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PROGRAMME FOR PROMOTING NUCLEAR NON-PROLIFERATION

Number 38 **NEWSBRIEF** **2nd Quarter 1997**

Editorial Note

The **Newsbrief** is published every three months, under the auspices of the Programme for Promoting Nuclear Non-Proliferation (PPNN). It gives information about the actual or potential spread of nuclear weapons and about moves to prevent that spread; it also contains references to relevant developments in the realm of the peaceful use of nuclear energy. The contents of the **Newsbrief** are based on publicly available material, chosen and presented so as to give an accurate and balanced depiction of pertinent events and situations.

This issue of the **Newsbrief** covers the period 25 March–30 June 1997. Unless otherwise indicated, sources used and publications listed date from 1997.

The format of the **Newsbrief** makes it necessary to choose among available items of information and present them in condensed form. Another reason why it is necessary to make a careful choice from the information material on hand is that a single event may be reported in a number of publications which may all give more or less the same news but in widely different ways; such reports may complement each other, but they may also be mutually contradictory. Yet another ground for cautious culling is the speculative nature of some media reports, even, at times, carried in generally credible publications. Such reports are used here only if there is reliable back-up information or if the fact of their original publication is deemed relevant in the framework of the **Newsbrief**. As a rule, therefore, the news items referred to in any one issue of the **Newsbrief** constitute only a small portion of those that come to the editor's attention during the period covered by that issue.

Subheadings used in the **Newsbrief** are meant to facilitate presentation and are not intended as judgements on the nature of the events covered. On occasion, related developments that might logically be dealt with under separate subheadings are combined under a single subheading if doing so makes the text more easily readable.

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 substance 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.

I. Topical Developments

a. The NPT

[Note: the editor of the **Newsbrief** served as consultant to the Secretariat for the first session of the Preparatory Committee (PrepCom) for the 2000 Review Conference of the NPT. He has made it a point not to disclose in this brief summary information he obtained in that function which was not meant for publication. Thanks are due to Rebecca Johnson of the *Disarmament Intelligence Review*, whose briefings and personal advice were of great help in the preparation of this summary.]

The first session of the Preparatory Committee for the 2000 Review Conference of the Non-Proliferation Treaty (NPT) was held at United Nations Headquarters in New York, from 7 until 18 April 1997. Representatives of 149 states parties to the NPT participated. The session was attended by observers from Brazil, Cuba, Israel and Pakistan.

At the outset of the meeting, agreement was reached about the chairmanship of the various sessions, pursuant to which a representative of the Group of Western European and other states would chair the first session; a representative of the Group of Eastern European states would chair the second session; a representative of the

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Group of Non-Aligned and other states party to the Treaty would chair the third session; and a representative of that same group would be proposed for the Presidency of the 2000 Review Conference [no mention was made of a fourth session — ed]. At the opening meeting, Poland and Ukraine stated that the presidency of the 2005 Review Conference should go to the Group of Eastern European states. In line with previous practices, it was agreed that the chairpersons would be vice-chairs and members of the Bureau of the sessions of the Preparatory Committee which they did not chair. Ambassador Pasi Patokallio of Finland chaired the first session. It was decided that Ambassador Tadeusz Strulak of Poland would be chairman of the second session, in 1998.

The opening of the session was delayed by consultations on the issue of Yugoslavia, which the Federal Republic of Yugoslavia claims to have succeeded as a party to the Treaty. The states party to the NPT who formed part of the original Yugoslavia (Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and Slovenia) deny this claim. The matter was resolved for this session by the absence of a representative from Belgrade and the understanding that the issue would be dealt with in subsequent consultations. A second potential problem was that of the attendance by a representative of the Democratic People's Republic of Korea. Reportedly, the DPRK had let it be known that it wished to attend as observer. This would have caused a problem, as it is formally a party to the Treaty and parties can only attend as such. In the event, the DPRK was not represented at the session.

On the first day, the Preparatory Committee adopted its agenda, which is intended to apply also for following sessions; it is reproduced below, in section **IV. Documentation**. In the course of the session the Committee settled several procedural matters, i.e.:

- decision-making (making every effort to adopt its decisions by consensus, but if that is not possible, taking decisions in accordance with the rules of procedure of the 1995 Conference, applied *mutatis mutandis*);

- participation (non-parties to be allowed to attend as observers meetings not designated as closed, seated behind their countries' nameplates, and to receive documents, and entitled at their own expense to submit documents to the participants; a similar rule to apply to representatives of specialised agencies and regional intergovernmental organisations; and non-governmental organisations (NGOs) to be allowed, upon request, to attend the meetings of the Committee not designated as closed, to be seated in the public gallery, receive documents of the Committee and to make written materials available to the participants. Also, the Committee decided that at each of its sessions it would make time available during which NGOs can make presentations);

- working languages (Arabic, Chinese, English, French, Spanish and Russian);

- records and documents (summary records at each session of the opening meeting, the general debate and the closing meetings; records of decisions to be taken at the other meetings);

- dates and venues of further sessions (a *provisional* agreement was reached that the second session of the Committee would be held in Geneva from 27 April to 8 May, 1998; the third session of the Committee would be held in New York from 12 to 23 April, 1999; and the Review Conference would be held in New York from 24 April to 19 May, 2000.)

- Secretary-General of the 2000 Review Conference (an invitation was extended to the UN Secretary-General in consultation with the members of the Preparatory Committee to nominate an official as provisional Secretary-General of the Conference, pending confirmation by the Conference); and

- financing (the Secretariat was asked to provide for the second session a cost estimate for the Conference and its preparation).

The timing and venues of other sessions were subjects of debate and extensive consultations, with members of the non-aligned movement (NAM) generally calling for all sessions of the Preparatory Committee as well as the Conference to be held in New York, while western countries, notably members of the European Union, opted for the holding of at least one session in Geneva. It was made clear that the provisional decision taken in this regard might have to be revisited.

The substantive part of the session began with one day, i.e., two meetings, devoted to a general exchange of views; 38 delegations made statements. The speeches were dedicated in particular to the issues the respective delegates wished to see emphasised in the review process. Many of the interventions contained views on the manner in which the Committee should carry out its business and in particular on the question of what the product of its session should be and how that should be passed on to the next session. There seemed to be a general preference for the production of a 'rolling progress report', in which the results of each session would be incorporated with a view to the eventual formulation, at the last session of the Preparatory Committee, of recommendations to the Review Conference. Although it was recognised, and stressed in particular by western delegations, that under the newly strengthened review process the Preparatory Committee itself played an important part in the review of the implementation of the Treaty, it was particularly the speakers from the NAM who stressed that the Review Conference should have the final word. Their approach seemed to be that conclusions drawn at any given session of the Preparatory Committee could not be passed on to the Review Conference as self-contained elements of an eventual Final Declaration. The term heard repeatedly was that 'nothing would be agreed until everything had been agreed'.

A total of nine meetings, i.e., the equivalent of four-and-a-half days, was reserved for substantive presentations. Three meetings each were set aside for presentations on the three clusters of subjects that underlay the structure of the 1995 Review and Extension Conference, *viz* the Main Committee I issues: non-proliferation, nuclear disarmament, nuclear-

weapon-free zones, and security assurances; Main Committee II issues: mainly safeguards; and Main Committee III issues: peaceful uses of nuclear energy. In the second cluster (Main Committee II issues) the topic of nuclear-weapon-free zones was discussed as well. The topic of universality was addressed by many speakers, mostly in submissions pertaining to the first cluster; it was also referred to in connection with the subject of nuclear-weapon-free zones, where questions were raised about the implementation of the resolution on the Middle East that was adopted in 1995.

Many of the statements made on the first set of issues dealt with nuclear disarmament, negative security assurances, and a ban on the production of weapons-usable fissionable material. The presentation of a paper on these and other issues on behalf of the NAM coincided with the conclusion of the Twelfth Ministerial Conference of the Non-Aligned Movement in New Delhi. Pursuant to decisions adopted at that conference, the NAM submitted a working paper which called for, among other things, the establishment within the Conference on Disarmament of an ad hoc committee on nuclear disarmament to commence negotiations on a phased programme of nuclear disarmament and for the complete elimination of nuclear weapons within a specified framework of time, including a nuclear weapons convention. It was reported that in New Delhi two members of the NAM (Chile and South Africa) had objected to this formulation and rather, (in the words of the statement of the delegate of Indonesia at the Preparatory Committee introducing the NAM's working paper) stated that they '... sought to engage the Nuclear Weapons States in order to reach agreement on the practical steps and negotiations required to adopt a programme of systematic and progressive steps to totally eliminate nuclear weapons in the shortest time possible'. This difference of views became apparent at several points during the session.

Another issue within the first cluster that received much attention was that of security assurances. South Africa proposed that negotiations on a legally binding instrument in which non-nuclear-weapon states party to the Treaty would be given assurances against the use or threat of use of nuclear weapons, in accordance with paragraph 8 of the Principles and Objectives, should be negotiated 'within the NPT umbrella'. It felt that this initiative legitimately fell within the mandate of the Preparatory Committee and suggested that the issue might be dealt with either in the Committee or between sessions. Myanmar, together with Nigeria and Sudan, proposed negotiations on a protocol to the NPT, providing comprehensive and unconditional security assurances for non-nuclear-weapon states parties to the Treaty. This protocol would have to be concluded not later than the time of the convening of the 2000 Review Conference. Initial reactions to these proposals on the part of nuclear-weapon states were negative. The US in particular pointed out that the nuclear-weapon states had given or were in the process of giving security assurances to countries members of nuclear-weapon-free zones and that soon such assurances would extend to over 100 states.

A statement delivered by France on behalf of the five nuclear-weapon states received special attention as being the first instance of a joint statement by all five to have been made during the review of the NPT. In that statement the five countries expressed, among other things, their determination to implement fully all the provisions of the Treaty, 'including those of article VI'. The joint statement was praised on the one hand as evidence of nuclear-power willingness to speak as one and of a common acknowledgement of special responsibilities. On the other hand, a number of speakers, especially from the NAM, regretted that the statement in no way implied a new approach to the issue of nuclear disarmament and in particular, that it contained no concrete suggestions for ways to proceed to the elimination of nuclear arsenals.

The first meeting on the eighth day was set aside for statements by NGOs. Registrations had been submitted by 113 NGOs. Nine NGO speakers, each of whom spoke on a different theme, made presentations at an informal meeting chaired by Ambassador Patokallio. Many NGO representatives felt that this meeting was held too late in the session, since the statements made would by then have lost such impact as they might have had if delegates in their statements could have taken account of views advanced. NGOs also expressed the hope that at the next session the period set aside for their statements would not coincide with other meetings so that wider attendance by delegates might be obtained. Further, they voiced regrets that most of the Committee's proceedings were closed to the public and urged the Bureau to ensure that this would not be the case at the next session.

The question of the reports on substantive and procedural issues considered by the Preparatory Committee, the form and substance of recommendations to the next session of the Preparatory Committee, and the issue of draft recommendations to the Review Conference were discussed at length during consultations held by the Chairman within a restricted group of representative delegations, who met in closed session to advise him on matters regarding the conduct of business, the preparation of the final documents of the Committee and the drafting of specific texts. It had been the Chairman's conception to end the Preparatory Committee with a report prepared by the Secretariat, consisting of a factual introduction, a summary on the organisation of the work of the Committee and of its proposals for the work of the 2000 Review Conference; together with an agreed set of recommendations to the next session of the Preparatory Committee. Annexed to the report would be the summary records that were kept of the first session and a 'Chairman's paper' consisting of:

- points of general agreement, set out in the order of the Principles and Objectives. These would be subject to review and updating at subsequent sessions of the Preparatory Committee, and pending agreement on all draft recommendations at the last session;

- specific proposals put forward by delegations for consideration by the Preparatory Committee on the understanding that the proposals were without commitment by the Preparatory Committee and without prejudice to the position of any delegation, and that the list was not exclusive and delegations were free to submit new proposals or modify or withdraw old ones at any further session of the Preparatory Committee; and

- official documents submitted by delegations during the first session of the Preparatory Committee.

The wording of the recommendations, which would be part III of the main report was a subject of considerable debate. In the draft elaborated by the Chairman, the first of these recommendations would refer to the annexed 'Chairman's paper', which was conceived to be the basis for further work on draft recommendations to the Review Conference. The second recommendation would say that at its second session the Committee should continue the consideration of all aspects of the Treaty, again clustered in the way they had been considered at the first session of the Committee and subdivided according to the Principles and Objectives. It further stated that time should be allocated at the second session for discussion and consideration of three subject areas which, in the eyes of a number of delegations, had not received adequate attention during the substantive discussions at the first session, to wit:

- security assurances for parties to the NPT (a point stressed in particular by South Africa);
- the resolution on the Middle East (to which Egypt attached particular importance); and
- a ban on the production of fissile material for nuclear weapons or other nuclear explosive devices (which was added upon the urging in particular of Canada and Germany).

In the discussion on the recommendations, the Mexican delegate objected to the singling-out of these issues because she felt that this seemed to allocate a lower priority to the issue of nuclear disarmament. She insisted on the addition of a reference to that issue. Also, because she did not want the Chairman's paper to take precedence over the proposals submitted by delegations that would be part of the annexes to the report, she sought to reword the reference in the draft recommendations to that paper in a manner that would have downgraded its value and deprived it of its status as the basis for further work in the Committee. This move was widely interpreted as dictated by the obvious wish to underline the supremacy of the issue of nuclear disarmament, but also as a reflection of the hesitation, reputedly shared by some other delegations, to having the Preparatory Committee commit itself to far-going agreements at this early stage of its work.

In a last-minute attempt to reach general agreement on the text of the report of the Preparatory Committee, the Chairman, with the help of delegates from all major groups, made several concessions to the Mexican delegation. Among these, the 'Chairman's paper' was now called the 'Chairman's working paper' (see page 23) and the phrase 'should be the basis for further work' was changed to 'should be taken into account' together with proposals from delegations. Mexico's wish to have the entire second recommendation deleted appeared not to be shared by all members of the NAM; reportedly, while many agreed with the emphasis on the need for nuclear disarmament, they preferred to retain the specific references to other items of interest, in particular to security assurances. In the end, in a compromise move, the Chairman read into the record the statement that 'It is understood that within the existing agenda and in accordance with the methods of work adopted at the first session, the Committee also recommended that time should be allocated at the second session for the discussion on and the consideration of any proposals on the following subject areas, without prejudice to the importance of other issues:', followed by the three items listed above. The Mexican delegate, also for the record, read a prepared speech reflecting her disagreement and, once again, emphasising the priority of nuclear disarmament.

The report of the Preparatory Committee as a whole was adopted without a vote. The following parts of the report are reproduced under section **IV. Documentation**: paragraphs 6 to 9, on the organisation of the Committee's work, including the agenda; paragraph 14, on the organisation of the 2000 Review Conference; paragraphs 15 to 17, containing agreed recommendations to the next session of the Preparatory Committee; the Chairman's statement, as reproduced separately in document NPT/CONF.2000/PC.I/31; and Annex II: Chairman's Working Paper.

(**Disarmament Intelligence Review**, Briefings no. 1–6 by Rebecca Johnson; **Preparatory Committee Documents** NPT/CONF.2000/PC.I/1 and Rev.1 through NPT/CONF.2000/PC.I/30; NPT/CONF.2000/PC.I/CRP.1; NPT/CONF/.2000/PC.I/32; **Direct information**)

b. Further Non-Proliferation Developments

- **China** attended the meeting of the Zangger Committee that was held in Vienna in mid-May in an observer capacity. Reportedly, it said it was willing to do so only for as long as the Committee's export rules did not include a requirement for the acceptance of full-scope safeguards by recipients. Chinese industry is said to be unwilling to commit itself to international export standards with respect to nuclear items, although parts of the country's bureaucracy seem to be more positively disposed. (**NuclearFuel**, 2/6; **Nucleonics Week**, 5/6)

- A project is reported to be underway at the Kurchatov Institute in **Russia** for the development of a 'Non-Proliferative Light-Water Thorium Reactor' that would not produce weapons-usable plutonium. The project, which is supported with **United States** funds, is based on research work conducted in **Israel** by Alvin Radkowsky, a former chief scientist of the US Naval Nuclear Propulsion Program; Radkowsky holds an American patent for a reactor of which the core is made up of 60 per cent of thorium. One US nuclear expert is quoted as saying that even if the high cost of converting power reactors to a thorium-fuel cycle would make it unlikely that utilities would easily do so, the project does contribute to US non-proliferation efforts by keeping Russian nuclear scientists employed in substantive research. (**Defense News**, 16-22/6)

c. Nuclear Disarmament and Arms Limitation

- On 14 May the **North Atlantic Treaty Organization (NATO)** and the **Russian Federation** concluded an agreement (Founding Act) setting the terms under which states from Central and Eastern Europe will be

admitted to the alliance. The document was signed in Paris on 27 May by heads of state or government of the NATO states. Section 4 of the Founding Act repeats the undertaking by the NATO states that they have 'no intention, no plan and no reason' to deploy nuclear weapons on the territory of new members 'nor any need to change any aspects of NATO's nuclear posture or nuclear policy — and do not foresee any future need to do so'. They added that this subsumed the fact that NATO would not establish nuclear storage sites on the territory of new members. In Moscow, the head of President Yeltsin's Security Council, Ivan P. Rybkin, has said that NATO's expansion made ratification of START II 'practically impossible' and former foreign minister Andrei Kozyrev has told an interviewer that the chances of the Russian Duma approving the Treaty this year were 'nil'. (**New York Times**, 15/5, 16/5, 28/5; excerpts from **Founding Act on Mutual Relations, Cooperation and Security Between NATO and the Russian Federation**, 27/5, in **Disarmament Times**, June)

- **Russia**: a senior official in the Ministry of Atomic Energy (MINATOM) has told the American trade journal *NuclearFuel* that his country is committed to burning its excess weapons-grade plutonium in mixed-oxide (MOX) power reactor fuel and continues to attach great importance to the peaceful use of nuclear energy for power production, but that if there should be any incident at a nuclear utility or storage facility the public would force the government to dispose of the plutonium by burial. Meanwhile, Moscow is said to have come to an agreement with Cogema of France and Siemens of Germany on the construction in Russia of a MOX fuel production facility that will use plutonium from dismantled weapons. Construction would start in 1999.

  A number of European nuclear-fuel manufacturers are said to seek a contract from the Department of Energy (DoE) to build and operate a MOX fabrication facility in the US. Siemens has formed a consortium of American partners from industry and utilities to bid for a contract with DoE for the fabrication of MOX in the US. Other European candidates for this work are the British company BNFL (together with some US fuel manufacturers), Cogema and Belgonucléaire (BN). Recently, a controversy seems to have arisen between the Belgium firm and Cogema, when the latter apparently pointed to the experience it had gained producing MOX fuel, while in fact much of the MOX fuel it claims to have manufactured came from a plant operated by BN. In terms of fuel rods delivered by the various European manufacturers for use in light-water reactors, the numbers reported are 664 supplied by BN, 401 by Siemens, 80 by Cogema and 20 by BNFL.

  There are reports that the Nuclear Energy Institute of the US is urging DoE to hasten the introduction of MOX fuel into American plants, but that the Department prefers to move cautiously in this matter and seeks to work out arrangements that would assure it of so-called cradle-to-grave services: designing, building, licensing, operating and decommissioning the MOX plant. DoE has published a 'notice of intent' that it is starting work on an Environmental Impact Statement (EIS) with regard to the selection of sites for facilities for the immobilisation of plutonium; manufacture of MOX fuel; and the conversion of plutonium 'pits' from nuclear weapons. Among other things, the EIS will deal with the question whether lead test assemblies will be fabricated in the US or abroad. If this is done in the US, it would be necessary first to develop a pilot capability; fabrication of lead assemblies in Europe would be possible earlier, given the existence of the necessary facilities there. A 'Procurement Acquisition Strategy' has been published in which DoE outlines the procedure it intends to follow to involve industry in MOX disposal work, but the Department has not yet issued a request for proposals to procure MOX fuel fabrication services, as it had been expected to do several months earlier. A consortium of 19 anti-nuclear groups who are strongly opposed to the idea of disposing of US weapons-grade plutonium through the use of MOX fuel are reported to have urged DoE and the US Nuclear Regulatory Commission to stop the participation in that initiative by Commonwealth Edison, America's largest nuclear utility, presumably as part of a campaign against DoE's MOX programme. The President of the Nuclear Control Institute, Paul Leventhal, has said that in all 55 groups have expressed support for the anti-MOX initiative.

  DoE is said to be still interested in testing the feasibility of disposing of Russian excess weapons-grade plutonium by burning it as MOX fuel in Canadian Candu reactors. It seems, however, that MINATOM is hesitating to conclude an agreement to this effect, possibly because it wants to keep the MOX in the country.

  (**NuclearFuel**, 24/3, 7/4, 19/5, 2/6; **BBC Monitoring Summary of World Broadcasts**, 16/5, in **UI News Briefing** 97.20; **Nucleonics Week**, 22/5, 29/5; **SpentFUEL**, 26/5, 23/6)

- In the **United States**, two expert panels have reached the conclusion that the US and Russia should reduce their nuclear arsenals to several hundred warheads each. One analysis, made by the National Academy of Sciences, says that nuclear weapons should be seen as fundamentally useless except to deter an enemy's nuclear attack. In answer to the questions, 'How much is enough?' and 'How low can we go?' the Academy came to the same conclusion: 300 warheads, of which 100 would be placed in a [*sic*] submarine at sea and ready to be fired in an emergency. Separately, an expert panel of the Institute for National Strategic Studies, a branch of the National Defense University, has recommended that the US should study the issues involved in reducing total nuclear weapons inventories in the US and in Russia to 'the low hundreds'. The US Administration, however, intends to maintain its nuclear arsenal at the present size but, reportedly, in order to do so at lower cost, is considering altering the mix of nuclear warheads on various delivery vehicles. One option apparently considered is a cut in the number of ballistic missile submarines and an increase in the number of warheads on land-based missiles and strategic bombers. The Armed Services Committee of the US Senate has approved a request by the

Department of Defense to be allowed to change the mix of nuclear forces so long as the total number of warheads remains at the START I level of 6,000. (**New York Times**, 18/6; **Washington Post**, 18/6)

d. Nuclear Testing

- As of 30 June, the **Comprehensive Test Ban Treaty** had been signed by 144 countries and ratified by four: Fiji, Japan, Qatar and Uzbekistan. The Provisional Technical Secretariat of the Preparatory Commission started work in Vienna on 17 March; in May, the **Comprehensive Test Ban Treaty Organisation** (CTBTO) held its first conference in Vienna, mainly to discuss technical preparations for the implementation of the Treaty. Reportedly, the Organisation's verification network will include 321 seismic and hydro-acoustic stations around the world. Executive Secretary of the CTBTO is the former Ambassador of Germany to the Conference on Disarmament in Geneva, Dr. Wolfgang Hoffmann. (**Information Note, Preparatory Commission for the CTBTO**, 5/6; **Kurier** [Vienna], 13/5; **Standard** [Vienna], 13/5)

- The **United States** will conduct two underground test explosions this year, at its Nevada test site. The explosions, which are part of the 'stockpile stewardship program' to ensure safety and reliability of the American nuclear-weapon stockpile, will involve conventional high explosives and a small amount of plutonium. The first test was scheduled for June; the second will be held some time in the autumn. An Administration spokesman has underlined that the tests, which do not generate any nuclear yield, are 'fully consistent' with the Comprehensive Test Ban Treaty. The experiments are controversial; there have been suggestions from arms control experts that they should be carried out above ground so that their legality could be verified. A coalition of organisations opposing the tests had sought an injunction in the Federal District Court in Washington, D.C. to stop them but has now decided to drop this action. Meanwhile, there are reports of intensified efforts by the Los Alamos, Livermore and Sandia National Laboratories for the construction of supercomputers for the simulation of test results, particularly with respect to the ageing of nuclear weapons. (**Arms Control Today**, April; **Reuter's**, 4/4; **Associated Press**, 5/4; **New York Times**, 5/4, 3/6, 26/6; **Defense News**, 2-8/6)

e. Nuclear Trade and International Cooperation

- **Iran** is reported to have paid **Russia** the first instalment for the completion of the Bushehr nuclear power station. The payment is said to have amounted to $80 million, i.e., ten per cent of total cost. Installation work is expected to start in mid-1998. According to official Israeli and American sources, the President of **Ukraine** has let it be known that his country will not supply equipment for the Bushehr project. Ukraine was to have supplied the 1000-MW turbine for the first power reactor unit as well as some pumps and welding services. It is expected that the move may cause a delay in the completion of the project, although Russia is expected to find a domestic supplier for the turbine. (**Novecon**, 20/3, in **UI News Briefing** 97.12; **New York Times**, 15/4; **Nucleonics Week**, 1/5)

- There is a report that **Kazakstan** is planning to build a research reactor in the town of Kurchatov, near the Semipalatinsk nuclear testing grounds with financial help of countries of the Asian region. A decision would be taken in 1998 during a meeting of leaders of Asian countries. (**Nucleonics Week**, 27/3)

- Attempts by the **United States** to persuade **China** to make commitments about its nuclear exports that would enable Washington to certify Beijing's nuclear credentials have not yet led to positive results. A two-day series of talks between China's leaders and US Vice President Gore in late March failed to bring the undertakings Washington had hoped for. Meanwhile, the American nuclear industry continues to press Washington for speedy progress on the matter so that the export of American nuclear components to China may resume. The Chairman and Chief Executive Officer of the American firm Westinghouse Electric Corp. has told the Ways and Means Subcommittee on Trade of the US House of Representatives that in the last eight years, trade sanctions imposed by Congress have caused his company to lose billions of dollars in potential sales of nuclear plants and services to China. The situation has special relevance for the cooperation between the Nuclear Power Institute of China and Westinghouse that has been under way for several years and now seems to be leading to the development of a 600-MW advanced 'passive' nuclear power reactor that is thought to provide great advantages over previous models in terms of simplicity of construction, reduction in size, safety, ease of maintenance, and higher availability rates. The design is claimed to be 'more than 100 times safer than current plants', thus reportedly providing a technical basis for eliminating the need for an emergency planning zone. Ending current restrictions on nuclear cooperation with China would improve Westinghouse's chances of marketing the new plant. (**Nuclear Engineering International**, March; **New York Times**, 27/3; **Nucleonics Week**, 27/3)

f. IAEA Developments

I. General

- At its meeting in March the Board of Governors of the International Atomic Energy Agency considered the nomination of the next Director General of the Agency. Reportedly, after an informal vote, it became apparent that none of the persons whose candidatures had been submitted (Dr. Reza Amrollahi, Vice President of Iran and head of its Atomic Energy Organization; Professor Jean-Alec Baer, a senior Swiss nuclear official; Yuri Kostenko, Minister of Environmental and Nuclear Safety of Ukraine; Fabio Pistella, head of the Italian institute for research and development on energy, ENEA; Dr. Mohamed Shaker, Ambassador of Egypt in London; and Dr. Mwindaace Siamwiza, head of the National Council for Scientific Research of Zambia) would have enough support to be nominated by consensus. The Board therefore asked for new nominations. Subsequently, a group of African states

submitted the name of Mohammed ElBaradei, currently Assistant Director General in the Agency's Secretariat, and Director of its Division of External Relations. Cameroon and Mongolia submitted the candidature of Ku Mo Chung, former head of the Atomic Energy Commission of the Republic of Korea and currently Ambassador for Atomic Energy Cooperation and representative to the IAEA. On 5 June, after a secret ballot had ascertained the support of two-thirds of the Board members for the candidacy of Dr. ElBaradei, the Board duly appointed him. At its session starting on 29 September, the General Conference is expected to approve the appointment in accordance with the Agency's statute. The term of the new Director General begins on 1 December.

Subsequently, Chung is said to have claimed that ElBaradei had not been nominated properly under IAEA procedures: his nomination had supposedly come from a group of states rather than from a specific country, as provided in the procedures.

Professor Maurizio Zifferero of Italy, former Deputy Director General and head of the IAEA's Department of Research and Isotopes, died on 20 June. From April 1991 until last May Prof. Zifferero was Leader of the Agency's Action Team in Iraq.

The IAEA has announced that Steffen Groth of Denmark has been appointed as Director of the Division of Human Health in the Department of Research and Isotopes. He succeeds Alfredo Cuarom of Mexico. Ms. Denise Loehner of France has succeeded Ms. Joyce Amenta of the US as Director of the Division of Scientific and Technical Information.

(**Nucleonics Week**, 6/3, 27/3, 24/4, 12/6; **Press Information from IAEA**; **IAEA Newsbriefs**, April/May; **NucNet News**, 4/6; **Reuter's**, 4/6; **Neue Zürcher Zeitung**, 5/6; **Die Presse**, 5/6; **Standard** [Vienna], 5/6; **Süddeutsche Zeitung**, 5/6; **IAEA website** [http://www.iaea.or.at/])

- Representatives of nine states, all users or possessors of plutonium stocks, viz. Belgium, China, France, Germany, Japan, the Russian Federation, Switzerland, UK and USA, are reported to have met in Vienna in March under the aegis of the IAEA, and to have reached an agreement in principle on guidelines to increase transparency on holdings and transfers of plutonium. Once the guidelines have been approved by the respective governments, the states are expected to submit annual reports on their plutonium holdings. The need for all plutonium-holding states to apply the highest possible degree of transparency with regard to plutonium holdings was stressed repeatedly at the April session of the NPT PrepCom. (**Ux Weekly**, 31/3, in **UI News Briefing** 97.14; **Statement by Representative of Japan** at the first session of the Preparatory Committee for the 2000 NPT Review Conference, 14/4)

II. Safeguards

- On 21 April the IAEA's Committee on Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System, which had been established by the Agency's Board of Governors on 14 June 1996, agreed on the text of the Model Protocol to implement Part 2 of the measures of the IAEA's Programme 93+2. On 15 May the Board of Governors, meeting in special session, approved the Protocol, which was presented publicly on 16 May by the Chairman of the Board and the Director General of the IAEA. The Protocol is reproduced in section **IV. Documentation**. (**Washington Post**, 15/5; **IAEA Press Release** PR97/9, 16/5; **Reuter's**, 16/5; **White House Fact Sheet**, 16/5; **Neue Zürcher Zeitung**, 17/5; **Direct information**)

- At its regular June meeting the Board of Governors reviewed the implementation of IAEA safeguards during 1996. It noted that 'in 1996, the Secretariat did not find any indication of the diversion of nuclear material, or of the misuse of any facility, equipment, or non-nuclear material, which had been declared and placed under safeguards. Therefore, it concluded that the nuclear material and other items which had been declared and placed under safeguards remained in peaceful use or were otherwise accounted for. However, the IAEA [was] still unable to verify the initial declaration made by the Democratic People's Republic of Korea (DPRK) and the DPRK continues to be in non-compliance with its NPT safeguards agreement'. It was reported that expenditures from the Safeguards Regular Budget for 1996 were $87,021,909 and extrabudgetary funds of $8,453,747 had been contributed by eight member states. The Secretariat's report noted that despite positive trends in efficiency and the recent increase in the number of posts in the Safeguards Department, the IAEA cannot continue to meet an expanding workload without more resources. (**IAEA Press Release** PR 97/12, 11/6)

- There have been reports in the US nuclear trade press that **Euratom** is opposed to the use of certain of the enhanced safeguards monitoring techniques provided for under Part 1 of the IAEA's Programme 93+2 with respect to centrifuge enrichment plants. Reportedly, the three Urenco countries that possess such plants, **Germany**, the **Netherlands**, and the **UK**, are allowing IAEA inspectors to take environmental samples as part of a continuous and routine monitoring scheme of the enrichment level of these plants. However, Germany, Euratom and Urenco are said to claim that the British-designed technology the IAEA would use to detect enrichment levels and report back to Vienna in real time is prone to failure may result in findings that would indicate a higher enrichment level than is actually being achieved. Apparently at the Capenhurst facility a finding of higher-than-authorised enrichment levels, rather than indicating faulty operation, is said to prove the extreme sensitivity of the device which actually found indications of earlier production of weapons-grade uranium. The issue is said to have led to friction between the IAEA and Euratom as has disagreement about monitoring associated with MOX fuel, where Germany and Euratom are said to insists on enhanced safeguards to be applied at the fabrication plant as against in-core applications at reactors, which is reportedly the IAEA's preference. Supposedly, the IAEA views the opposition as inspired by basic resistance to the more rigid 93+2 safeguards system,

specifically environmental monitoring. (**NuclearFuel**, 10/3, 5/5, 19/5)

- Current negotiations between the **IAEA** and **Canada** on the implementation of the new safeguards procedures under the 93+2 programme are reported to point to a potential problem. Under the new system, potentially greater intrusiveness under particular conditions may be compensated for in a more relaxed application of routine safeguards such as those applied with regard to the fuel in Candu reactors. While the IAEA is said to be in favour of a reduction in routine safeguards on Candu reactors because any loss of continuity in knowledge would be made up by various new techniques, it is expected that the changes will indeed bring an interruption in continuity of safeguards knowledge. This is not seen as a problem with regard to Canada, but it might become one with respect to other countries that would call for the same treatment in the interest of non-discrimination. The case of the DPRK is seen as an example of a situation where continuity of knowledge is essential. (**NuclearFuel**, 16/6; **Direct information**)

g. Peaceful Nuclear Developments

- There is a report that **Armenia** will receive assistance from the European Union and the US for safety upgrades of its Metsamor-2 VVER-440 power reactor. In 1996 Armenia concluded an agreement with the European Union under which Metsamor-1 would be kept closed and Metsamor-2 will be closed in the medium term. The plant had been shut down in 1989, after a heavy earthquake, reportedly more for political reasons than because of earthquake effects. Lack of power sources forced the Armenian government in 1995 to authorise unit-2 to be restarted, mainly with Russian assistance and reportedly some help also from France, Germany and the US. The idea of only restarting one unit had initially met with opposition in Armenia for, among other reasons, the consideration that the two units share control room space and other structures so that presumably using both units would provide greater safety for the plant as a whole and greater stability for the grid. It is now recognised, however, that it may not be economical to restart Metsamor-1. (**Nucleonics Week**, 10/4, 22/5; **BBC Monitoring Service of World Broadcasts**, 23/5, in **UI News Briefing** 97.21)

- Moves are on the way to obtain through the European Commission financing for safety upgrading of the Kozloduy-5 and -6 VVER-1000 reactors in **Bulgaria**, to what is called 'near western safety standards'. The work will be done by a consortium of Framatome and Siemens, with Russian firms as partners. (**Nucleonics Week**, 10/4)

- Members of the US Congress, from both parties, are seeking to adopt measures designed to keep **Cuba** from completing its two VVER-1000 power reactors at Jurugua with Russian help. Reportedly, a proposal has been made in both Houses for legislation that would prohibit the Administration to pay the IAEA any share of the technical assistance programme for Cuba. Another measure, enacted last year, intends to force other governments to abide by American sanctions against Cuba. The first-mentioned bill directs the US representative to the IAEA to oppose the use of any American funds not only for assistance to Cuba but also in respect of the Bushehr reactor in Iran (see page 22), and of uranium research in the DPRK. (**Nucleonics Week**, 3/4)

- Completion of the first unit of the Temelin nuclear power station in the **Czech Republic** is expected to be delayed until April 1999, and possibly the middle of that year. The station consists of two VVER-1000 reactors. The second unit should be completed 18 months after the first. Principal cause of the delay is said to be changes in safety features and the replacement of Russian equipment by American components, which, among other things, necessitated extensive recabling. The delay is expected to result in a ten per cent increase in construction costs. An anti-nuclear group, reportedly composed mainly of Austrians and Germans, has staged another protest against the completion of the power station.

  Two fuel rods that had been missing for six months from a Westinghouse nuclear fuel fabrication plant have been found in the Czech Republic in a replica fuel assembly used for training. The incident is under investigation.

  (**Radio Prague**, 2/4, in **BBC Monitoring Summary of World Broadcasts**, 4/4; **Reuter's**, 2/4; **Financial Times**, 3/4; **Associated Press**, 18/4, in **UI News Briefing** 97.16; **Nucleonics Week**, 24/4; **CTK News Agency** [Prague], 26/4, in **BBC Monitoring Summary of World Broadcasts**, 28/4)

- At the beginning of the quarter covered by this **Newsbrief**, the restart of **France**'s Superphenix fast-breeder reactor, which was closed down last December for maintenance, inspection and the reconfiguration of its core, was still on hold, pending a court decision about relicensing. The work was not expected to be fully completed until early Autumn. Meanwhile, there were indications that the relicensing decision was being held up until after the National elections of May and June. Since then, Lionel Jospin, the leader of the Socialist Party, who was named Prime Minister after winning the elections, and who had said that if he won he would close down Superphenix, has confirmed that the plant will be 'abandoned', and has given his minister for the environment, Dominique Voynet, the leader of the 'Green' party, a mandate to arrange the shut-down. It is not yet clear when this will take place and there is talk that the plant will be allowed to operate until 2001, when the first core should be exhausted. The expectation that one way or the other Superphenix is likely to be closed in the foreseeable future has triggered protests from both labour and industry. Jospin had also said that he would impose a 10-year moratorium on construction of new reactors. Reportedly, he is also opposed to the use of MOX as a reactor fuel. (**Nucleonics Week**, 24/4, 29/5, 5/6, 19/6, 26/6; **Enerpresse**, 24/5; **NuclearFuel**, 2/6; **Guardian**, 10/6; **Reuter's**, 16/6; **SpentFUEL**, 23/6)

- **Indonesia**'s Minister of Research and Technology, who had earlier been quoted as saying that the nuclear power option would not be exercised before 2020 is now reported to have said that the country's first commercial nuclear power station could be completed by 2006. (**Associated Press**, 15/4; **Power in Asia**, 21/4, and **Nikkei Weekly**, 21/4, all in **UI Newsbriefing** 97.16)

- **Japan**: the fire at the waste solidification facility at Tokai-mura on 11 March (see **Newsbrief** 37, page 6) has had important consequences. The event has been rated at Level 3 on the IAEA's International Nuclear Events Scale (INES), meaning that it was a 'serious incident or near-accident', based on the finding of a 'loss of multiple barrier function' at the facility, i.e., the explosion is said to have eliminated all defences at the plant, leaving it exposed should anything else have gone wrong. There have been no indications that any persons outside the facility have been affected, even though radiation readings in the area beyond the facility, still said to be far below regulatory limits, were found to have increased noticeably, and there was a report that traces of radioactive caesium^{137} were found 38 miles from the site and that a small amount of plutonium had been found in the soil outside the damaged building. Shortly after the incident, air samples taken from the ventilator shafts of the facility were said to indicate an eight-fold increase in particles capable of admitting alpha and gamma radiation.

  A commission set up by Science and Technology Agency (STA) to investigate the causes of the accident is said to have concluded that an experimental slowdown of the speed with which liquid waste was mixed with hot asphalt may have made the product denser and hotter, which, together with a change in the combination of the chemicals that are routinely added to the low-level radioactive liquid, may have caused temperatures to rise to the point of combustion. The Power Reactor & Nuclear Fuel Development Corp. (PNC) has denied this, however, and has suggested that some catalytic agent might have been mixed with the waste, causing exothermic reactions which triggered the fire. There are said to be some indications that in fact two explosions took place, at different stages in the process.

  Shortly after the incident there were reports that the Tokai reprocessing plant (which is Japan's only functioning facility of this type) would have to be idled for a lengthy period (the estimates varied between one and 'at least four years'). In early June, however, it was reported that the Japanese government considered shutting the plant down altogether.

  The event at Tokai has been widely publicised domestically as well as abroad. PNC, which also owns the Monju fast-breeder reactor that in December 1995 suffered a sodium leak, is once again accused of having mishandled a nuclear incident and staging a cover-up. PNC has admitted that it initially gave STA false information about the accident, when it reported that workers at the plant, after making a visual inspection, had confirmed twice that the fire was out even though it was not. In reality, no such inspection seems to have been made nor had management received any confirmation to that effect from employees. It has also been disclosed that photographs made of the wreckage had been shredded by a sub-management employee of PNC after his supervisor told his superiors that no photos had been taken. (A subsequent report says that it was an investigator of PNC who destroyed the photographs). Further, there have been reports of efforts to reposition debris after it had been cleaned up following the accident, for fear that the clean-up might be taken as an attempted cover-up. These actions, described in one US trade journal as 'an endless series of nuclear energy slapstick', have led to much anti-nuclear comment in the international press.

  Following reports that senior PNC officials may be charged in criminal court for trying to cover up the Monju event by editing and hiding videotapes and misrepresenting the accident in official reports, it has also been disclosed that STA has filed a criminal complaint against PNC and three of its managers for their alleged roles in falsifying reports of the happenings at Tokai-mura. Five executives who are considered to have been involved in the affair have been demoted. In mid-April STA began gathering evidence regarding possible violations of legislation dealing with false reporting of accidents at nuclear facilities; there are said to have been police raids on the Tokyo offices of PNC and the Tokai-mura plant. Apparently, PNC's position has been further affected by an event that occurred just when the investigations at Tokai started, at which time it was revealed that STA had ordered the immediate and indefinite shut-down of PNC's Fugen advance thermal reactor on the ground that for thirty hours following that event, the authorities had not been told of the occurrence of a leak in a pump in the facility's heavy-water processing system, which led to an escape of a small amount of tritium. Moreover, the President of PNC's Board of Directors has confirmed that PNC's office at Fugen had failed to report 11 other tritium leaks over the past two-and-a-half years. Fugen has since resumed operations.

  These events are feared to have caused a further drop in the credibility of Japan's nuclear industry and in the public acceptance of nuclear power. Nevertheless, both the Minister of International Trade and Industry and the Chairman of Japan's Atomic Energy Commission have confirmed that the country will continue pursuing nuclear fuel recycling policy and will put more emphasis on the introduction of MOX fuel in light-water power plants. At the same time, there have been reports that the government is considering shutting the Monju fast-breeder reactor down altogether.

  The Japanese government is preparing to reorganise PNC. Basing itself in part on recommendations by the American consulting firm Arthur Andersen which, at the request of STA, has reviewed PNC's organisation, administration, management, crisis control, and notification systems, among others, a special committee set up by STA is said to have proposed that PNC should be reorganised into a research and development body with more authority than hitherto

but fewer projects. Reportedly, options being considered include the closure of the Tokai reprocessing plant; the transfer of the Fugen advanced thermal reactor to Japan Atomic Power; and the transfer of the management of plutonium fuel fabrication programmes, spent fuel reprocessing and uranium enrichment work to private industry. There had been earlier reports that research and development for Japan's indigenous uranium enrichment would be entrusted to Japan Nuclear Fuel Ltd. (JNFL). The slow pace of development of PNC's centrifuge programme is said to have been the subject of criticism for some time. With the closure of the Tokai plant, reprocessing would be done exclusively at Rokkasho, where JNFL is building a commercial plant with a planned capacity of 800 tonnes a year. This facility was to be finished in 2003 but is behind schedule and is now being redesigned both to meet seismic standards and to lower construction and operation costs. Reportedly the pause in construction will also be used to make a formal decision on the site for a commercial MOX fuel fabrication plant, using the plutonium separated at Rokkasho.

The Tokyo Electric Power Co. (Tepco) is planning to load the first MOX fuel elements into the Fukushima I-3 BWR in 1999 and into its Kashiwazaki-Kariwa-3 reactor a year later. Reportedly, the two facilities will eventually have MOX fuel in a third of their cores. Similarly, Kansai Electric Power Co. (Kepco) plans to begin using MOX fuel in its Takahama-3 PWR in 1999 and in unit-4 in 2000. Three more electric utilities are scheduled to begin loading MOX fuel in 2000 and by the year 2010 six more should have done so, for a total of 11 companies and 16-18 reactors. However, there are reports that the problems at PNC may delay the realisation of these plans.

(**JiJi Press Newswire**, 14/3, 17/3, 14/4, 5/6; **Reuter's**, 15/3, 21/3, 9/4, 13/4, 16/4, 17/4, 18/4, 22/4, 23/4, 25/4, 7/5; **Kyodo News Service** [Tokyo], 16/3, in **BBC Monitoring Summary of World Broadcasts**, 19/3; **NucNet News**, 17/3, 11/4, 16/4; **Associated Press**, 18/3; **Die Presse**, 18/3, 18/4; **Yomiuri Shimbun**, 19/3, 10/4, 16/4, 24/4, 11/6; **NucNet News**, 24/3, in **UI News Briefing** 97.12; **New York Times**, 15/3; **Nucleonics Week**, 27/3, 3/4, 10/4, 17/4, 1/5, 8/5, 12/6, 19/6; 26/6; **International Herald Tribune**, 29-30/3, 10/4, 19-20/4; **SpentFUEL**, 24/3, 31/3, 7/4, 21/4, 28/4, 5/5, 2/6, 16/6; **Asahi Shimbun**, 31/3, 9/4, 17/4, 25/4, 7/5; **Süddeutsche Zeitung**, 10/4, 18/4; **Financial Times**, 10/4, 18/4; **Neue Zürcher Zeitung**, 11/4, 17/4; **Atoms in Japan**, April, May; **Economist**, 19/4; **Sankei Shimbun**, 23/4; **Nikkei Weekly**, 28/4 and 9/6, in **UI News Briefing** 97.17 and 97.23, respectively; **NuclearFuel**, 5/5, 16/6; **Mainichi Shumbun**, 6/5; **Economist Intelligence Unit**, 7/5)

- The **Republic of Korea** plans to use MOX fuel in commercial power reactors. The Korea Electric Power Corp. (KEPCO) has said it hopes to contract with foreign reprocessors to extract plutonium from its spent fuel and fabricate it into MOX fuel elements. Whether and when the plan can be realised is seen as depending on political conditions, such as the conclusion of a Korean peace treaty or even unification of the two Korean states. Reportedly, the DPRK opposes an interim arrangement under which South Korean spent fuel would be sent to France or the UK, but for the present no reprocessing would take place. It is also reported that South Korea has asked foreign reprocessors to separate a small amount of spent fuel and manufacture lead test MOX assemblies; according to Korea, the US blocked this move, while the US denies that there has been a Korean request. Meanwhile, Korea is said to be exploring with European manufacturers a scheme to use foreign plutonium to make MOX lead assemblies and use those in South Korean reactors. (**NuclearFuel**, 7/4)

- Construction of **Pakistan**'s second nuclear power plant, at Chashma, which is being built by China National Nuclear Corp., is said to be proceeding as planned and the 300-MW pressurised water reactor of which the design is based on that of China's plant at Qinshan should be completed by October 1998. (**ENS**, 10/3; **Nucleonics Week**, 27/3)

- The parliament of **Sweden** has approved the government's energy policy agreement which includes the decision to phase out nuclear power, in line with a referendum of 17 years ago. The first reactor to be decommissioned will be one of the two 600-MW units at Barsebäck which will be closed in the summer of 1998. The second unit is scheduled to be shut down in 2001. No time-table has been adopted for the remaining reactors. Reportedly, the power produced at Barsebäck will be offset at least initially by power obtained from Danish coal-fired plants. Like much of Sweden's industry, the automobile industry has attacked the decision, pointing out that the government urges that industry to reduce CO_2 emission but causes more pollution through this decision. The phase-out policy is also resisted by labour unions. A new opinion poll suggests that 53 per cent of persons questioned were opposed to the Barsebäck decommissioning, while 32 per cent were in favour. Opposition was particularly heavy among small business owners and persons above 50 (68 per cent and 60 per cent, respectively). Employees of Barsebäck and local residents have staged demonstrations to protest against the shut-down. Plant management are expected to fight the closure plans in both the Swedish and European courts. European legal experts have expressed the opinion that Sydkraft, the owner of the plant, cannot block its shut-down but would be able to claim full compensation from the state. Apparently, Sydkraft plans to seek this compensation in the form of a stake in another power plant. However, the government has submitted a bill in parliament that would permit it to expropriate reactors if no agreement can be reached on compensation and would enable it to take possession if the owner brings suit over compensation and a lengthy case ensues. Many legal experts are said to doubt the validity of the proposed law, *inter alia,* because it provides for the possibility of a take-over before compensation has been agreed and thus leaves owners unprotected, and because it is directed at a specific case. The fact that, allegedly, the government's representative in the negotiations with the facility's owners is the chairman of the board of a competing company has also drawn criticism.

The US Ambassador to Sweden has apologised for having told a television journalist that the plans to shut down Sweden's nuclear power reactors had sent a negative signal to potential US investors. The Ambassador was criticised by the Prime Minister for making his comments. Two European investment bankers have been quoted in the trade press as having said that the closure will have a negative impact on Sweden's utilities in a liberalised European electricity market.

Meanwhile, Oskarshamn-1, which is among the oldest of Sweden's nuclear power reactors, is about to be modernised and its power increased.

(**Nucleonics Week**, 10/4, 1/5, 8/5, 15/5, 22/5, 5/6, 12/6, 19/6, 26/6; **Dagens Industri**, 21/4, in **UI News Briefing** 97.16; **Svenska Dagbladet**, 23/4, in **UI News Briefing** 97.17; **NucNet News**, 14/5, 23/5; **Reuter's**, 11/6; **Die Welt**, 12/6; **Süddeutsche Zeitung**, 12/6; **FreshFUEL**, 16/6, in **UI News Briefing** 97.24)

- The Supreme Rada (Parliament) of **Ukraine**, in what is said to be doubt that the west will meet its commitments to finance closure of the Chernobyl plant by 2000, has called on the Ukrainian government to develop alternatives to the plant's early shut-down. One considerations is concern that there may not be sufficient funds to complete the Rovno and Khmelnitski power stations to replace Chernobyl's output. The European Bank for Reconstruction and Development (EBRD) has repeatedly expressed doubt that the completion of the two power stations is a least-cost option for Ukraine and has sought the political direction of the G-7 nations. It is also said not to be fully convinced of Ukraine's eventual ability to pay back the loan. The EBRD is said to consider a partial solution, under which for now only Khmelnitski-2 should be completed and work on Rovno-4 postponed; this would limit the bank's exposure to $100 million. The 'Summit of the Eight' meeting (the G-7 states and the Russian Federation) held in Denver, Colorado, on 18–20 June, once again expressed the wish that Chernobyl should be closed by the year 2000 but it did not formally consider the funding of alternative power sources.

  In late April, agreement was reached between the G-7 and Ukraine on short-term measures to stabilise the sarcophagus over Chernobyl-4. The Shelter Implementation Plan worked out by the G-7, is estimated to cost up to US $780 million and will include strengthening the walls, building shields over the fuel still in the facility, and erecting a further shelter over the sarcophagus. The plan aims to maintain the structural integrity and safety of the existing structure for the next 50 years. It was approved at the June summit meeting in Denver, with a pledge of a $300-million contribution. Ukraine itself expects to contribute $100 to $150 million in material and services. Russia has been called upon, but has not yet promised to pay its share. The plan as agreed takes account of Ukraine's wish to have nuclear fuel extracted from the sarcophagus although it is not yet quite clear how this should be done and what it will cost. A number of US firms and two Ukrainian organisations are cooperating in the development of remote systems to inspect the sarcophagus and are experimenting with robot methods to perform various tasks under conditions of high radiation.

  (**Associated Press**, 23/4, and 23/6, in **UI News Briefing** 97.17 and 97.25, respectively; **Nucleonics Week**, 24/4, 8/5, 15/5, 12/6; **Reuter's**, 24/4; **NucNet News**, 25/4; **Enerpresse**, 12/5; **Nucleonics Week**, 26/6)

h. Nuclear Policies and Related Developments in Nuclear-Weapon States

- There is concern in the US about reports that after restraints on the export of computers were lifted, in 1995, **China** has bought 46 supercomputers as well as many less powerful ones. The fear is that these devices could be used in the design of lighter and more efficient nuclear warheads for deployment on missiles capable of reaching the American mainland. However, Administration officials say they have no evidence that the computers are being used for this purpose. (**New York Times**, 10/6)

- The foreign minister of the **Russian Federation**, Primakov, has confirmed that his country continues to adhere to the doctrine of first-use of nuclear weapons. (**Die Presse**, 13/5; **National Public Radio** [Washington, D.C.], 26/5)

- There are reports that on 17 June a criticality accident occurred in a defence-related experiment carried out in a glove box at the nuclear weapon research facility of Arzamas-16, near Nizhniy Novgorod, **Russia**. The principal researcher involved died from radiation exposure. The event is said to have been one of several to have occurred at the same site involving personal injury. (**Financial Times**, 17/6, in **UI Newsbriefing** 97.24; **Reuter's**, 20/6; **Nucleonics Week**, 26/9)

- The **United States** Administration has issued regulations designed to preclude any further government-financed experiments with radioactive, chemical or other dangerous materials on human subjects, without their 'informed consent'. Cases involving such experiments when in the 1940s and 1950s government researchers injected civilians with nuclear materials are still being settled with the families of the persons concerned. Five lawsuits involving about 80 persons are said to be underway and further ones are pending. Outstanding cases reportedly include experiments in the period 1963–71 on prisoners in the states of Oregon and Washington and an earlier case involving a group of mentally retarded children in Massachusetts. (**New York Times**, 29/3)

- The **United States** Department of Defense has announced that six B-2 'stealth' bombers have been adapted for nuclear use (other reports claim that of the 21 B-2 bombers that will be delivered to the US Air Force, 13 have so far arrived and all are in fact nuclear-capable). Reportedly, among the weapons they will carry is the new B61-11 ('bunker buster') needle-shaped warhead designed to penetrate fifty feet into the ground to destroy military command posts and

facilities for the manufacture and storage of weapons of mass destruction. The announcement mentions the DPRK, Iraq and Libya, as well as Russia, as being among the states believed to have such installations. It may be noted here that in March, American and Israeli sources alleged that Libya had resumed work on its underground chemical weapons plant at Tarhunah, and that it was one of several other states suspected of planning the production of weapons of mass destruction who are said to have bought large amounts of earth-boring equipment.

The development of the B61-11 is criticised in the US as well as elsewhere, as giving a signal that the US is ready to use nuclear weapons in an almost-conventional manner and would do so in a future conflict. Some observers also see the development of what is in essence a new weapon as violating the US' commitments under the NPT, and fear that the 'stockpile stewardship program' may be used as a cloak for the development of other new nuclear weapons. Arms control advocates in the US have expressed concern that the news of the development of the new weapon may further stiffen the Russian parliament's refusal to ratify START II. American military authorities claim that the B61-11 warhead is an upgraded version of an existing warhead and will replace an older hydrogen bomb, the B53, which was so powerful that it could destroy hardened underground targets by blasting a 500 foot deep crater but would also cause huge collateral damage. That bomb apparently weighed about 9,000 lbs, while the new weapon weighs 750 lbs.

(**Agence France Presse**, 24/2, in **Disarmament Diplomacy**, February/March; **Standard** [London], 9/3; **New York Times**, 1/4, 31/5; **Reuter's**, 1/4; **Christian Science Monitor**, 8/4; **Observer**, 13/4; **Jane's Defence Weekly**, 14/5; **Washington Post**, 1/6; **National Public Radio** [Washington, D.C.], morning edition, 20/6)

- There are reports that weapon scientists in the **United States** and in **France** are working on the development of a 'pure fusion bomb': a hydrogen bomb that could be ignited without the use of an atomic explosion, presumably by means of laser beams. The research is said to be in an early stage and although there is no agreement among experts as to whether the idea is at all practical, it has already raised concern that in the long run it might conceivably lead to the development of a new type of weapon that would be light and cheap to manufacture. On 15 April Nobel-prize physicist Hans A. Bethe wrote to President Clinton urging him to have a stop put to this research, but there is doubt that such a move would be successful, given the political influence of the nuclear-weapon laboratories in New Mexico and California with local authorities and conservative politicians in general. Moreover, the government reputedly needs the support from weapons experts in getting the Comprehensive Test Ban Treaty ratified by the Senate. (**New York Times**, 27/5, 17/6; **Nature**, 29/5; **Times** [London], 5/6; **Direct information**)

- The **United States** Department of Defense is continuing its efforts to have American industry produce radiation-hardened microchips that would withstand the extreme heat effects of nuclear blasts. Such devises would be built into space-based sensors to avoid them being incapacitated by an electro-magnetic pulse (EMP) in case of a nuclear exchange. (**Defense News**, 26/5-1/6)

- Also in the **United States**, persistent rumours that serious consideration was being given to the merger of several independent agencies, including the Arms Control and Disarmament Agency (ACDA), into the State Department have been proven correct. On 17 April, the White House announced that ACDA and the US Information Agency (USIA) would be absorbed into the Department of State over a two-year period, but the third body that had been mentioned as a target for absorption, the Agency for International Development (AID), would remain autonomous. As reported by Vice President Al Gore, ACDA's functions will be retained within the State Department and the official in charge will be Under-Secretary of State for both arms control and international security affairs, and will have access to the President through the Secretary of State. It is thought likely that the current ACDA Director, John Holum, will be named for that post. The Republican Chairman of the Senate Foreign Relations Committee, Jesse Helms, had for some time been calling for ACDA and USIA to be folded into the State Department, and it had been suggested that if the Administration were to give in on this point, the Senator might be persuaded to allow the Chemical Weapons Convention (CWC) to move to the Senate floor for early ratification. According to media reports, the Administration denied that the reorganisation of the State Department was a concession to Senator Helms on the specific issue at hand and claimed that it was more generally intended to 'improve the climate' in the Senate. In early April, President Clinton intensified his efforts to line up support in the Senate for approval of the CWC before the entry-into-force deadline of the 29th of that month. In a move to gain Republican support, the President sent a letter to the Senate majority leader, Republican Sen. Trent Lott, which contained his commitment that the US would withdraw from the Treaty if transfer of defensive equipment to another country could result in significantly degrading US defensive capabilities; if technology and chemical exchange requirements are used to erode international export controls; or if these requirements are carried out in ways that jeopardise US security by contributing to arms proliferation. The Administration and the Senate majority also agreed on 28 amendments to the Senate resolution consenting to ratification. Nevertheless, together with a number of conservative senators, Helms maintained his opposition, and called for five modifications (four of which were described as 'killer amendments', that would have made ratification of the Convention in its present form impossible) that would, among other things, have demanded that the US wait with its ratification until the Convention had been ratified by Russia as well as by a number of other named states; ensure action against suspected 'rogue states'; reduce the intrusive inspection of US chemical facilities; and ban the admission to the US of inspectors from 'rogue states'. On 24 April, after each of these proposals was voted down, the Senate approved the

Chemical Weapons Convention as a whole by 74 votes in favour and 26 against. The majority was 7 more than the two-thirds required. (**Arms Control Today**, April; **Washington Post National Weekly Edition**, 31/3; **New York Times**, 5/4, 9/4, 18/4, 21/4, 23/4; **Washington Post**, 18/4; **Reuter's**, 23/4; **Guardian**, 25/4; **International Herald Tribune**, 26/4; **NuclearFuel**, 5/5)

- Several members of the **United States** Congress have announced their intention once again to abolish the Department of Energy, but DoE officials have expressed scepticism that there will be sufficient support this year to do so. (**Reuter's**, 8/5; **Associated Press**, 9/5, both in **UI News Briefing**, 97.19)

- In January, the then Secretary of Energy of the **United States** announced that the fast-flux test facility (FFTF) at Hanford would be kept on 'hot standby' for another two years, in order to be available as one of three options for the production of tritium, pending a final choice in 1998 (see **Newsbrief 37**, page 8). This announcement has run into opposition from several sides. One argument used against the decision is that of safety; the other is the contention that funds allotted to the clean-up of the Hanford site would be used to keep the defunct FFTF-project alive. DoE has denied both claims but it seems that also within the Department there are experts who do not support keeping the FFTF option open, mainly because of doubts about its production capability and because, as they contend, it would be difficult to take the time necessary for feasibility and safety studies without delaying production of the needed quantities of tritium.

  In June, DoE released a request for proposals for the production of tritium in a commercial light-water reactor. This includes two possible approaches. Under one, DoE would obtain irradiation services in existing reactors using a 'tritium-producing burnable absorber rod' which after irradiation would be taken to a DoE facility for the extraction of the tritium. Under the other approach, DoE would buy the reactor.

  (**NuclearFuel**, 7/4; **Nucleonics Week**, 22/5)

i. Proliferation-Related Developments

- Following the expression of regrets by the **DPRK**, earlier in the year, over the incursion of its submarine into South Korean waters (see **Newsbriefs** 37, page 9, and 36, pages 11–12), talks on current issues in the Korean Peninsula appear to be on course again. Shortly after a meeting in New York on 5 March at which South Korean and American officials briefed the DPRK on suggestions for four-party peace talks (involving also China), bilateral discussions were resumed between the DPRK and the US on the establishment of liaison offices, food aid, and missile proliferation. Around the same time, Japanese, South Korean and American officials were said to have had a wide-ranging exchange on issues regarding the two Koreas. Negotiations have gone on between the DPRK and the Korean Peninsula Energy Development Organization (KEDO) on a range of 'pre-construction protocols' on such matters as the status of KEDO personnel, communications, transportation, control of the project site and contracting within the DPRK. Agreement in principle was reached on an additional protocol on the reimbursement of reactor construction costs and on the redress available to KEDO in the event of non-payment. In April it was announced in Seoul that the government of the Republic of Korea would provide US $45 million for site preparations. Four South Korean companies have been selected for this purpose.

  A second briefing meeting on the issue of four-party peace talks, held in New York on 17 April, had been scheduled to go on for two days, but after one day the DPRK side said it was awaiting further instructions and soon after it announced it was not ready to continue the talks at the same level of seniority — a move seen in Seoul as intending to exert pressure to obtain more food aid. A lower-level meeting was held a few days later but this is said to have ended without results and on 21 April the respective delegations left without agreement on the resumption of the tasks. Word from Washington was that rather than increasing assistance to the DPRK as an incentive to resume the discussions, the US was considering withholding aid until the DPRK consented to recommence the talks. South Korea, too, was seen as using the prospect of large-scale food shipments as an incentive for the North to join peace talks. In late June, Pyongyang once again agreed to send a senior delegation to New York and there was some hope in Washington that the DPRK might be willing finally to take part in four-party peace talks. According to a report from Seoul, the DPRK wants to establish diplomatic and economic ties to the US before negotiating a peace treaty with the Republic of Korea.

  After several postponements, talks on the issue of missile development and deployment in the DPRK, between officials from the two Koreas and the US, were held in early June, in New York, but the outcome is not known. For some time Washington had expressed concern about reports that Pyongyang is preparing to deploy Rodong ballistic missiles with a range of over 1000 kilometres (625 miles). The talks would also deal with the DPRK's export of long-range Scud missiles to Iran and Syria. In a first round of talks that was held in April 1996, the US had sought a freeze on exports and production of missiles by the DPRK. Concern about the development of the Rodong missile has also been voiced in Japan. In April that country's Foreign Minister publicly referred to unconfirmed reports that the Rodong missile, which is thought to be capable of hitting almost any target in Japan, had already been deployed. According to Japanese sources, information generated by US spy satellites indicated that three Rodong missiles had been deployed on the eastern coast of the DPRK and seven more were being prepared for deployment.

  Talks were resumed between the DPRK and the US on ways to account for the 8,100 American soldiers missing in action during the Korean War of 1950–53. The talks had been interrupted at the time of the submarine incident. Agreement is said to have been reached on a new search effort, but a request to

interview supposed American defectors does not seem to have been agreed to.

A delegation of US Senators, on a visit to Pyongyang in March, reported being told of disagreement between the DPRK government and its military over the question whether or not to consent to the holding of four-power peace talks before the country receives considerably more food aid from abroad. The military apparently maintained that assistance promised to their country since 1994 still had not arrived, but there were reports of feelings also in other DPRK quarters that insufficient progress has been made in fulfilling the terms of the Agreed Framework, in particular with regard to food aid.

Reports about the extent of the famine vary greatly. Various American intelligence agencies have come up with different figures for last year's wheat harvest in the North. Chinese sources also point to the dearth of information about the situation. According to news agency reports of late May, a fifth of the North Korean population risk starvation during the coming summer unless the country receives large-scale food shipments. In mid-April the US State Department announced that it would donate $15 million worth of corn to Pyongyang, in addition to the $10 million in food aid promised in February. This assistance was to be channelled through the World Food Programme (WFP) and was said to be unconnected with whether or not the DPRK would consent to take part in peace talks. South Korea was also said to plan making a new contribution in addition to the $6 million worth of food it donated several months earlier. These donations, however, are seen as amounting to only about ten per cent of actual needs. The funds the WFP has been able to raise have also fallen far short of the target. It was understood that more substantial food supplies would have to come direct from the governments concerned and both South Korea and the US have let it be known that further large-scale assistance would be contingent upon the DPRK taking part in peace talks. Reportedly, at the April meeting in New York the DPRK said that it would not participate in peace talks without an advance guarantee of receiving 1.5 million metric tons of grain. While acknowledging the DPRK's urgent needs, officials in Seoul are quoted as saying that Pyongyang has spent large sums to commemorate Kim Il Sung and sustains an annual military budget of $5 billion. They suggest that even a modest percentage of these expenses might buy enough grain to alleviate the famine. Furthermore, Washington defence officials point out that large-scale food assistance from abroad might enable Pyongyang to spend huge amounts for military purposes which they would otherwise have to use to buy grain. Private groups in South Korea have been collecting funds to buy food for the North, to be channelled through the South Korean Red Cross, and in late May it was announced that agreement had been reached between the two Korean governments about the supply of 50,000 tonnes of food aid by the South, through the Red Cross. In early June, however, a deal fell through under which the DPRK would have exchanged 20,000 tonnes of zinc for grain, to be supplied by the US firm of Cargill Inc., which had been given permission to export up to 500,000 tonnes of rice or wheat to the North. There was some speculation of a possible connection between the cancellation and a statement by head of state Kim Jong Il, broadcast by Pyongyang radio, warning his people to be wary of foreign assistance which might be used as a way to influence them.

The IAEA is reported to have told both Pyongyang and Washington that some damaged fuel elements of the graphite-moderated 25-MW reactor at Yongbyon, which have been held in a dry storage pit on the site since the reactor was last refuelled, in 1994, pose a serious fire hazard. A group of British and American experts investigating the matter is said to have concluded that the condition of the fuel is stable. Additionally, US experts reportedly have taken measures that would make a fire even less likely. Meanwhile, North Korean and American technicians have continued removing irradiated fuel elements from the storage pool into canisters; about 60 per cent of the total spent fuel inventory of the pool is said to have been removed so far.

On 20 April, the former senior DPRK official, Hwang Jang Yop, who defected in China in mid-February and had spent several weeks in the Philippines, was flown to Seoul with an aide who defected with him. Hwang is quoted as having said on arrival that the North is planning war and that its present economic problems have been caused for a large part by its disproportionate military expenditures. In an essay said to have been written in 1996, which was made public by the South Korean daily *Chosun Ilbo*, Hwang said that the North has both nuclear and chemical weapons and missiles which could completely annihilate the South as well as Japan, turning them into a 'sea of fire', and that it is convinced it would win a war. A senior official in Seoul cited Hwang as having told the security agency of the Republic of Korea that in 1992 Kim Jong Il had made plans for an attack on the South but that his father, Kim Il Sung, opposed it; he had claimed that the younger Kim was still looking for an opportunity to attack. The warning does not seem to have caused much alarm in Seoul, although some analysts take it seriously, particularly in light of the 1992 Russian TV report which alleged that 56 kg of weapons-grade plutonium had been smuggled into the DPRK. Pyongyang has reacted by calling Hwang a 'lunatic' and 'a crazy man sick with paranoia' and it has since said again that, while its food shortage had reached 'a serious stage', it had no plans to wage war. There has also been a report from a still more recent defector, alleging that there were widespread rumours in the North that Kim Jong Il might start a war between July and October. US reactions to these allegations have been cautious; officials have pointed out that the authenticity of Hwang's essay had yet to be ascertained. The IAEA, asked about the DPRK's presumed nuclear-weapon capability, has only been able to confirm that there still is a discrepancy between the amount of plutonium the IAEA suspects to be in the country and the quantities the DPRK has declared.

South Korean officials have claimed that the site in the DPRK where low-level radioactive waste from Taiwan will be stored (see **Newsbrief** 37, pages 9 and 12) is

structurally unsound and would not be accessible to the IAEA. In response, a senior official of Taipower, the Taiwanese company where the waste would originate, has said that Seoul has implicitly accepted the site as suitable for waste disposal because, as he claims, it is the designated disposal site for low-level waste from the power reactors that will be constructed by KEDO. Taipower also claims that the site, at Pyongsan, about 60 miles north of the demilitarised zone, has no faults, seismic activities or aquifers and that the tunnels of a depleted coal mine that would be used for waste from Taiwan are physically separated from those used for the DPRK's low-level waste. China has once again expressed opposition to Taiwan's plans to ship nuclear waste to the DPRK and is reported to have said it is willing to help Taiwan dispose of the waste. Norway has said it would support South Korea's efforts to block the shipment. The environmental organisation, Greenpeace, has asked Taiwan to drop its plan and is alleged to have made a covert inspection of its main waste storage site on the island of Lanyu, following which it says the waste concerned is not low-level but is at a much higher radiation level than was stated by Taiwan.

According to Russia's Minister for Atomic Energy, his Ministry no longer maintains any contacts with the DPRK. Minister Mikhaylov has said, however, that he did not rule out the possibility that there might still be some experts from the Russian Federation in the country.

It has been confirmed that the European Union (EU) will join KEDO with the status of a full member (see **Newsbrief** No. 37, p. 8). The decision is to be approved by the European Council of Ministers. The US Secretary of State has told the Senate that KEDO could have trouble meeting its responsibilities unless it receives additional funding from the US Congress and other countries. In the short run, funds are urgently needed, in particular for the provision of fuel oil.

(**Newsletter of Korea Institute for National Unification (KINU)** [Seoul], March; **Yonhap News Agency** [Seoul], 18/3, 19/3, in **BBC Monitoring Summary of World Broadcasts**, 20/3, and **Yonhap News Agency** [Seoul], 14/4 and 22/4, in **BBC Monitoring Summary of World Broadcasts**, 15/4 and 23/4, respectively; **Arms Control Today**, April; **New York Times**, 24/3, 25/3, 30/3, 8/4, 14/4, 16/4, 20/4, 21/4, 22/4, 23/4, 24/4, 4/5, 8/5, 10/5, 11/5, 23/5, 27/5, 6/6, 12/6, 21/6, 26/6; **NuclearFuel**, 24/3; **Los Angeles Times**, 30/3; **Washington Post**, 1/4, 11/4, 12/4, 15/4, 16/4, 21/4, 23/4; **ITAR-TASS news agency**, 10/4, in **BBC Monitoring Summary of World Broadcasts**, 11/4; **Nucleonics Week**, 10/4, 1/5, 29/5; **Reuter's**, 14/4, 23/4, 24/5, 27/5; **Independent**, 16/4; **Economist**, 19/4, 26/4, 31/5; **Newsweek**, 21/4; **Financial Times**, 23/4, 13/5; **International Herald Tribune**, 23/4, 25/4, 14/5; **Washington Post National Weekly Edition**, 28/4; **Korea Herald**, 28/4, 30/4; **Jiji Press**, 4/5, in **Jiji Press Newswire**, 6/5; **Christian Science Monitor**, 15/5; **National Public Radio** [Washington, D.C.], 26/5; **China Economic News Service**, 29/5, in **UI Newsbriefing** 97.22; **Die Welt**, 30/5; **Korean Herald**, 4/6; **Central News Agency** [Taipei], 6/6)

- In New Delhi, in late March/early April, the Foreign Secretaries of **India** and **Pakistan** had four days of discussion on major issues of contention between the two countries, including nuclear matters. At the time there was some hope that the talks might pave the way for a meeting between Pakistan's new Prime Minister, Nawaz Sharif, and the then Prime Minister of India, H.D. Deve Gowda, at the annual meeting of the South Asian Association for Regional Cooperation in Male, Maldive Islands, in May. The discussions in New Delhi in March ended without concrete results but in early April a date was fixed for a further meeting at the Foreign Secretary level, to be held in Islamabad, in May, just before the meeting in the Maldives. Since then, Mr. Deve Gowda has been replaced as India's Prime Minister by Indar Kumar Gujral, who served in the previous cabinet as the Foreign Secretary and took part in the New Delhi meeting. Mr. Gujral is known for his determination to improve relations with Pakistan. The two Prime Ministers met as planned for what was seen as a get-acquainted meeting, which was said to have been held in 'an atmosphere of striking amiability'. As expected, no immediate breakthroughs were achieved and the Kashmir issue was reported to have been as great an obstacle to rapprochement as ever, but some agreements were said to have been concluded, including one on the reestablishment of a telephone hot line. The two Prime Ministers agreed to instruct officials to be addressed in the next round of talks, beginning with a meeting to establish topics for negotiation and devise a mechanism for resolving disputes. Shortly before this issue of the **Newsbrief** went to press, it was announced that India and Pakistan had undertaken to make a new effort to reconcile their differences over Kashmir and that this issue as well as other 'peace and security issues' would be discussed directly between the foreign secretaries of the two countries.

According to a report in *The Washington Post*, US intelligence officials believe that India has moved 'a handful' of Prithvi medium-range ballistic missiles to Jullundur, near its border with Pakistan. Pakistan reacted by pointing out that such a move could trigger a dangerous arms race. India has denied the report.

The American nuclear trade journal *Nucleonics Week* of 20 March carried a report, according to which Pakistan's former army chief had said in a newspaper interview (referred to in **Newsbrief** 37, page 10) that the country had successfully completed tests of its nuclear-weapon capability through computer simulation. Gen. Mirza Aslam Beg is also reported to have been the first army chief to confirm the country's nuclear capability and to have disclosed that Pakistan froze its nuclear programme in 1989 under US pressure.

In 1990 the US Congress prohibited all military sales to Pakistan because then President Bush was not in a position to certify that it was not developing nuclear weapons. Earlier, Pakistan had ordered 60 F-16 fighter planes, for 28 of which it had since paid. The fighters

have never been delivered, nor has the money been returned and Pakistan's foreign minister has now advised Washington that if there is no progress on the matter Pakistan will have to consider bringing the matter before an American court of justice.

There has been a report in Pakistan that the natural-uranium reactor which was under construction near Khusab has gone critical. Pakistani authorities have repeatedly denied the existence of this plutonium production reactor, which is thought to have a power rating between 50 and 70 MW(th) and is said to have been built with Chinese assistance. The facility is supposed to be moderated by graphite or heavy water, but Pakistan is not believed to have a source for heavy water beside China, which is not thought to export this commodity to Pakistan. A reprocessing complex is said to be under construction near the reactor.

(**New York Times**, 19/3, 1/4, 21/4, 12/5, 13/5, 15/5, 23/5, 24/6, 25/6; **Nucleonics Week**, 20/3, 19/6; **International Herald Tribune**, 27/3, 10/4, 5/6; **Financial Times**, 10/4; **South China Morning Post**, 11/4; **Guardian**, 13/5; **Washington Post**, 3/6, 4/6)

- Although the election of an apparently more moderate president of **Iran** does not seem to have affected US claims that Teheran has a nuclear-weapons programme, there are indications that, as part of a reformulated strategy for the Persian Gulf area, Washington may review its policy towards Iran in this regard. While Iran's military expenses are said to be lower than had been expected and its activities in the nuclear field are termed 'uneven', Washington appears currently to be primarily concerned about its naval build-up, which includes the acquisition from Russia of three nuclear-powered submarines. Iran is also said to be testing an anti-ship cruise missile to be fired from aircraft. Supposedly, this is a version of a Chinese-supplied ship-based missile which Iran has had for some time.

  Some American security experts, including former security advisers Brzezinski and Scowcroft, recommend that the US should establish commercial dealings with Iran on a case-by-case basis and should explore incentives as well as penalties to discourage it from seeking nuclear weapons. Some US experts are said to hold the view that if the US would relax its opposition to the cooperation between Iran and Russia on the Bushehr reactor project and to the involvement of other countries in that project, Iran would turn to the west for assistance on acceptable non-proliferation terms.

  While reportedly there has been little, if any, progress at Bushehr, officials from the two countries are expected to discuss the issue of reprocessing of spent fuel of Russian origin. Iran is said to have undertaken not to reprocess material irradiated in Bushehr and Russia is reported to seek its further promise that it will not do any reprocessing or any uranium enrichment at all.

  (**New York Times**, 20/4, 18/6; **Foreign Affairs**, May/June; **International Herald Tribune**, 2/6; **Nucleonics Week**, 12/6)

- On 1 July, Ambassador Rolf Ekéus, Executive Chairman of the United Nations Special Commission (UNSCOM), set up by the Security Council in 1991 to investigate and disable **Iraq**'s capabilities in the area of weapons of mass destruction, is leaving that post to become Sweden's Ambassador to Washington. On 1 May, UN Secretary-General Kofi Annan appointed Ambassador Richard Butler of Australia in his stead. Amb. Butler is currently his country's Permanent Representative to the United Nations in New York. In mid-June, Amb. Ekéus informed the Security Council that in June UNSCOM inspectors had on four separate occasions been forced by Iraqi military personnel to halt their inspections, 'in clear violation' of Council resolutions; he called for a 'firm reaction' in response to which, on 21 June, the Council threatened to tighten the sanctions if Iraq continued to hamper the investigations. In an interview with the *New York Times* upon his departure, Amb. Ekéus said that UNSCOM was 'closing in on' Iraq's missile programmes while the IAEA was optimistic that it had shut down potentially dangerous nuclear projects. However, he felt that Iraq was still engaged in the development and fabrication of chemical and biological weapons and their delivery systems. (**Reuter's**, 1/4, 3/5, 11/6; **New York Times**, 2/5, 12/6, 19/6, 21/6, 25/6; **Direct information**)

- In March, **Israel**'s parliament, the Knesset, was informed that all possible safety and security measures were taken at the Dimona reactor to prevent leaks and environmental pollution, and that contingency plans had been prepared in case of an accident. The head of the Chemistry Department at Tel Aviv University, who used to work at the Dimona plant, is reported to have criticised the fact that nuclear waste from the reactor is buried at the site without treatment.

  The report that Syria had developed a particularly lethal form of nerve gas called VX and had introduced this into some of its Scud missiles has prompted Israeli cabinet ministers to say that their country has even more devastating things in its arsenal. Syria's President Hafez Assad is quoted as having responded that a state that has nuclear weapons does not have the right to criticise others for whatever weapons they may have. The President stated that the Arabs would give up chemical weapons when Israel gives up its nuclear ones.

  The Director of Israel's Atomic Energy Commission has been quoted in the Jerusalem daily *Ha'aretz* as saying that many years of democracy were needed in the Arab states before Israel could give up its nuclear capability. [If this claim is correct, it would be the first time a senior Israeli official has confirmed his country's nuclear capability — ed.]

  (**IPR Strategic Business Information Database**, 19/3; **Economist**, May; **Times** [London], 24/5)

- According to a report of *Reuter's News Service*, **South Africa**'s Deputy Director General for Mineral and Energy Affairs has told the National Council of Provinces that the country's Atomic Energy Corporation will have to pay off maturing loans of

231.2 million rand in repayments for loans taken out to fund the nuclear weapons programme. This is said to be more than a quarter of the Ministry's total budget. (**Reuter's**, 7/5)

j. Illicit Nuclear Trafficking

- On 7 April, the American trade journal *NuclearFuel* quoted IAEA Deputy Director General Murogov, who until last year was head of the nuclear research at Obninsk, as saying that, contrary to statements by German and Euratom officials, the 363 grams of plutonium that were seized in 1994 at Munich Airport were not of Russian origin (see **Newsbrief 37**, page 11). The German allegation is said to have been based on information from the person who, at the time the material was smuggled into Germany, was the head of Russian intelligence. Murogov has claimed that the theft and seizure of the plutonium were staged to discredit Russia's nuclear programme. Earlier allegations that the affair was masterminded or at least provoked by the German foreign intelligence service have been investigated in Germany but have never been confirmed. One of the three persons found guilty, Colombian national Justiniano Torres-Benitez, has meanwhile been allowed to return to his country, allegedly in accordance with an understanding reached with the German court. (**NuclearFuel**, 7/4; **Der Spiegel**, 5/5)

- A container with uranium is reported to have been seized by Taleban militia in Kabul, **Afghanistan**. No details are available on the enrichment level or the quantity of the material involved. (**Reuter's**, 18/5, in **UI News Briefing** 97.20)

- It is reported that in May, a national of **Colombia** tried to sell material he claimed was plutonium and high-enriched uranium he had obtained from Justiniano Torres-Benitez, the Colombian convicted in Germany for smuggling plutonium-oxide in Russia. (See above, first item in this section). The case drew the attention of law enforcement officials because of reports that Torres-Benitez, among others, may have stolen more fissile material. In fact, analysis of the material offered for sale in Colombia showed it to be a small amount of natural uranium and a strontium^{90} source. Apparently there have been several attempts by Colombian confidence men to sell worthless materials as fissionable materials stolen from Russia. (**Nucleonics Week**, 29/5)

- Police in **Germany** have found an unshielded caesium^{137} source at an industrial waste site. (**Nucleonics Week**, 5/6).

- The German weekly, *Stern*, has alleged that a Baltic ferry, the Estonia, carried contraband nuclear material when it sank several years ago. (**Lloyd's of London Press Ltd.**, 28/4)

- In **Pakistan** a drug smuggler has been arrested carrying samples of uranium allegedly destined for a recipient in London. There is no indication of the isotopic content of the material. (**Nucleonics Week**, 24/4)

- A **Russian** disarmament expert, Vladimir Orlow, is quoted in the German and Austrian press as having said that in 1993, two drunk workmen stole two atomic warheads from a Russian military depot east of the Ural Mountains. The event was described as a 'prank'. According to the story, the warheads were later found in a nearby garage. Russian official sources have denied the story; deputy Atomic Energy Minister Yegorov called it 'really idiotic'. Another Russian nuclear expert has pointed out that even if security at commercial plants may leave something to be desired, nuclear-weapon storage facilities are strictly controlled and nuclear warheads would anyway be too large to be stolen and hidden in a garage. (**Frankfurter Allgemeine Zeitung**, 20/4, 22/4; **Reuter's**, 20/4, 21/4; **Kurier**, 21/4; **Standard** [Vienna], 21/4; **International Herald Tribune**, 22/4)

- In western **Russia**, law enforcement officers have detained eight persons on suspicion of smuggling two containers of caesium^{137}. (**ITAR-TASS**, 25/4)

- Security forces in **Turkey** have arrested four persons who were in unauthorised possession of 850 grams of uranium dioxide. No further details were given. (**TRT TV** [Ankara], 26/5, in **BBS Monitoring Summary of World Broadcasts**, 28/5)

k. Environmental Issues

- The IAEA has faulted a report on the **sea transport of vitrified high-level waste**, prepared under the auspices of the Nuclear Control Institute (NCI) at Washington. The Agency's review was made at the request of the International Maritime Organization (IMO) in response to a paper by Dr. Edwin Lyman, Scientific Director of NCI addressed, among other things, to the nuclear materials shipments between Europe and Japan that are condemned by NCI and by Greenpeace. According to the Agency's comments, the paper does not provide a reliable analysis of the safety of sea transport of vitrified high-level waste, and does not establish 'the sequencing of events necessary to lead to the conditions that are analysed...'. The IAEA accuses the report of building a technical case on selected references while ignoring a substantial body of scientific evidence which is contrary to its position. As a result, the IAEA found that the study was 'fundamentally flawed and [could] be easily misleading' and stated that it did 'not reveal any new reliable information that would warrant changing' the current regulatory regime. In a review made by DoE's Sandia National Laboratories, the worst-case accident scenario contained in Lyman's report is not seen as credible.

  There is a report that the US government will oppose any transport of MOX fuel from fabricators in Belgium and the UK through the Panama Canal, on the grounds of non-proliferation and physical protection concerns. Japan has pointed out that the US has no right to oppose Japan's plutonium-use plans because under the bilateral nuclear trade agreement, it has given programmatic approval to recycle US-origin spent fuel. It is pointed out that the shipment is not likely to be made before 1999, by which time the Canal will be

under the control of Panama and the US can no longer interfere with the shipment.

The British nuclear fuel producer BNFL has rejected allegations in the UK press that it had secret plans to fly nuclear waste into and out of the country. It has pointed out that it has indeed transported nuclear material by air to Switzerland but that this is MOX, which it has for many years flown out to customers on the continent. It also claims that the flights are perfectly safe. The company has stated categorically that it has no plans to transport spent nuclear fuel by air. Nevertheless, the UK government has announced it would review BNFL's policy of transporting MOX fuel by air.

(**BNFL/COGEMA/ORC**, 17/3, in **UI News Briefing**, 97.12; **SpentFuel**, 24/3; **Nucleonics Week**, 24/4; **Reuter's**, 9/6; **Daily Mail**, 9/6, and **Financial Times**, 10/6, both in **UI News Briefing** 97.23; **NucNet**, 9/6, 10/6; **Times** [London], 10/6; **Financial Times**, 13/6)

- In **Russia**, former naval captain Alexandr Nikitin was awarded an American environmental prize. Nikitin has spent nine months in prison, charged with treason for giving a Norwegian environmental organisation data on radioactive waste and nuclear submarines in the region of Murmansk. Although released from detention, he is still under investigation and forbidden to travel outside St. Petersburg. Recent reports indicate that Nikitin will soon face a new set of charges, very like the initial ones. His lawyer has announced he will challenge the law under which Russian authorities have indefinitely prolonged the investigation. (**Nucleonics Week**, 17/4, 26/6)

- **United Kingdom**: The Board of Directors of Nirex UK has decided not to appeal against the refusal by the Secretary of State for the Environment of planning permission for its 'rock characterisation facility', the geological test laboratory for a possible underground nuclear waste repository near Sellafield, in West Cumbria (see **Newsbrief** 37, page 12). The refusal is seen as spelling the end of Nirex's development investigation at the site and raises serious questions about the future of a programme for deep disposal of waste. (**SpentFuel**, 24/3, 31/3; **Financial Times**, 27/3, 29-30/3; **Nucleonics Week**, 3/4)

- The debate in the Energy and Natural Resources Committee of the **United States** Senate during the confirmation hearings of Federico Peña as Secretary of Energy earlier in the year (see **Newsbrief 37**, page 12) reflected the long-standing controversy between the Administration and the Republican Congressional majority over the issue of the storage of high-level nuclear waste. Republicans, together with representatives of utilities and the governors of many states, have been pressing the Administration to make an interim storage for high-level waste available without delay. In July 1996, a federal court ruled that DoE has a legal obligation to begin accepting spent fuel from utilities as of early 1998. In January of this year, 36 utilities and 33 states sought court authorization to suspend payments to the Nuclear Waste Fund as long as DoE does not accept spent fuel from utilities, and in March a federal court ruled against DoE's motion to dismiss two suits pending on this question. On 15 April, by a vote of 65 in favour and 34 against, the Senate adopted legislation, called the Nuclear Waste Policy Act of 1997, which provides for the establishment of an interim spent fuel storage facility at the Nevada Test Site. As initially submitted the bill called for federal storage of spent fuel from utilities no later than November 1999 but an amendment has put the date back by four years, to 2003, which is said to have made the bill more acceptable to some of its opponents, as did an amendment ruling out alternative sites in three other states as well as one limiting the size of the facility to 33,100 metric tonnes, from 60,000, as originally proposed. It is the Administration's view that no decision must be taken on an interim storage site until DoE knows if the proposed high-level waste repository at Yucca Mountain in Nevada is a viable site, pending which President Clinton has threatened to veto any legislation providing for interim storage. The later date agreed upon in the bill will give DoE time to complete its viability study. The number of votes cast in favour of the bill is two fewer than needed to override a presidential veto but the main author of the bill, the chairman of the Energy and Natural Resources Committee, has predicted that once the Senate reaches agreement with the House of Representatives, where a similar bill has been introduced, there will be more support. A Committee of the House of Representatives has been told that nothing has been found to indicate that the Yucca Mountain site would be unsuitable for a permanent geologic repository.

  A five mile (eight kilometre) tunnel under Yucca Mountain has been completed as part of the search for a disposal site. In its annual report to Congress, the Nuclear Waste Technical Review Board that oversees the investigation has called for another tunnel to be dug crossing the first one, to enable water flow through the mountain to be more thoroughly observed. Reportedly, more water flows through the mountain than was originally thought, and the Review Board has said that more information is needed on geologic, hydrological and geochemical properties of the rock at the level of the proposed repository. In fact, in mid-June there was a report that researchers, using the newly completed tunnel, have found that in just forty years rainwater has seeped into the mountain to a depth of 800 feet. Supporters of the use of Yucca mountain as a high-level waste depository have responded by pointing to the supposedly small volume of the water seepage, claiming that cracks may indeed help concentrate water flow in a few spots. Another argument used by opponents of the selection of Yucca Mountain as a disposal site is the claim that there are scores of seismic faults in the area and that in the last 20 years, there have been 621 seismic events within 50 miles of the site.

  Secretary of Energy Peña, meanwhile, has agreed with nuclear industry officials to set up a working group on DoE storage of spent fuel from utilities. The discussions have already hit a snag, however, as DoE claims that it does not have statutory authority to begin accepting spent fuel from utilities, while the latter

disagree, on the grounds that DoE is accepting spent fuel from foreign research reactors.

(**Enerpresse**, 17/3; **SpentFUEL**, 24/3, 14/4, 21/4, 5/5; **NuclearFuel**, 24/3, 7/4, 5/5; **NEI Infowire**, 10/4, 29/4; **New York Times**, 15/4, 16/4; **NEI Infowire**, 15/4, in **UI News Briefing** 97.15; **Nucleonics Week**, 17/4; **United Press International**, and **PR Newswire**, both 25/4, in **UI News Briefing** 97.17)

I. Miscellaneous

- The small 'Triga II' research and training reactor at Kinshasa, **Democratic Republic of the Congo** (formerly **Zaire**), briefly became the object of press attention when concerns arose that it might be damaged in the fighting that took place in that city, recently. The concerns turned out to be unwarranted. Reportedly, the facility has not operated since 1992, when the US blocked the shipment of an essential replacement part. IAEA inspectors reportedly make annual inspection visits to ascertain the presence of the fuel. (**Washington Post**, 10/6)

- Earlier reports that the nuclear research institute at Vinca, near Belgrade, in the former **Socialist Federal Republic of Yugoslavia** (see **Newsbrief** 37, page 13) had been the site of plutonium-extraction experiments as part of a move by Yugoslavia in the 1970s towards the acquisition of a nuclear capability have been denied by the manager of that institute. There is still a fear, however, both among staff of the facility and IAEA experts, that canisters containing spent fuel from the Vinca research reactor, which was closed in the early 1980s, could pose a fire hazard and might even explode as a result of hydrogen build-up. So far, there have not been funds to clean up the storage pool and repackage the fuel, either in Yugoslavia or from the IAEA. Recently, however, officials in Belgrade have promised the necessary funding but it is not yet known when the money will be made available. The IAEA is also said to be concerned about the physical security of the 40 kg of fresh fuel at the site. (**Vreme** [Belgrade], 15/3; **New Scientist**, 22/3; **NuclearFuel**, 21/4)

- In **Italy**, a magistrate investigating the cause of the crash of a commercial jet plane in 1980 has called for caution over reports that the aircraft might have been carrying a consignment of uranium intended for Libya. According to newspaper reports, the plane was on its way from Bologna to Palermo, in Sicily, where the uranium would have been loaded on a ship. Investigators examining the wreckage of the plane, which was retrieved recently from the sea, are said to have found uranium traces. Italian media claim that the jet may have been shot down by accident by a NATO missile. NATO is said to have set up a special committee to help in the investigation. (**Reuter's**, 1/4, 2/4; **Corriere della Serra**, 2/4)

II. PPNN Activities

- PPNN personnel and members of its Core Group were engaged in various capacities in the first session of the **Preparatory Committee** (PrepCom) **for the 2000 NPT Review Conference**, held in New York from 7 to 18 April. Peter Goosen (South Africa) and Martine Letts (Australia), members of the Core Group, served on their delegations at the session; Ben Sanders was Consultant to the Secretariat; John Simpson attended in his capacity as a member of the UN Secretary-General's Advisory Board on Disarmament Affairs; and Emily Bailey and Abigail Sanders represented PPNN as NGO observers. At the session, PPNN distributed information materials and organised two working luncheons for delegates, to discuss and analyse the progress of the session. Over 300 copies of **PPNN Briefing Book Volume I** (Third Edition) on the evolution of the nuclear non-proliferation regime and **PPNN Briefing Book Volume II** (Fifth Edition) containing Treaties, Agreements and other Relevant Documents were distributed to delegations, together with recent **PPNN Issue Reviews** and **Newsbriefs**.

- In Monterey, on 25–27 April, PPNN and the Monterey Institute of International Studies (MIIS) co-sponsored a meeting to discuss the impact the events at the PrepCom session just past would have on the next session, in 1998, and on the newly strengthened NPT review process in general. The meeting was attended by a number of delegates to the first session of the Preparatory Committee for the 2000 Review Conference, including the Chairman of the first session and the presumptive Chairman of the second. Conclusions arising from this meeting will be incorporated into a PPNN **Issue Review** that will analyse the issues before the 1998 session; it will be published towards the end of the year.

  There are plans to hold a regional meeting in Southeast Asia, jointly with the MIIS, the Peace Research Institute, Frankfurt, and the Institute of Security and International Studies, Thailand, in Bangkok on 18–21 November. This meeting will address security and non-proliferation issues in the region, as well as the impact of regional issues upon the global regime. It will be followed by a Core Group meeting to be held at the same venue from 21–23 November.

- Plans are made to hold a further Core Group meeting, combined with a Briefing Seminar for delegates to the 1998 NPT PrepCom meeting, in France in March 1998. This will be part of a programme of activities for the period January 1998–December 2000 that is now under preparation and will be presented to funders in mid-1997.

III. Recent Publications

Books

David Albright, Frans Berkhout, and William Walker, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies,* Oxford University Press, Oxford, 502 pp.

Richard Guthrie (ed.), *Verification 1997: The VERTIC Yearbook,* VERTIC, London/Westview Press, Boulder, Co, 340 pp.

Geoffrey Kemp and Robert E. Harkavy, *Strategic Geography and the Changing Middle East,* Carnegie Endowment for International Peace and Brookings Institution Press, Washington, D.C., 491 pp.

Robert H. Paterson, *Britain's Strategic Nuclear Deterrent,* Frank Cass & Co Ltd., London, 194 pp.

Articles and other materials

'An American Legacy: Building a Nuclear-Weapon-Free World', Final Report of the Steering Committee Project on Eliminating Weapons of Mass Destruction, Chair, General Andrew J. Goodpaster (USA, Ret.), *Report No. 22*, The Henry L. Stimson Center, March, 16 pp.

Vladimir Belous, 'Key Aspects of the Russian Nuclear Strategy', *Security Dialogue,* Vol. 28, No. 2, June, pp. 159-171.

Adam Bernstein, 'Viewpoint: Getting Burnt by Weapons Plutonium: Security Implications of U.S. Disposition Options', *Nonproliferation Review*, Vol. 4, No. 2, Winter, pp. 72-81.

Li Bin, 'Nuclear Missile Delivery Capabilities in Emerging Nuclear States', *Science & Global Security,* Vol. 6, No. 3, pp. 311-331.

Alexander Bolsunovsky, 'How to Utilize Fissile Materials After Dismantling Russian Warheads', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, The Center for International Trade and Security at the University of Georgia, Vol. 2, No. 4, Fall 1996, pp. 1, 4-6.

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Oleg Bukharin, 'Problems of Nuclear Terrorism', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, The Center for International Trade and Security at the University of Georgia, Vol. 3, No. 2, Spring, pp. 8-10.

Oleg Bukharin, 'Upgrading Security at Nuclear Power Plants in the Newly Independent States', *Nonproliferation Review*, Vol. 4, No. 2, Winter, pp. 28-39.

Malcolm Chalmers, *British Nuclear Weapons Policy: The Next Steps*, Special ISIS Report on the Future of UK Nuclear Weapons, Fissile Materials, Arms Control and Disarmament Policy, International Security Information Service, May, No. 1, 30 pp.

Kalpana Chitteranjan, 'Arms Control and Disarmament: Is an NWFW Possible?', *Strategic Analysis,* Vol. 19, No. 12, March, pp. 1699-1712.

Shahram Chubin, 'Eliminating Weapons of Mass Destruction: The Persian Gulf Case', *Occasional Paper No. 33*, The Henry L. Stimson Center, March, 45 pp.

Joseph Cirincione, 'A New Beginning for the NPT', *Disarmament Diplomacy*, No. 13, February/March, pp. 5-8.

Paul M. Cole, 'Atomic Bombast: Nuclear Weapon Decision-Making in Sweden, 1946-72', *The Washington Quarterly,* Vol. 20, No. 2, Spring, pp. 233-251.

Robin Cook, 'Press Conference on Mission Statement', *Disarmament Diplomacy*, No. 15, May, pp. 41-42.

Zachary S. Davis, 'Nuclear Nonproliferation Policy Issues in the 105th Congress', *CRS Issue Brief*, June 6, 12 pp.

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Lewis A. Dunn, 'Speculations on the Nuclear Future: Possibilities, Pathways, and Policy Implications', *CGSC Monograph, Strategy and Policy Series*, No. 1, February, 41 pp.

Astrid Forland, 'Norway's Nuclear Odyssey: From Optimistic Proponent to Nonproliferator', *Nonproliferation Review*, Vol. 4, No. 2, Winter, pp. 1-16.

'The Future of the NPT: Ideas for the New Review', A summary of the seminar held in Geneva at the Palais des Nations (UN) on 29 January, Centre for European Security and Disarmament, with presentations by Peter Goosen, John Simpson and Rebecca Johnson, 16 pp.

Alex Galperin, Paul Reichert, and Alvin Radkowsky, 'Thorium Fuel for Light Water Reactors — Reducing Proliferation Potential of Nuclear Power Fuel Cycle', *Science & Global Security,* Vol. 6, No. 3, pp. 265-290.

Richard L. Garwin, 'Stewardship: Don't claim too much or too little', *Bulletin of the Atomic Scientists*, Vol. 53, No. 3, May/June, pp. 21-24.

Jozef Goldblat, 'The Nuclear Non-Proliferation Regime: Assessment and Prospects', *Recueil des Cours/Collected Courses*, Vol. 256, May, 180 pp.

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Robert A. Manning, 'PACATOM: Nuclear Cooperation in Asia', *The Washington Quarterly,* Vol. 20, No. 2, Spring, pp. 217-232.

Michael M. May, *Rivalries Between Nuclear Power Projectors: Why the Lines Will Be Drawn Again*, Stanford University Press, Stanford, May 1996.

John C. Matter, James R. Lemley, Robert G. Behrens, and David Dougherty, 'Summary of the GLC Forum on Nonproliferation', *Journal of Nuclear Materials Management*, Vol. 25, No. 2, February, pp. 6-11.

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Hiromasa Nakano, Mitsunori Akiba, Hideo Kobayashi, Saburo Takahashi, 'The Development and Experience of Safeguards at the Plutonium Fuel Production Facility', *Journal of Nuclear Materials Management*, Vol. 25, No. 2, February, pp. 19-23.

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Todd Perry, 'Stemming Russia's Plutonium Tide: Cooperative Efforts to Convert Military Reactors', *Nonproliferation Review*, Vol. 4, No. 2, Winter, pp. 104-114.

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William Walker, 'Evolutionary Versus Planned Approaches to Nuclear Disarmament', Text of a presentation given at the Joint Seminar on Asian Security held in New Delhi on 23-24 January by the United Services Institution of India and the Royal United Services Institute for Defence Studies, London, *Disarmament Diplomacy*, No. 15, May, pp. 2-4.

Mingquan Zhu, 'The Evolution of China's Nuclear Nonproliferation Policy', *Nonproliferation Review*, Vol. 4, No. 2, Winter, pp. 40-48.

Matin Zuberi, 'Testing Times', *U.S.I. Journal,* Vol. 125, No. 527, January-March, pp. 78-87.

IV. Documentation

a. Report of the Preparatory Committee on Its First Session [Extracts]

[Text reproduced from NPT/CONF.2000/PC.I/32]

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II. SUBSTANTIVE AND PROCEDURAL ISSUES

A. *Organization of work of the Preparatory Committee*

6. With regard to the chairmanship of the various sessions of the Preparatory Committee and the presidency of the 2000 Review Conference, an understanding had been reached among delegations, according to which a representative of the Western Group should be proposed to chair the first session, a representative of the Group of Eastern European States should be proposed to chair the second session, a representative of the Group of Non-Aligned and other States parties to the Treaty on the Non-Proliferation of Nuclear Weapons should be proposed to chair the third session and a representative of the Group of Non-Aligned and other States parties to the Treaty should be proposed for the presidency of the 2000 Review Conference. All groups were encouraged to propose the representatives for the chairmanship of the various sessions of the Preparatory Committee and for the presidency of the 2000 Review Conference at their earliest possible convenience.
7. Pursuant to the understanding, Mr. Pasi Patokallio (Finland), the representative of the Western Group, was proposed to chair the first session. At its first meeting, on 7 April, the Committee unanimously elected Mr. Patokallio to serve as Chairman of the first session. At its 15th meeting, on 18 April, the Committee also decided that Mr. Tadeusz Strulak (Poland), the representative of the Group of Eastern European States, would be the Chairman of its second session. It was also decided that when not serving as Chairman, the Chairmen of the first and second sessions of the Preparatory Committee would serve as Vice-Chairmen of the Committee. It was further decided that a representative of the Group of Non-Aligned and other States parties to the Treaty on the Non-Proliferation of Nuclear Weapons should be proposed to serve as Vice Chairmen of the second session.
8. At its first meeting, on 7 April, the Committee adopted the following agenda (NPT/CONF.2000/PC.I/1/Rev.1):
   1. Opening of the session.
   2. Election of the Chairman.
   3. Adoption of the Agenda.
   4. Preparatory work for the review of the operation of the Treaty in accordance with article VIII, paragraph 3, taking into account the decisions and the resolution adopted by the 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons.
   5. Organization of work of the Preparatory Committee:
      (a) Election of officers;
      (b) Dates and venues for further sessions;
      (c) Methods of work:
         (i) Decision-making;
         (ii) Participation;
         (iii) Working languages;
         (iv) Records and documents;
         (v) Consideration of ways and means.
   6. Reports on substantive and procedural issues, recommendations to the next session of the Preparatory Committee and draft recommendations to the Review Conference.
   7. Organization of the 2000 Review Conference:

(a) Dates and venue;
(b) Draft rules of procedure;
(c) Election of the President and other officers;
(d) Appointment of the Secretary-General;
(e) Provisional agenda;
(f) Financing of the Review Conference, including its Preparatory Committee;
(g) Background documentation;
(h) Final document(s).

8. Adoption of the final report and recommendations of the Preparatory Committee to the Review Conference.
9. Any other matters.

9. In the course of the discussion of agenda item 5 on the organization of work of the Preparatory Committee, the following decisions were taken:

(a) *Dates and venues of further sessions*
At its 15th meeting, the Committee provisionally agreed, subject to further consultations by the Chairman, that the second session would be held from 27 April to 8 May 1998 in Geneva and that the third session would take place from 12 to 23 April 1999 in New York.

(b) *Methods of work*

(i) *Decision-making*
At its first meeting, on 7 April, the Committee decided to make every effort to adopt its decisions by consensus. In the event that consensus could not be reached, the Committee would then take decisions in accordance with the rules of procedure of the 1995 Review and Extension Conference, which would be applied *mutatis mutandis*.

(ii) *Participation*
At its first meeting, on 7 April, the Committee decided that:

- Representatives of States not parties to the Treaty on the Non-Proliferation of Nuclear Weapons should be allowed, upon request, to attend as observers the meetings of the Committee other than those designated closed meetings, to be seated in the Committee behind their countries' designated nameplates and to receive documents of the Committee. They should also be entitled, at their own expense, to submit documents to the participants in the Committee. Accordingly, representatives of the following States not parties to the Treaty attended the meetings of the Committee as Observers: Brazil, Cuba, Israel and Pakistan.
- Representatives of specialized agencies and regional intergovernmental organizations should be allowed, upon request, to attend as observers the meetings of the Committee other than those designated closed meetings, to be seated in the Committee behind their organizations' nameplates and to receive documents of the Committee. They should also be entitled, at their own expense, to submit documents to the participants in the Committee. Accordingly, the following regional intergovernmental organization was represented as an observer at the meetings of the Committee: South Pacific Forum.
- Representatives of non-governmental organizations should be allowed, upon request, to attend the meetings of the Committee other than those designated closed, to be seated in the public gallery, to receive documents of the Committee and, at their own expense, to make written material available to the participants in the Committee. The Committee would also make time available at each session, during which the non-governmental organizations could make presentations. Accordingly, representatives of 113 non-governmental organizations attended the meetings of the Committee.

(iii) *Working languages*
Also at its first meeting, the Committee decided to use Arabic, Chinese, English, French, Russian and Spanish as its working languages.

(iv) *Records and documents*
At its 6th meeting, on 10 April, the Committee decided that summary records would be provided at each session of the Committee's opening meeting, the general debate and the closing meetings. There would be records of decisions taken at the other meetings.

B. *Organization of the 2000 Review Conference*

14. The Preparatory Committee, in conformity with its task to prepare for the 2000 Review Conference, considered issues contained in agenda item 7. It took the following actions:

(a) *Dates and venue of the Conference*
At its 15th meeting on 18 April, the Committee provisionally agreed, subject to further consultations by the Chairman, that the Review Conference would be held from 24 April to 19 May 2000 in New York.

(b) *Appointment of the Secretary-General*
The Committee decided to invite the Secretary-General of the United Nations, in consultation with the members of the Preparatory Committee, to nominate an official to act as provisional Secretary-General of the 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, a nomination which would later be confirmed by the Conference itself.

(c) *Financing of the Review Conference, including its Preparatory Committee*
The Committee decided to request the Secretariat to provide for its second session an estimate of the costs of the 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons and its preparation.

III. RECOMMENDATIONS TO THE NEXT SESSION OF THE PREPARATORY COMMITTEE

15. During the course of the session, the Chairman held a number of informal consultations in the process of which delegations put forward their views and proposals on recommendations to the next session of the Preparatory Committee and on draft recommendations to the 2000 Review Conference. As a result of those consultations, the Chairman put forward a working paper which is annexed to the present report (annex II). The Committee recommended that at its second session the official documents and other proposals submitted by delegations during the first session of the Preparatory Committee as contained in annex II (para 4. and the appendix) will be taken into account during further work on draft recommendations to the Review Conference and also the working paper submitted by the Chairman which will be interpreted in the light of the official documents and other proposals made by delegations as contained in annex II (para 4. and the appendix).
16. The Committee recommended that at its second session, it should continue the consideration of all aspects of the Treaty in a structured and balanced manner, in accordance with agenda item 4 entitled 'Preparatory work for the review of the operation of the Treaty in accordance with article VIII, paragraph 3, taking into account the decisions and the resolution adopted by the 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons'.
17. Following approval of paragraph 16, the Chairman made a formal statement which is contained in document NPT/CONF.2000/PC.I/31.

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ANNEX II

CHAIRMAN'S WORKING PAPER

1. The first session of the Preparatory Committee began the process of reviewing the operation of the Treaty in accordance with article VIII, paragraph 3, taking into account the decisions and the resolution adopted by 1995 Review and Extension Conference.
2. In the course of this process, the specific proposals listed in paragraph 4 below were put forward by delegations as a basis for recommendations to be made by the Preparatory Committee to the Review Conference to be held in 2000.
3. At this stage, there was general agreement, subject to review and updating at subsequent sessions of the Preparatory Committee, and pending final agreement on all draft recommendations at the last session, on the following points:

   Reaffirmation of commitment to the preamble and the articles of the Treaty,

   Reaffirmation of commitment to efforts designed to promote the full realization and effective implementation of the provisions of the Treaty, as well as reaffirmation of the decisions on principles and objectives for nuclear non-proliferation and disarmament and on strengthening the review process for the Treaty as well as the resolution on the Middle East adopted by the 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons;

   (i) *Universality*

   Urgency and importance of achieving the universality of the Treaty; welcome for the eight new accessions to the Treaty since 1995, bringing the number of States parties to 186; urgency for all States not yet party to the Treaty to accede to the Treaty at the earliest possible date, particularly those States that operate unsafeguarded nuclear facilities.

   (ii) *Main Committee I issues*

   Non-Proliferation

   Reaffirmation that every effort should be made to implement the Treaty in all its aspects to prevent the proliferation of nuclear weapons and other nuclear explosive devices, without hampering the peaceful uses of nuclear energy by States parties to the Treaty.

   Nuclear Disarmament

   The importance of all States to make every effort to promote the earliest entry into force of the Comprehensive Nuclear-Test-Ban-Treaty, in accordance with article XIV of that Treaty.

   Reaffirmation of the need for 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, in accordance with the statement of the Special Coordinator of the Conference on Disarmament and the mandate contained therein.

   Recognition of the progress in nuclear weapons reductions by the nuclear-weapon States, including those made unilaterally or bilaterally under the START process, as steps towards nuclear disarmament; reaffirmation of the commitment by the nuclear-weapon States to the determined pursuit of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons and of the commitment by all States to the achievement of general and complete disarmament under strict and effective international control.

   Nuclear-weapon-free zones

   Welcome for the steps taken to conclude further nuclear-weapon-free-zone treaties since 1995 and reaffirmation of the conviction that the establishment of internationally recognized nuclear-weapon-free zones freely arrived at among the States concerned enhances global and regional peace and security.

   Recognition of the importance attached by signatories and States parties to the Treaties of Tlatelolco, Rarotonga, Pelindaba and Bangkok to establishing a mechanism for cooperation among their respective Treaty agencies.

   Security assurances

   Reaffirmation of the view that further steps, which could take the form of an international legally binding instrument, should be considered to assure non-nuclear-weapon States party to the Treaty against the use or threat of use of nuclear weapons.

   (iii)*Main Committee II issues*

   Safeguards

   Welcome for the conclusion of negotiations on the IAEA 93+2 programme to strengthen the effectiveness and improve the efficiency of the Agency's safeguards system and expectation that IAEA will endorse that outcome at its special session in May; reaffirmation that IAEA is the competent authority responsible for verifying and assuring, in accordance with the statute of the Agency and the Agency's safeguards system, compliance with its safeguards agreements.

   (iv)*Main Committee III issues*

   Peaceful uses of nuclear energy

   Reaffirmation of commitment to continue to take further steps for the full realization of the relevant provisions of the Treaty, taking into account the undertakings in the principles and objectives on the peaceful use of nuclear energy.

   Reaffirmation that attacks or threats of attack on nuclear facilities devoted to peaceful purposes jeopardize nuclear safety and raise serious concerns regarding the application of international law on the use of force in such cases, which could warrant appropriate action in accordance with the provisions of the Charter of the United Nations.
4. The following is a list of the specific proposals put forward by delegations for consideration by the Preparatory Committee on the understanding that the proposals are without commitment by the Preparatory Committee and without prejudice to the position of any delegation, and that the list is not exclusive and delegations are free to submit new proposals or modify or withdraw old ones at any further sessions of the Preparatory Committee.

[List of specific proposals is not reproduced here]

Statement of the Chairman of the Preparatory Committee

[Text reproduced from NPT/CONF.2000/PC.I/31]

CHAIRMAN'S STATEMENT

It is understood that within the existing agenda and in accordance with the methods of work adopted at the first session, the Committee also recommended that time should be allocated at the second session for the discussion on and the consideration of any proposals on the following subject areas, without prejudice to the importance of other issues:

- Security assurances for parties to the Treaty on the Non-Proliferation of Nuclear Weapons;
- The resolution on the Middle East;
- The provision in paragraph 4(b) of the principles and objectives on a non-discriminatory and universally applicable convention banning the production of fissile

material for nuclear weapons or other nuclear explosive devices.

It is noted that there was no objection to my making this statement.

b. Protocol Additional to the Agreement(s) between ..... and the International Atomic Energy Agency for the Application of Safeguards

[Part II of Programme 93+2, as approved by the IAEA Board of Governors on 15 May]

Foreword to the model Protocol

This document is a model Additional Protocol designed for States having a Safeguards Agreement with the Agency, in order to strengthen the effectiveness and improve the efficiency of the safeguards system as a contribution to global nuclear non-proliferation objectives.

The Board of Governors has requested the Director General to use this Model Protocol as the standard for additional protocols that are to be concluded by States and other parties to comprehensive safeguards agreements with the Agency. Such protocols shall contain all of the measures in this Model Protocol.

The Board of Governors has also requested the Director General to negotiate additional protocols or other legally binding agreements with nuclear-weapon States incorporating those measures provided for in the Model Protocol that each nuclear-weapon State has identified as capable of contributing to the non-proliferation and efficiency aims of the Protocol, when implemented with regard to that State, and as consistent with that State's obligations under Article I of the NPT.

The Board of Governors has further requested the Director General to negotiate additional protocols with other States that are prepared to accept measures provided for in the model Protocol in pursuance of safeguards effectiveness and efficiency objectives.

In conformity with the requirements of the Statute, each individual Protocol or other legally binding agreement will require the approval of the Board and its authorization to the Director General to conclude and subsequently implement the Protocol so approved.

Preamble

WHEREAS ..... (hereinafter referred to as '.....') is a party to (an) Agreement(s)between ..... and the International Atomic Energy Agency (hereinafter referred to as the 'Agency') for the application of safeguards [full title of the Agreement(s) to be inserted] (hereinafter referred to as the 'Safeguards Agreement(s)'), which entered into force on .....;

AWARE OF the desire of the international community to further enhance nuclear non-proliferation by strengthening the effectiveness and improving the efficiency of the Agency's safeguards system;

RECALLING that the Agency must take into account in the implementation of safeguards the need to: avoid hampering the economic and technological development of ..... or international co-operation in the field of peaceful nuclear activities; respect health, safety, physical protection and other security provisions in force and the rights of individuals; and take every precaution to protect commercial, technological and industrial secrets as well as other confidential information coming to its knowledge;

WHEREAS the frequency and intensity of activities described in this Protocol shall be kept to the minimum consistent with the objective of strengthening the effectiveness and improving the efficiency of Agency safeguards;

NOW THEREFORE ..... and the Agency have agreed as follows:

RELATIONSHIP BETWEEN THE PROTOCOL AND THE SAFEGUARDS AGREEMENT

Article 1

The provisions of the Safeguards Agreement shall apply to this Protocol to the extent that they are relevant to and compatible with the provisions of this Protocol. In case of conflict between the provisions of the Safeguards Agreement and those of this Protocol, the provisions of this Protocol shall apply.

PROVISION OF INFORMATION

Article 2

a. ..... shall provide the Agency with a declaration containing:

(i) A general description of and information specifying the location of *nuclear fuel cycle-related research and development activities* not involving *nuclear material* carried out anywhere that are funded, specifically authorized or controlled by, or carried out on behalf of, ...

(ii) Information identified by the Agency on the basis of expected gains ineffectiveness or efficiency, and agreed to by ....., on operational activities of safeguards relevance at *facilities* and *locations outside facilities* where nuclear material is customarily used.

(iii) A general description of each building on each *site*, including its use and, if not apparent from that description, its contents. The description shall include a map of the *site*.

(iv) A description of the scale of operations for each location engaged in the activities specified in Annex I to this Protocol.

(v) Information specifying the location, operational status and the estimated annual production capacity of uranium mines and concentration plants and thorium concentration plants, and the current annual production of such mines and concentration plants for ..... as a whole. ..... shall provide, upon request by the Agency, the current annual production of an individual mine or concentration plant. The provision of this information does not require detailed *nuclear material* accountancy.

(vi) Information regarding source material which has not reached the composition and purity suitable for fuel fabrication or for being isotopically enriched, as follows:

(a) the quantities, the chemical composition, the use or intended use of such material, whether in nuclear or non-nuclear use, for each location in .....at which the material is present in quantities exceeding ten metric tons of uranium and/or twenty metric tons of thorium, and for other locations with quantities of more than one metric ton, the aggregate for ..... as a whole if the aggregate exceeds ten metric tons of uranium or twenty metric tons of thorium. The provision of this information does not require detailed *nuclear material* accountancy;

(b) the quantities, the chemical composition and the destination of each export out of ....., of such material for specifically non-nuclear purposes in quantities exceeding:

(1) ten metric tons of uranium, or for successive exports of uranium from ..... to the same State, each of less than ten metric tons, but exceeding a total of ten metric tons for the year;

(2) twenty metric tons of thorium, or for successive exports of thorium from ..... to the same State, each of less than twenty

metric tons, but exceeding a total of twenty metric tons for the year;

(c) the quantities, chemical composition, current location and use or intended use of each import into ..... of such material for specifically non-nuclear purposes in quantities exceeding:

(1) ten metric tons of uranium, or for successive imports of uranium in to ..... each of less than ten metric tons, but exceeding a total of ten metric tons for the year;

(2) twenty metric tons of thorium, or for successive imports of thorium into ..... each of less than twenty metric tons, but exceeding a total of twenty metric tons for the year;

(vii) (a) information regarding the quantities, uses and locations of *nuclear material* exempted from safeguards pursuant to [paragraph 37 of INFCIRC/153]2/;

(b) information regarding the quantities (which may be in the form of estimates) and uses at each location, of *nuclear material* exempted from safeguards pursuant to [paragraph 36(b) of INFCIRC/153]2/ but not yet in a non-nuclear end-use form, in quantities exceeding those set out in[paragraph 37 of INFCIRC/153]2/. The provision of this information does not require detailed *nuclear material* accountancy.

(viii) Information regarding the location or further processing of intermediate or high-level waste containing plutonium, *high enriched uranium* or uranium-233 on which safeguards have been terminated pursuant to [paragraph 11 of INFCIRC/153]2/. For the purpose of this paragraph, 'further processing' does not include repackaging of the waste or its further conditioning not involving the separation of elements, for storage or disposal.

(ix) The following information regarding *specified equipment and non-nuclear material* as follows:

(a) for each export out of ..... of such equipment and material: the identity, quantity, location of intended use in the receiving State and date or, as appropriate, expected date, of export;

(b) upon specific request by the Agency, confirmation by ....., as importing State, of information provided to the Agency in accordance with paragraph (a) above.

(x) General plans for the succeeding ten-year period relevant to the development of the nuclear fuel cycle (including planned *nuclear fuel cycle-related research and development activities*) when approved by the appropriate authorities in .....

b. ..... shall make every reasonable effort to provide the Agency with the following information:

(i) a general description of and information specifying the location of *nuclear fuel cycle-related research and development activities* not involving *nuclear material* which are specifically related to enrichment, reprocessing of nuclear fuel or the processing of intermediate or high-level waste containing plutonium, *high enriched uranium* or uranium-233 that are carried out anywhere in ..... but which are not funded, specifically authorized or controlled by, or carried out on behalf of, ... For the purpose of this paragraph, 'processing' of intermediate or high-level waste does not include repackaging of the waste or its conditioning not involving the separation of elements, for storage or disposal.

(ii) A general description of activities and the identity of the person or entity carrying out such activities, at locations identified by the Agency outside a *site* which the Agency considers might be functionally related to the activities of that *site*. The provision of this information is subject to a specific request by the Agency. It shall be provided in consultation with the Agency and in a timely fashion.

c. Upon request by the Agency, ... shall provide amplifications or clarifications of any information it has provided under this Article, in so far as relevant for the purpose of safeguards.

Article 3

a. ..... shall provide to the Agency the information identified in Article 2.a.(i), (iii), (iv), (v), (vi)(a), (vii) and (x) and Article 2.b.(i) within 180 days of the entry into force of this Protocol.

b. ..... shall provide to the Agency, by 15 May of each year, updates of the information referred to in paragraph a. above for the period covering the previous calendar year. If there has been no change to the information previously provided, ... shall so indicate.

c. ..... shall provide to the Agency, by 15 May of each year, the information identified in Article 2.a.(vi)(b) and (c) for the period covering the previous calendar year.

d. ..... shall provide to the Agency on a quarterly basis the information identified in Article 2.a.(ix)(a). This information shall be provided within sixty days of the end of each quarter.

e. ..... shall provide to the Agency the information identified in Article 2.a.(viii) 180 days before further processing is carried out and, by 15 May of each year, information on changes in location for the period covering the previous calendar year.

f. ..... and the Agency shall agree on the timing and frequency of the provision of the information identified in Article 2.a.(ii).

g. ..... shall provide to the Agency the information in Article 2.a.(ix)(b) within sixty days of the Agency's request.

COMPLEMENTARY ACCESS

General

Article 4

The following shall apply in connection with the implementation of complementary access under Article 5 of this Protocol:

a. The Agency shall not mechanistically or systematically seek to verify the information referred to in Article 2; however, the Agency shall have access to:

(i) Any location referred to in Article 5.a.(i) or (ii) on a selective basis in order to assure the absence of undeclared *nuclear material* and activities;

(ii) Any location referred to in Article 5.b. or c. to resolve a question relating to the correctness and completeness of the information provided pursuant to Article 2 or to resolve an inconsistency relating to that information;

(iii) Any location referred to in Article 5.a.(iii) to the extent necessary for the Agency to confirm, for safeguards purposes, ...'s declaration of the decommissioned status of a *facility* or *location outside facilities* where *nuclear material* was customarily used.

b. (i) Except as provided in paragraph (ii) below, the Agency shall give ..... advance notice of access of at least 24 hours;

(ii) For access to any place on a *site* that is sought in conjunction with design information verification visits or ad hoc or routine inspections on that *site*, the period of advance notice shall, if the Agency so requests, be at least two hours but, in exceptional circumstances, it may be less than two hours.

c. Advance notice shall be in writing and shall specify the reasons for access and the activities to be carried out during such access.

d. In the case of a question or inconsistency, the Agency shall provide ..... with an opportunity to clarify and facilitate the resolution of the question or inconsistency. Such an opportunity will be provided before a request for access, unless the Agency considers that delay in access would prejudice the purpose for which the access is sought. In any event, the Agency shall not draw any conclusions about the question or inconsistency until..... has been provided with such an opportunity.
e. Unless otherwise agreed to by ....., access shall only take place during regular working hours.
f. ..... shall have the right to have Agency inspectors accompanied during their access by representatives of ....., provided that the inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions.

Provision of access

Article 5

..... shall provide the Agency with access to:

a. (i) Any place on a *site*;
   (ii) Any location identified by ..... under Article 2.a.(v)–(viii);
   (iii) Any *decommissioned facility* or *decommissioned location outside facilities* where *nuclear material* was customarily used.
b. Any location identified by ..... under Article 2.a.(i), Article 2.a.(iv), Article 2.a.(ix)(b)or Article 2.b, other than those referred to in paragraph a.(i) above, provided that if .....is unable to provide such access, ... shall make every reasonable effort to satisfy Agency requirements, without delay, through other means.
c. Any location specified by the Agency, other than locations referred to in paragraphs a.and b. above, to carry out *location-specific environmental sampling*, provided that if..... is unable to provide such access, ... shall make every reasonable effort to satisfy Agency requirements, without delay, at adjacent locations or through other means.

Scope of Activities

Article 6

When implementing Article 5, the Agency may carry out the following activities:

a. For access in accordance with Article 5.a.(i) or (iii): visual observation; collection of environmental samples; utilization of radiation detection and measurement devices; application of seals and other identifying and tamper indicating devices specified in Subsidiary Arrangements; and other objective measures which have been demonstrated to be technically feasible and the use of which has been agreed by the Board of Governors (hereinafter referred to as the 'Board') and following consultations between the Agency and .....
b. For access in accordance with Article 5.a.(ii): visual observation; item counting of nuclear material; non-destructive measurements and sampling; utilization of radiation detection and measurement devices; examination of records relevant to the quantities, origin and disposition of the material; collection of environmental samples; and other objective measures which have been demonstrated to be technically feasible and the use of which has been agreed by the Board and following consultations between the Agency and.....
c. For access in accordance with Article 5.b.: visual observation; collection of environmental samples; utilization of radiation detection and measurement devices; examination of safeguards relevant production and shipping records; and other objective measures which have been demonstrated to be technically feasible and the use of which has been agreed by the Board and following consultations between the Agency and .....
d. For access in accordance with Article 5.c., collection of environmental samples and, in the event the results do not resolve the question or inconsistency at the location specified by the Agency pursuant to Article 5.c., utilization at that location of visual observation, radiation detection and measurement devices, and, as agreed by ..... and the Agency, other objective measures.

Managed access

Article 7

a. Upon request by ....., the Agency and ..... shall make arrangements for managed access under this Protocol in order to prevent the dissemination of proliferation sensitive information, to meet safety or physical protection requirements, or to protect proprietary or commercially sensitive information. Such arrangements shall not preclude the Agency from conducting activities necessary to provide credible assurance of the absence of undeclared *nuclear materials* and activities at the location in question, including the resolution of a question relating to the correctness and completeness of the information referred to in Article 2 or of an inconsistency relating to that information.
b. ..... may, when providing the information referred to in Article 2, inform the Agency of the places at a *site* or location at which managed access may be applicable.
c. Pending the entry into force of any necessary Subsidiary Arrangements, ... may have recourse to managed access consistent with the provisions of paragraph a. above.

Article 8

Nothing in this Protocol shall preclude ..... from offering the Agency access to locations in addition to those referred to in Articles 5 and 9 or from requesting the Agency to conduct verification activities at a particular location. The Agency shall, without delay, make every reasonable effort to act upon such a request.

Article 9

..... shall provide the Agency with access to locations specified by the Agency to carry out *wide-area environmental sampling*, provided that if ..... is unable to provide such access it shall make every reasonable effort to satisfy Agency requirements at alternative locations. The Agency shall not seek such access until the use of *wide-area environmental sampling* and the procedural arrangements therefor have been approved by the Board and following consultations between the Agency and .....

Statements on the Agency's access activities

Article 10

The Agency shall inform ..... of:

a. The activities carried out under this Protocol, including those in respect of any questions or inconsistencies the Agency had brought to the attention of ....., within sixty days of the activities being carried out by the Agency.
b. The results of activities in respect of any questions or inconsistencies the Agency had brought to the attention of ....., as soon as possible but in any case within thirty days of the results being established by the Agency.
c. The conclusions it has drawn from its activities under this Protocol. The conclusions shall be provided annually.

DESIGNATION OF AGENCY INSPECTORS

Article 11

a. (i) The Director General shall notify ..... of the Board's approval of any Agency official as a safeguards inspector. Unless ..... advises the Director General of its rejection of such an official as an inspector for ..... within three months of receipt of notification of

the Board's approval, the inspector so notified to .....shall be considered designated to ..... ;

(ii) The Director General, acting in response to a request by ..... or on his own initiative, shall immediately inform ..... of the withdrawal of the designation of any official as an inspector for ..... .

b. A notification referred to in paragraph a. above shall be deemed to be received by .....seven days after the date of the transmission by registered mail of the notification by the Agency to ..... .

Visas

Article 12

..... shall, within one month of the receipt of a request therefor, provide the designated inspector specified in the request with appropriate multiple entry/exit and/or transit visas, where required, to enable the inspector to enter and remain on the territory of ..... for the purpose of carrying out his/her functions. Any visas required shall be valid for at least one year and shall be renewed, as required, to cover the duration of the inspector's designation to ..... .

SUBSIDIARY ARRANGEMENTS

Article 13

a. Where ..... or the Agency indicates that it is necessary to specify in Subsidiary Arrangements how measures laid down in this Protocol are to be applied, ... and the Agency shall agree on such Subsidiary Arrangements within ninety days of the entry into force of this Protocol or, where the indication of the need for such Subsidiary Arrangements is made after the entry into force of this Protocol, within ninety days of the date of such indication.

b. Pending the entry into force of any necessary Subsidiary Arrangements, the Agency shall be entitled to apply the measures laid down in this Protocol.

COMMUNICATIONS SYSTEMS

Article 14

a. ..... shall permit and protect free communications by the Agency for official purposes between Agency inspectors in ..... and Agency Headquarters and/or Regional Offices, including attended and unattended transmission of information generated by Agency containment and/or surveillance or measurement devices. The Agency shall have, in consultation with ....., the right to make use of internationally established systems of direct communications, including satellite systems and other forms of telecommunication, not in use in ..... At the request of ..... or the Agency, details of the implementation of this paragraph with respect to the attended or unattended transmission of information generated by Agency containment and/or surveillance or measurement devices shall be specified in the Subsidiary Arrangements.

b. Communication and transmission of information as provided for in paragraph a. above shall take due account of the need to protect proprietary or commercially sensitive information or design information which ..... regards as being of particular sensitivity.

PROTECTION OF CONFIDENTIAL INFORMATION

Article 15

a. The Agency shall maintain a stringent regime to ensure effective protection against disclosure of commercial, technological and industrial secrets and other confidential information coming to its knowledge, including such information coming to the Agency's knowledge in the implementation of this Protocol.

b. The regime referred to in paragraph a. above shall include, among others, provisions relating to:

(i) General principles and associated measures for the handling of confidential information;

(ii) Conditions of staff employment relating to the protection of confidential information;

(iii)Procedures in cases of breaches or alleged breaches of confidentiality.

c. The regime referred to in paragraph a. above shall be approved and periodically reviewed by the Board.

ANNEXES

Article 16

a. The Annexes to this Protocol shall be an integral part thereof. Except for the purposes of amendment of the Annexes, the term 'Protocol' as used in this instrument means the Protocol and the Annexes together.

b. The list of activities specified in Annex I, and the list of equipment and material specified in Annex II, may be amended by the Board upon the advice of an open-ended working group of experts established by the Board. Any such amendment shall take effect four months after its adoption by the Board.

ENTRY INTO FORCE

Article 17

This Protocol shall enter into force on the date on which the Agency receives from ..... written notification that .....'s statutory and/or constitutional requirements for entry into force have been met.

OR3/

upon signature by the representatives of ..... and the Agency.

..... may, at any date before this Protocol enters into force, declare that it will apply this Protocol provisionally.

The Director General shall promptly inform all Member States of the Agency of any declaration of provisional application of, and of the entry into force of, this Protocol.

DEFINITIONS

Article 18

For the purpose of this Protocol:

a. *Nuclear fuel cycle-related research and development activities* means those activities which are specifically related to any process or system development aspect of any of the following:

- conversion of *nuclear material*,
- enrichment of *nuclear material*,
- nuclear fuel fabrication,
- reactors,
- critical facilities,
- reprocessing of nuclear fuel,
- processing (not including repackaging or conditioning not involving the separation of elements, for storage or disposal) of intermediate or high-level waste containing plutonium, *high enriched uranium* or uranium-233, but do not include activities related to theoretical or basic scientific research or to research and development on industrial radioisotope applications, medical, hydrological and agricultural applications, health and environmental effects and improved maintenance.

b. *Site* means that area delimited by ..... in the relevant design information for a *facility*, including a *closed-down facility*, and in the relevant information on a *location outside facilities* where *nuclear material* is customarily used, including a *closed-down location outside facilities* where *nuclear material* was customarily used (this is limited to locations with hot cells or where activities related to conversion, enrichment, fuel fabrication or reprocessing

were carried out). It shall also include all installations, co-located with the *facility* or location, for the provision or use of essential services, including: hot cells for processing irradiated materials not containing *nuclear material*; installations for the treatment, storage and disposal of waste; and buildings associated with specified items identified by ..... under Article 2.a.(iv) above.

c. *Specific equipment and non-nuclear material* means equipment and non-nuclear material listed in Annex II to this Protocol.

d. *Decommissioned facility* or *decommissioned location outside facilities* means an installation or location at which residual structures and equipment essential for its use have been removed or rendered inoperable so that it is not used to store and can no longer be used to handle, process or utilize nuclear material.

e. *Closed-down facility* or *closed-down location outside facilities* means an installation or location where operations have been stopped and the *nuclear material* removed but which has not been decommissioned.

f. *High enriched uranium* means uranium containing 20 percent or more of the isotope uranium-235.

g. *Location-specific environmental sampling* means the collection of environmental samples(e.g., air, water, vegetation, soil, smears) at, and in the immediate vicinity of, a location specified by the Agency for the purpose of assisting the Agency to draw conclusions about the absence of undeclared *nuclear material* or nuclear activities at the specified location.

h. *Wide-area environmental sampling* means the collection of environmental samples (e.g., air, water, vegetation, soil, smears) at a set of locations specified by the Agency for the purpose of assisting the Agency to draw conclusions about the absence of undeclared *nuclear material* or nuclear activities over a wide area.

i. *Nuclear material* means any source or any special fissionable material as defined in Article XX of the Statute. The term source material shall not be interpreted as applying to ore or ore residue. Any determination by the Board under Article XX of the Statute of the Agency after the entry into force of this Protocol which adds to the materials considered to be source material or special fissionable material shall have effect under this Protocol only upon acceptance by .....

j. *Facility means*:
   (i) A reactor, a critical facility, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant or a separate storage installation; or
   (ii) Any location where *nuclear material* in amounts greater than one effective kilogram is customarily used.

k. *Location outside facilities* means any installation or location, which is not a *facility*, where *nuclear material* is customarily used in amounts of one effective kilogram or less.

1/ Terms in italics have specialized meanings, which are defined in Article 18 below.
2/ The reference to the corresponding provision of the relevant Safeguards Agreement should be inserted where bracketed references to INFCIRC/153 are made.
3/ The choice of alternative depends on the preference of the State concerned according to its internal legal requirements.

The Programme for Promoting Nuclear Non-Proliferation and the Newsbrief

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

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