons: Arms Control Moves to the World Court', *Arms Control Today,* Vol. 26, No. 1, February, pp. 10-14.

Harald Müller, 'A Cornerstone of World Order: Extending the NPT', *NATO Review,* Vol. 43, No. 5, September 1995, pp. 21-26.

Harald Müller, 'Approches spécifiques: prolifération nucléaire, chimique et biologique', *Obligations en matière de désarmement et de limitation des armements. Problèmes de respect at mesures d'imposition,* New York/Geneva, United Nations, 1995, pp. 359-393.

Harald Müller, 'Kernwaffenproliferation', *Rüstung statt Entwicklung? Sicherheitspolitik, Militärausgaben und Rüstungskontrolle in der Dritten Welt,* Baden-Baden, 1995, pp. 23-46.

Harald Müller, 'La prolifération: mythes et réalités, *Défense Nationale,* Vol. 52, April, pp. 57-68.

Harald Müller, 'L'Union européene et la dissuasion nucléaire. Evaluation critique, *Relations Internationales et Stratégiques,* No. 21, Spring, pp. 107-112.

Harald Müller and David Fischer, 'United Divided. The Europeans and the NPT Extension Conference', *PRIF Report 40,* Frankfurt 1995.

Larry A. Niksch, 'North Korea's Nuclear Weapons Program', *CRS Issue Brief,* April 23, 14 pp.

'Nuclear Successor States of the Soviet Union', Nuclear Weapons and Sensitive Export Status Report, A Cooperative Project of the Monterey Institute of International Studies and the Carnegie Endowment for International Peace, No. 4, May, 104 pp.

Sola Ogunbanwo, 'History of the Efforts to Establish an African Nuclear-Weapon-Free Zone', *Disarmament,* Vol. XIX, No. 1, pp. 13-20.

Sola Ogunbanwo, 'The Treaty of Pelindaba: Africa is Nuclear-Weapon-Free', *Security Dialogue,* Vol. 27, No. 2, January 1996, pp. 185-200.

Pavel Povinec, Scott Fowler and Murdoch Baxter, 'Chernobyl & the Marine Environment: The Radiological Impact in Context', *IAEA Bulletin,* Vol. 38, No. 1, March, pp. 18-22.

Jan Prawitz and James F. Leonard, 'A Zone Free of Weapons of Mass Destruction in the Middle East', *UNIDIR/96/24,* 134 pp.

Jaap Ramaker, 'The CTBT Negotiations' *UNIDIR Newsletter,* UNIDIR/9/23, May 1996, 15-23 pp.

Tariq Rauf, 'France Ends Nuclear Tests in the South Pacific, *CANCAPS Bulletin,* No. 8, March, pp. 10-11.

Tariq Rauf, 'The Southeast Asia Nuclear Weapon Free Zone', *CANCAPS Bulletin,* No. 8, March, pp. 8-9.

Noah Sachs, 'DOE's Reprocessing Relapse', *Science for Democratic Action,* Vol. 5, No. 1, Winter 1996, pp. 1-4,7.

Shiro Sasaki, 'Changes in the Construction Program of Rokkasho Reprocessing Plant', *Plutonium,* No. 13, Spring, pp. 2-6.

Tilahun W. Selassie, 'The African Nuclear-Weapon-Free Zone and Sustainable Development on the Continent', *Disarmament,* Vol. XIX, No. 1, pp. 39-51.

John Simpson, 'A Nuclear-Weapon-Free Zone in the Middle East: The Global Context and Regional Possibilities' in Calleya, Stephen C.(ed.), *Selected Topics of Mediterranean Relations,* Mediterranean Academy of Diplomatic Studies, University of Malta, Malta, February 1996, *Lecture Series,* Vol. 1, pp. 15-35.

Nikolai N. Sokov, 'Russia's Approach to Deep Reductions of Nuclear Weapons: Opportunities and Problems', *The Henry L. Stimson Center,* Occasional Paper, No. 27, June, 41 pp.

Jessica E. Stern, 'U.S. Assistance Programs for Improving MPC&A in the Former Soviet Union', *The Nonproliferation Review,* Vol. 3, No. 2, Winter, pp. 17-32.

Johan Swahn, 'Nuclear Non-Proliferation and Energy Futures', *INESAP Information Bulletin,* No. 9, May, pp. 1, 7-8.

Mikhail Ustyugov, 'Problems of Developing an Export Control System in Kazakhstan', *The Monitor: Nonproliferation, Demilitarization and Arms Control,* Vol. 2, No. 1-2, Winter-Spring, pp. 8-10.

Arend Wellmann, 'Der künftige Atomteststop-Vertrag: Seine Chancen und seine Grenzen', Die Friedens~Warte, Band 71, Heft 1, 1996, pp. 46-61.

Amy F. Woolf, 'Nuclear Arms Control and Nuclear Threat Reduction: Issues and Agenda', *CRS Issue Brief,* April 1, 15 pp.

Yaderny Kontrol — Digest of the Russian Nonproliferation Journal, with articles by Vladimir Belous, Nikolai Filonov, Yuri Fyodorov, Mikhail Kulik, Vladimir Orlov, and Alexander Rumyantsev, *Center for Policy Studies in Russia,* PIR Center, No. 1, Spring, 24 pp.

Hisham Zerriffi, 'Tritium Production: DOE Moves Ahead Where Non-Proliferationists Fear to Tread', *Science for Democratic Action,* Vol. 5, No. 1, Winter 1996, pp. 1, 12-13, 16.

IV. Documentation

a. Moscow Nuclear Safety and Security Summit Declaration, 20 April 1996

1. The end of the cold war and the political and economic reforms in Russia have opened a new era in our relationship and have provided the international community with real possibilities for cooperation in the fields of nuclear safety and security. The

Moscow meeting is an important step in the realization of these objectives. We are determined, at this summit and beyond, to work together to ensure the safety of nuclear power and to promote greater security for nuclear materials.

2. We are committed to give an absolute priority to safety in the use of nuclear energy. As we approach the tenth anniversary of the Chernobyl accident, it is our shared objective that such a catastrophe cannot reoccur.
   We are ready to cooperate among ourselves so that the use of nuclear energy is conducted all over the world consistently with fundamental principles of nuclear safety. Further, we are committed to measures which will enable nuclear power, already a significant contributor to electricity supply in those countries choosing to exploit it, to continue in the next century to play an important role in meeting future world energy demand consistent with the goal of sustainable development agreed at the Rio Conference in 1992.
   We recognize the importance of openness and transparency to obtain public trust which is a key factor for the use of nuclear energy.
3. The security of all nuclear material is an essential part of the responsible and peaceful use of nuclear energy. In particular, the safe management of fissile material, including material resulting from the dismantling of nuclear weapons, is imperative, not least as a safeguard against any risk of illicit trafficking in nuclear materials.
4. In the spirit of the decisions adopted during the New York Conference of May 1995 on review and extension of the Non Proliferation Treaty (NPT), including the Decision on principles and objectives for nuclear non-proliferation and disarmament, we will increase our cooperation in the field of nuclear non-proliferation and disarmament i.e. by promoting universal adherence to the NPT, working vigorously to strengthen the International Atomic Energy Agency (IAEA) safeguards system and through effective and responsible export control measures. We are issuing a separate text on a Comprehensive Nuclear Test Ban Treaty (CTBT). We renew our commitment to the immediate commencement and early conclusion of negotiations on a non-discriminatory and universally applicable convention banning the production of fissile material for nuclear weapons or other nuclear explosive devices.

Nuclear Safety

5. Recognizing that the prime responsibility for nuclear safety rests with national governments, it is of the first importance to continue to enhance international collaborative efforts to promote a high level of nuclear safety worldwide.

Safety of Civilian Nuclear Reactors

6. Nuclear safety has to prevail over all other considerations. We reaffirm our commitment to the highest internationally recognized safety level for the siting, design, construction, operation and regulation of nuclear power installations.
7. The promotion of an effective nuclear safety culture in each country with nuclear installations is essential to that end.
8. Sustainable nuclear safety also requires a supportive economic and legal environment whereby both operators and national regulatory bodies can fully assume their independent responsibilities.
9. Nuclear safety can also be enhanced by greater international transparency in nuclear power activities, in particular by means of peer reviews, and this should lead to existing reactors which do not meet current safety requirements being brought to an acceptable level of safety or ceasing operation.
10. The adoption of the Convention on Nuclear Safety, which reaffirms these fundamental safety principles, is a major accomplishment in this field. We urge all countries to sign this Convention and to complete internal procedures to join so that the Convention can be brought into force expeditiously certainly before the end of 1996.
11. National efforts have been made in the countries of Central and Eastern Europe and the Newly Independent States to improve nuclear safety levels, often in cooperation with multilateral and bilateral programmes. In this regard, we acknowledge these important efforts to upgrade reactor safety and improve safety culture, but note that further substantial progress is still required. We reaffirm our commitment to cooperate fully for this purpose.

Nuclear Liability

12. An effective nuclear liability regime must assure adequate compensation to victims of, and for damage caused by, nuclear accidents. In addition, to secure the degree of private sector involvement needed to undertake vital safety improvements, the regime should at the same time protect industrial suppliers from unwarranted legal action.
13. The essential principles in this area are the exclusive and strict liability of the operator of the nuclear installations and ensuring needed financial security for adequate compensation.
14. It is essential that countries with nuclear installations that have not yet done so establish an effective regime for liability for nuclear damage corresponding to these principles.
15. It is important to work together on enhancing the international regime of liability for nuclear damage with a view to ensuring that it will attract wide adherence and accommodate any state which may wish to become a party. We encourage the experts to make further progress to this end. In this connection, the reinforcement of regional cooperation is welcomed.

Energy Sector Strategies in transition countries

16. Efficient market-oriented strategies for energy sector reform are essential to promote nuclear safety. This will generate adequate resources for investment in safety upgrades and maintenance, and encourage energy conservation. All countries in transition should pursue such market-oriented reforms and investment strategies based upon least cost planning, giving due regard to nuclear safety and environmental criteria, and to energy efficiency and conservation.
17. The International Financial Institutions have played a leading role in developing market-oriented energy sector reforms and investment plans. Their continued involvement and support is critical to ensure further progress.

Nuclear waste Management

International Convention

18. National authorities must ensure radioactive waste is managed safely and that provisions are made for its proper handling, storage and ultimate disposal. These are essential elements for any nuclear energy programme.
19. The development of the Convention on the Safety of Radioactive Waste Management, based on these principles, is of paramount importance. We call on all countries generating nuclear waste with nuclear installations to participate actively in the preparation of this Convention under the auspices of the IAEA and to encourage its effective finalization and prompt adoption.

Ocean Dumping

20. We commit ourselves to ban dumping at sea of radioactive waste and encourage all states to adhere at an earliest possible date to the 1993 amendment of the London Convention.

Nuclear Material Security

Programme for Preventing and Combatting illicit Trafficking in Nuclear Material

21. Illicit trafficking of nuclear material is a public safety and non-proliferation concern. We recognized the importance of this issue at our meetings in Naples and Halifax. As risks continue to exist, we have agreed on, and released, a programme for preventing and combatting illicit trafficking in nuclear material to ensure increased cooperation among our governments in all aspects of prevention, detection, exchange of information, investigation and prosecution in cases of illicit nuclear trafficking.
    We call on other governments to join us in implementing this programme.

Nuclear Material Accounting and Control and Physical Protection

22. We reaffirm the fundamental responsibility of nations to ensure the security of all nuclear materials in their possession and the need to ensure that they are subject to effective systems of nuclear material accounting & control and physical protection. These systems should include regulations, licensing and inspections. We express our support for the IAEA safeguards regime, which plays a critical role in providing assurance against the diversion of nuclear material going undetected. We underline the need for the urgent strengthening of IAEA capabilities to detect undeclared

nuclear activities. We note that these measures are also conducive to preventing illicit trafficking of nuclear material.

23. We recognize the importance of continually improving systems and technologies for controlling and protecting nuclear materials. We urge nations to cooperate bilaterally, multilaterally and through the IAEA to ensure that the national systems for controlling nuclear materials remain effective. We are encouraged by the wide array of cooperative projects underway in this field under bilateral and multilateral auspices and pledge to sustain and increase these efforts.
24. We urge ratification by all states of the Convention on the Physical Protection of Nuclear Material and encourage the application of the IAEA recommendations on the Physical Protection of Nuclear Material.
25. We pledge our support for efforts to ensure that all sensitive nuclear materials (separated plutonium and highly enriched uranium) designated as not intended for use for meeting defence requirements is safely stored, protected and placed under IAEA safeguards (in the Nuclear Weapon States, under the relevant voluntary offer IAEA-safeguards agreements) as soon as it is practicable to do so.

Safe and effective Management of weapons fissile material designated as no longer required for defence purposes

26. Major steps have been taken in recent years towards nuclear disarmament. This has created substantial stocks of fissile material designated as no longer required for defence purposes. It is vital, as mentioned above, that these stockpiles are safely managed and eventually transformed into spent fuel or other forms equally unusable for nuclear weapons and disposed of safely and permanently.
27. The primary responsibility for the safe management of weapons fissile material rests with the nuclear weapon states themselves, but other states and international organizations are welcome to assist where desired.
28. We welcome the steps that the United States and Russian Federation have taken to blend highly-enriched uranium (HEU) from dismantled nuclear weapons to low-enriched uranium (LEU) for peaceful, non-explosive purposes, and the cooperation programs of Canada, France, Germany, Italy, Japan, the United Kingdom, the United States of America and other states with the Russian Federation for the safe storage, the peaceful uses of fissile material released by the dismantlement of nuclear weapons, and their safe and secure transportation for that purpose; we encourage other efforts along these lines.
29. We are determined to identify appropriate strategies for the management of fissile material designated as no longer required for defence purposes. Options include safe and secure long-term storage, vitrification or other methods of permanent disposal, and conversion into MOX fuel for use in nuclear reactors. We have agreed to share relevant experience and expertise to elaborate and implement these strategies. We welcome plans to conduct small-scale technology demonstrations related to these options, including the possibility of establishing pilot projects and plants. We shall convene an international meeting of experts in order to examine available options and identify possible development of international cooperation in the implementation of these national strategies, bearing in mind technical, economic, non-proliferation, environmental and other relevant considerations. The meeting will take place in France by the end of 1996.
30. We recognize the importance of ensuring transparency in the management of highly enriched uranium and plutonium designated as no longer required for defence purposes.

Statement on Complete Test Ban Treaty

We affirmed our commitment to conclude and sign a comprehensive nuclear test ban treaty (CTBT) by September 1996. We agreed that a CTBT will be a concrete step toward the achievement of one of the highest priority objectives of the international community in the field of disarmament and non proliferation, and the fulfillment of the obligations under article VI of the Treaty on the non proliferation of nuclear weapons (NPT). We also agreed that the CTBT must prohibit any nuclear weapon test explosion or any other nuclear explosion. We affirmed that this would constitute a truly comprehensive nuclear test ban.

In this connection, we recalled the importance of the Decision on Principles and Objectives for nuclear Non Proliferation and Disarmament adopted on 11 May 1995.

Statement on Ukraine

We met on 20 April 1996 with President Kuchma of Ukraine and together examined a wide range of issues to improve nuclear safety and security. We agreed to continue our bilateral and multilateral cooperation with Ukraine in this field.

President Kuchma announced Ukraine's endorsement of the Programme on Preventing and Combatting Illicit Trafficking in Nuclear Material and expressed his willingness to support the objectives and actions described in the Moscow Nuclear Safety and Security Summit declaration.

We recognized the importance of President Kuchma's decision to close Chernobyl by the year 2000 as set out in the Memorandum of Understanding signed on 20 December 1995.

The signatories to the Memorandum reaffirmed their commitment to its full implementation and will cooperate closely with Ukraine and with International Development Banks on measures to support Ukraine's decision. For his part, President Kuchma confirmed Ukraine's willingness to cooperate actively and efficiently within the framework of the Memorandum.

b. The Cairo Declaration

Adopted on the Occasion of the Signature of the African Nuclear-Weapon-Free Zone Treaty (The Treaty of Pelindaba)

The African states signatories of the African Nuclear-Weapon Free-Zone Treaty (The Treaty of Pelindaba), meeting in Cairo, Egypt, on 11 April 1996,

Recalling the Declaration on the Denuclearization of Africa adopted by the Assembly of Heads of State and Government of the Organization of African Unity at its first ordinary session held in Cairo in 1964,

Recalling also the adoption by the Assembly of Heads of State and government of the organization of African Unity at its thirty-first ordinary session, held at Addis Ababa from 26 to 28 June 1995, of the final text of the Treaty,

Recalling further United Nations General Assembly Resolution 50/78 of 12 December 1995, by which the Assembly welcomed the Adoption by the African leaders of the final text of the Treaty,

Recognizing the valuable contribution that the establishment of nuclear weapon free zones in Latin America and the Caribbean, South Pacific and South East Asia have made to the process of nuclear non-proliferation,

Stressing the importance of promoting regional and international cooperation for the development of Nuclear Energy for peaceful purposes in the interest of sustainable social and economic development of the African Continent,

Solemnly declare that the signing of the Treaty further consolidates global efforts towards the non-proliferation of nuclear weapons including the objectives of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and is a highly significant contribution to the enhancement of international peace and security;

Invite the African states to ratify the Treaty as soon as possible so that it can enter into force without delay;

Call upon the Nuclear-Weapon States as well as the States contemplated in Protocol III to sign and ratify the relevant Protocols to the Treaty as soon as possible;

Emphasize that the establishment of nuclear-weapon-free zones, especially in regions of tension, such as the Middle East, on the basis of arrangements freely arrived at among the States of the regions concerned, enhances global and regional peace and security;

Call upon all those States who have not yet done so to adhere to the NPT;

Call upon the Nuclear Weapon States to actively pursue the goal of a nuclear-weapon-free world as embodied in Article VI of the NPT, through the urgent negotiation of agreements with effective measures of verification towards the complete elimination of nuclear weapons at the earliest possible time;

Decide that the first session of the Conference of the States Parties to the Treaty shall be held not later than one year after its entry into force, and endorse the establishment of the headquarters of the African Commission on Nuclear Energy in South Africa;

Request the Secretary-General of the United Nations, in accordance with resolution 50/78, adopted by the United Nations General Assembly on 12 December 1995, to provide the necessary assistance in 1996 in order to achieve the aims of the present declaration.

Cairo, April 11, 1996

c. US Statement on the Occasion of the Signature of the African Nuclear-Weapon-Free-Zone Treaty

US Adherence to Africa Nuclear Weapon Free Zone Protocols
Text of Declarations and Understandings

(A) The United States government understands the term 'dumping' as used in the ANWFZ Treaty to be identical to that term as defined in the 1982 United Nations convention on the Law of the Sea;

(B) The United States government understands the term 'inland waters' as used in the ANWFZ Treaty to exclude waters used in connection with maritime navigation;

(C) The United States government understands that nothing in the ANWFZ Treaty affects rights under international law of a State adhering to the protocols regarding the exercise of the freedom of the seas or regarding passage through or over waters subject to the sovereignty of a State, as reflected in the 1982 Law of the Sea convention

(D) With respect to Protocol II, the United States government declares that it would consider that an invasion or any other attack on the United States, its territories, its armed forces or other troops, its allies or on a State toward which it has a security commitment, carried out or sustained by a Treaty Party in association or alliance with a nuclear weapon state, would be incompatible with the Treaty Party's corresponding obligations under the Treaty;

(E) The United States government declares that its policies and practices are already consistent with the ANWFZ Treaty and protocols, and that its decision to sign and seek advice and consent to ratification of the ANWFZ protocols in no way affects the United States position with regard to other nuclear weapon free zone treaties; and,

(F) The United States notes that Diego Garcia, part of the chain of archipelagic islands in the Indian Ocean known as the British Indian Ocean Territories and under the sovereign authority of the United Kingdom of Great Britain and Northern Ireland, appears on the map of the zone of the Treaty, as set forth in Annex I, 'without prejudice to the question of sovereignty'. The United States notes further that the United Kingdom of Great Britain and Northern Ireland is not eligible to become a Party either to the Treaty or to protocol III. Thus, neither the Treaty nor protocol III apply to the activities of the United Kingdom, the United States, or any other State not party to the Treaty on the Island of Diego Garcia or elsewhere in the British Indian Ocean Territories. Accordingly, no change is required in United States armed forces operations in Diego Garcia and elsewhere in the British Indian Ocean Territories.

d. UK Statement on the Occasion of the Signature of the African Nuclear-Weapon-Free-Zone Treaty

I have the honour, on proceeding this day to sign Protocols I and II to the African Nuclear-Weapon-Free Zone Treaty, to make the following statement on instructions from Her Majesty's Principal Secretary of State for Foreign and Commonwealth Affairs:

a) Generally

The Government of the United Kingdom believe that universal adherence to and compliance with international agreements seeking to prevent the proliferation of weapons of mass destruction are vital to the maintenance of world security.

The Government of the United Kingdom have no doubt as to their sovereignty over the British Indian Ocean Territory and do not accept the inclusion of that Territory within the African nuclear-weapon-free zone without their consent. The Government of the United Kingdom do not accept any legal obligations in respect of that Territory by their adherence to Protocols I and II.

b) Re: Protocols I and II, first preambular paragraph

The Government of the United Kingdom understands the obligations referred to in the context of the provisions of Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons of 1 July 1968.

c) Re: Protocol I, Article 1

The Government of the United Kingdom will not be bound by their undertaking under Article 1 of Protocol I: -

i) in the case of an invasion or any other attack on the United Kingdom, its dependent territories, its armed forces or other troops, its allies or a State towards which it has a security commitment, carried out or sustained by a party to the Treaty in association or alliance with a Nuclear-Weapon State.

or,

ii) if any party to the Treaty is in material breach of its own non-proliferation obligations under the Treaty.

d) Re: Protocols I and II, Article 2

The Government of the United Kingdom accept this obligation on the understanding that it means that each party undertakes not to contribute to any act of a party to the Treaty which constitutes a violation of the Treaty, or to any act of another party to a Protocol which constitutes a violation of that Protocol.

e) Re: Protocols I and II, Article 6

The Government of the United Kingdom reserve the right to withdraw from these Protocols under the conditions specified on giving notice of withdrawal to the Depositary three months in advance.

V. Comments From Readers/Corrections

There were some inaccuracies in **Newsbrief** 33, 1st Quarter 1996. The following corrections are called for:

- On page 1, in the item on the Wassenaar Agreement on Export Controls etc., Argentina, Republic of Korea and Romania should be added to the list of non-NATO members.
- On page 2, the number of missile submarines that will form part of France's nuclear forces should be four, not five as indicated there. Further, the number of warheads aboard these vessels is said to be lower than indicated in the **Newsbrief**, but the actual number has not been made public.
- On page 3, the sentence 'China has announced that it will continue its nuclear tests until a Comprehensive Test Ban Treaty enters into force' should read 'China has announced that it will cease its nuclear tests as soon as a Comprehensive Test Ban Treaty enters into force'.
- On page 4, in the item about Russia, the reference to 'American plans for hydronuclear tests' is open to misinterpretation. In fact, US plans are understood to call only for subcritical experiments that do not involve a nuclear chain reaction.
- On page 6, the town where the Hungarian power station is located is Paks, rather than Pax.
- On page 11, 'KEDO' stands for Korean Peninsula Energy Development Organization.

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.

The **Newsbrief** is published on behalf of PPNN by the Mountbatten Centre for International Studies, Department of Politics, University of Southampton. Communications relating to its content and other editorial matters should be addressed to Ben Sanders at 240 East 27th Street, New York, New York 10016, USA (Tel. 1 (212) 532-3153; Fax. 1 (212) 532 9847). Those relating to production and distribution should be addressed to John Simpson, Mountbatten Centre for International Studies, University of Southampton, Southampton, SO17 1BJ, United Kingdom (Tel. 01703 592522; Fax. 01703 593533; international code +44/1703).

Production by Richard Guthrie. Printed by Autoprint.

ISSN 0965-1667