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Programme for Promoting Nuclear Non-Proliferation, Newsbrief, Number 41

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Summary:

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

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NEWSBRIEF

1st Quarter 1998

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 1 January to 31 March 1998.

The limited size of the *Newsbrief* makes it necessary to choose among available items of information and present them in condensed form. Another reason for careful selectivity is that an event may be reported in more than one publication but in different ways, sometimes complementary but often also contradictory. A further ground for cautious culling is the speculative nature of some media reports. Such reports are used only if there is reliable back-up information or if the fact of their original publication is relevant in the framework of the *Newsbrief*.

Readers will have noted that recent issues of the *Newsbrief* have dwelt at some length on developments such as the scarcity of food in the Democratic People's Republic of Korea (DPRK), and the difficulties encountered in Iraq by inspectors of the United Nations Special Commission in getting access to places where they suspect biological or chemical warfare agents are stored or produced. At first glance, these might seem to have little to do with nuclear matters, but it is the editor's conviction that, since moves towards the development of a nuclear-weapon capacity cannot be seen in isolation from a nation's over-all security considerations and policies, it is the *Newsbrief's* task to present a modicum of information on such matters so as to help readers see the nation's nuclear activities in the perspective of its other actions and policies. In the case of the DPRK, for instance, the current grave economic problems may have an impact on that country's continued

adherence to the 'Agreed Framework' that should help it refrain from manufacturing nuclear weapons, and also on the likelihood that it will regain an interest in the denuclearisation of the Korean Peninsula. The questions that arose in the past several months about access by UN inspectors to suspected weapons sites in Iraq had a bearing on the authority of the Security Council as the arbiter of observance of agreements banning the production of weapons of mass destruction, including nuclear weapons. As such, the situation in Iraq with regard to UN inspections has a clear impact on nuclear non-proliferation and merits extensive treatment in the *Newsbrief*.

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.

Unless otherwise indicated, dates (day/month) refer to 1998. Where reference is made to an uninterrupted series of items in a daily newspaper, only the first and the last date of the series are given, for example, '6-25/3'.

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. Nuclear Disarmament and Arms Limitation

- At the time this issue of the *Newsbrief* was closed, the full impact of the dismissal of Viktor Chernomyrdin as

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Prime Minister of **Russia**, on 23 March, on the ratification by the Duma of START II was not yet clear. However, Yevgeny M. Primakov, who continues as Russia's Foreign Minister, has assured Secretary of State Madeleine K. Albright that Russia's foreign policy will remain unchanged, that his country will "fully abide and comply with" the agreement with the US reached earlier in March to limit the transfer of missile technology to Iran (see below, page 10) and that President Yeltsin will continue to urge early ratification of START II. This confirms the statement of Chernomyrdin, made during a visit to Washington earlier in March, that his government would urge the Duma to ratify START II before US President Clinton would visit Moscow by mid-year, for a meeting with Yeltsin. It is reported from Washington that the US Administration has made prior ratification of START II a condition of the meeting. An earlier report from Moscow said that the START II ratification would be discussed by the state Duma in June. Another Russian comment in late March was that consideration of the issue would be delayed until Autumn. (**Yaderny Kontrol Digest**, Winter 1997/1998 [17/3]; **New York Times**, 12/3, 24/3, 25/3; **direct information**)

- There are said to be problems in the implementation of plans for the disposition of excess weapons plutonium, both in **Russia** and in the **United States**. One set of problems is connected with the proposal to immobilise most of the material. On 14 January, the US General Accounting Office (GAO) submitted to the Senate Foreign Relations Committee a report entitled 'Uncertainties About the Implementation of the U.S.-Russian Plutonium Disposition Efforts', in which it claims that there are "unresolved questions" how plutonium will react in the immobilisation process, how stable and durable the immobilised material will be, and how difficult it will be to recover the plutonium and use it in nuclear weapons. Further, if it can be successfully vitrified on a large scale, GAO raises the question of the burial site. Mixed-oxide (MOX) fuel technologies, too, are said not to have been demonstrated in the US on an industrial scale. As for Russia, whose plutonium stockpile is estimated to be about twice as large as that of the US, it appears that funding is lacking to complete the project. The GAO report suggests that future requests by the Department of Energy (DoE) for funding for the plutonium disposition programme should be linked to the formal conclusion of a Russian-US agreement.

In March, a study by the Center for Strategic and International Studies, in Washington, unanimously endorsed DoE's dual-track approach but criticised delays in realising it. The report urged both countries to develop a work plan with specific schedules and projected budgets, and called for an overall agreement to be in place by mid-1999. The panel preparing the study was co-chaired by Republican Senator Domenici and Republican Representative Graham, which is seen as lending political weight to the findings.

Meanwhile, for its fiscal year 1999 budget DoE has requested \$65 million for the conceptual design of Russian and US plutonium disposition facilities, \$28 million to initiate the design of a MOX-fuel fabrication plant, and \$25 million for the design of a pit disassembly and conversion facility to convert weapons plutonium pits into an 'unclassified' oxide form. Reportedly, DoE plans to immobilise a total of 17 metric tons (MT) of the 50 MT of

plutonium declared surplus; the remaining 33 MT would eventually be used in MOX fuel.

On 2 March, DoE issued a solicitation for the design and construction of a plutonium pit disassembly and conversion facility that should provide the feed material for DoE's planned MOX-fuel fabrication plant as well as its immobilisation facility.

A group of anti-nuclear organisations led by the Nuclear Information Research Service (NIRS) of Washington have launched an international campaign against the use of MOX at US nuclear plants.

(**NuclearFuel**, 26/1, 9/2; **SpentFUEL**, 9/2, 9/3, 23/3; **NIRS**, 16/3, in **UI News Briefing** 98.11)

- As of 4 March, 148 former or current heads of state, including former Presidents Carter, Gorbachev and De Klerk, and leading personalities from 48 nations, had signed a statement calling for reducing the threat of nuclear weapons. The statement advocates storing all atomic warheads away from launchers and, among a number of other measures, calls for the adoption of a "no-first use" policy. (**Washington Post**, 2/2; **Disarmament Diplomacy**, February)

b. Non-Proliferation Developments

- The **United States** Department of Energy has demonstrated technologies for detecting weapons of mass destruction and preventing the illicit movement of nuclear materials. Equipment shown at two exhibitions in the offices of the US Congress included radiation-detection portal monitors and a Wide Area Tracking System to intercept vehicles transporting nuclear weapons. DoE is also said to be testing new sensor technologies for satellites that should detect the radiofrequency electromagnetic pulse from the use or test of a nuclear weapon. (**NuclearFuel**, 23/3)

c. Nuclear Testing

- Nuclear tests carried out in the atmosphere over Maralinga, **Australia**, forty years ago, and ground-based explosive experiments involving radioactive materials are being blamed by Australian and British servicemen and Aboriginal groups from the area for a variety of diseases and congenital abnormalities. Historically, the reaction of the Australian government to claims for compensation by the persons involved or their descendants is said to have been negative. (**Age**, 29/12/97; **Australian**, 30/12/97; **Courier Mail**, 31/12/97; **Sydney Morning Herald**, 3/1)
- It has been revealed in Paris that **France** continued atmospheric testing in the South Pacific even after it became clear that the local population was being exposed to dangerous levels of radioactive fallout. Reportedly, the French radiological security service, SMSR, warned that the population was particularly vulnerable, but appears to have been disregarded. Although contamination was found in crops, no decontamination measures were taken and the population was not alerted to the risks. (**Guardian**, 6/2)
- In **Russia** the trade union newspaper, *Rabochaya Tribuna*, has reported that for 30 years Soviet bomber pilots and their families were compelled to live near the

Semipalatinsk nuclear testing ground in Kazakstan, presumably to serve as objects for research on the effects on human beings of nuclear explosions. They are said to have been moved from Ukraine in 1958 to Chagan, 50 miles from the main testing site, at a time when nuclear explosions were still held in the atmosphere. Reportedly, many people died; others suffered serious diseases. Those who complained were punished. Apparently pilots were selected for this purpose because they underwent regular medical checks. (Reuters, 8/1)

- As announced by United States President Clinton in the State of the Union address on 27 January, preparations began in Washington for the submission of the Comprehensive Test Ban Treaty (CTBT) to the Senate. They involved a consistent campaign to convince Senators that the Treaty is essential to US national security and that it does not stand in the way to the conduct of a 'science-based stockpile stewardship program' to maintain a high level of confidence in the safety and reliability of US nuclear weapons, also without explosive (nuclear) testing. In early February, the President visited the Los Alamos National Laboratory where he made a speech urging early ratification of the CTBT. The Administration stresses its intention to maintain a basic capability to resume nuclear tests if for any reason the Treaty should no longer be in force. A further point adduced by the Administration is the possibility of withdrawal from the Treaty under the supreme national interest clause if the President were advised by the Secretaries of Defense and of Energy, in consultation with the Nuclear Weapons Council, the directors of the National Laboratories and the Commander of the US Strategic Command, that they cannot certify their high confidence in US nuclear weapons.

For the case that nuclear tests should ever have to be started again, DoE is said to be conducting interviews, mostly on videotape, with persons involved in the previous testing programme. The Department also communicates with a regularly updated list of 400-500 retired test-site workers who would be willing to come back into service if asked.

Jesse Helms, Chairman of the US Senate Foreign Relations Committee, has announced that he will take no action on the ratification of the CTBT until the Administration submits the Kyoto Climate Change Agreement to the Senate, together with amendments to the 1972 Anti-Ballistic Missile Treaty.

It has been reported from Washington that on 25 March, DoE conducted its third subcritical nuclear test in Nevada, using approximately one kg of plutonium. Three more tests are said to be planned.

(Reuters, 23/1; Transcript issued by the Office of the Press Secretary, the White House, of a briefing by the NSC Senior Director for Defense Policy and Arms Control, 2/2; New York Times, 4/2; Economist, 14/2; Yomiuri Shimbun, 26/3)

d. Nuclear Trade, International Cooperation and Nuclear Export Issues

- On 12 January, President Clinton signed the documents certifying the non-proliferation credentials of China. The certification was open to Congressional review and had to lie before the Congress for 30 days of continuous

session before it could take effect and the 1985 agreement for cooperation between China and the United States could enter into force; this period ended on 18 March without either House of Congress having taken action to block it. The bilateral agreement on nuclear cooperation went into effect one day later. In hearings before the International Relations Committee of the House of Representatives, several leading members had expressed reservations to certification. Subsequently, 13 Republican Congressmen urged President Clinton to take immediate measures to prevent the delivery of reactors and other nuclear technology to China. During the hearings the Administration had confirmed that, among other measures, China had undertaken to phase out its nuclear cooperation with Iran and was putting into place a comprehensive nation-wide system of nuclear and nuclear-related dual-use export controls. Iran, meanwhile, has denied that its nuclear cooperation with China has been discontinued.

Shortly before the period ran out during which Congress could raise objections to the certification it was revealed in Washington that the US Administration had discovered a possible transaction between a Chinese entity and an Iranian organisation regarding the supply of a large consignment of anhydrous hydrogen fluoride (AHF), a substance allegedly used in the enrichment of uranium, to the Isfahan Nuclear Research Center. As reported by the State Department's spokesman, Administration officials raised the matter with the Chinese authorities who, upon investigation, assured them that the deal had not been agreed to and that China had no intention of selling chemicals to Iran that could be used to develop nuclear weapons. The spokesman pointed out that there was no evidence that a shipment of AHF had occurred or was proceeding. Further, the material was understood not to be used in the enrichment of uranium but in its conversion, and was not on the list of controlled nuclear items. While Administration officials point to the event as a demonstration of the effectiveness of US non-proliferation methods, the rumour that China had planned to make this export, after it had ostensibly undertaken not to support Iran's nuclear programme, has further raised Republican criticism of the certification.

There have been warnings in Washington against overly optimistic expectations of Chinese investments in nuclear energy. Prospects are said to be less rosy than they had initially seemed to be, in part due to the reduced availability of funds for investment in Asia, and in part to the expectation that China will become largely self-sufficient in nuclear plant building and will not have to rely on turnkey deals. Nevertheless, within one week after the entry into effect of the cooperation agreement, five American firms had requested authorisations from DoE for transfers of nuclear technology and services.

It now seems that the zirconium-tube facility which — as reported in PPNN Newsbrief no. 40, page 4 — China was planning to import from South Africa, had been redundant for years. At the time this issue of the Newsbrief was completed, South Africa's Council for Non-Proliferation of Weapons of Mass Destruction (NPC), headed by Abdul Minty, Deputy Director General of the Department of Foreign Affairs, had not yet ruled on the application for a license on export; its decision is expected in April. Allegations that the plant would be re-exported from China to Iran have been denied by Beijing.

Apparently, these reports had arisen from the fact that China itself was planning to export a similar plant to Iran.

(SAPA News Agency [Johannesburg], 15/12/97, in **BBC Monitoring Summary of World Broadcasts**, 17/12/97; **Daily Telegraph**, 18/12/97; **Nucleonics Week**, 15/1, 22/1, 26/3; **Reuters**, 15/1, 13/3, 15/3, 24/3; **Transcript of Statement**, 4/2; **SpentFUEL**, 9/2, 30/3; **NuclearFuel**, 9/3; **Washington Post**, 13/3; **Washington Times**, 13/3; **USIA Transcript**, 13/3; **New York Times**, 19/3; **Associated Press**, 20/3)

- A report from **Cuba** claims that it has agreed with the **Russian Federation** to complete the power station at Juragua, Cienfuegos Province, on which work stopped eight years ago. Faced with opposition from the US, the two governments are said to have decided not to involve firms from other countries as they had originally hoped to do. (**Associated Press**, 23/2; **Frankfurter Allgemeine Zeitung**, 23/2)
- On 4 February, **Egypt** inaugurated a 22-MW research reactor which it has purchased from **Argentina**. Argentina's President Carlos Menem was present for the occasion. (**ArabicNews**, 30/1, in **UI News Briefing** 98.05; **Reuters**, 3/2)
- Germany and the **Russian Federation** have signed a framework agreement for the supply of 1,200 kg of Russian weapons-grade highly-enriched uranium for the FRM-2 high-flux research reactor that is under construction at Garching, near Munich. (**Nuclear Engineering International**, March, in **UI News Briefing** 98.11; **NuclearFuel**, 6/3)
- On the occasion of the visit to **India** by the President of **France**, it was divulged that the latter country was exploring ways to provide India with nuclear safety improvements to its existing reactors. The rules of the Nuclear Suppliers Group (NSG), to which France belongs, prevent it from initiating wider nuclear cooperation with India, but make an exception with respect to matters of nuclear safety. President Chirac acknowledged this in pointing out that, for France to sell reactors to India, the latter would have to meet certain conditions and make new progress on the path of disarmament and non-proliferation. Reportedly, one idea under consideration would be obtaining an exception from the NSG rule that prohibits commerce with states refusing full-scope safeguards. Belgium is said also to have raised this question. (**Nucleonics Week**, 29/1)
- **Pakistan** and **China** are discussing the construction of further 300-MW power reactors of Chinese design at the Chasma site. (**Nucleonics Week**, 26/2)
- The current cooling of relations between **Turkey** and the **European Union** is expected to have a negative effect on the chances that the joint venture Nuclear Power International, of **Germany's** Siemens A.G. and **France's** Framatome, will be selected to provide a 1400-MW light-water reactor to that country. Apparently Turkey is now thinking of involving the US firm Westinghouse in the project. (**Nucleonics Week**, 1/1)

e. IAEA Developments

- In a special meeting with all IAEA staff, the Agency's new Director General, Mohamed ElBaradei, announced he was convening a high-level expert team to review the Agency's entire work programme. Reportedly, the expert team will examine the Agency's programme from a scientific point of view but will also consider aspects of policy and public acceptance. They will be asked to pronounce themselves on the cost-effectiveness of Agency activities and to determine whether the structure of the Secretariat corresponds to current needs. Dr. ElBaradei announced that for the first time in over ten years, next year's budget will not necessarily be one of zero growth. (**Nucleonics Week**, 1/1)
- A quantity of 80 grammes of plutonium left behind in **Viet Nam** by mistake when, during the Viet Nam war, US personnel removed nuclear material from the Dalat research reactor, has been located and put under IAEA safeguards. Reportedly, the material had been taken to Hanoi during the war. (**Reuters**, 10/2)

f. Peaceful Nuclear Developments

- There is a report from **Armenia** that significant progress has been made in upgrading safety at the Metsamor-2 VVER-440 reactor. The reactor, which had been shut down in 1989 after a major earthquake, was restarted in 1995 but there had been concern that, because of shortage of funds the safety upgrade programme might not be completed. Apparently money is now being received and more people are said to be paying their electricity bills. Among the sources of financial assistance are Russia, which has promised to support the plant until 2002, France and the European Union. (**Nucleonics Week**, 5/2. See also **Newsbrief** no. 38, page 8)
- **Bulgaria** will soon begin to upgrade the two VVER-1000 power reactors Kosloduy-5 and -6. A first contract has been awarded to a Spanish-led consortium which includes the UK's Magnox Electric. An engineering contract has been awarded to the American firm Westinghouse. Yet another contract is expected to go to the consortium Siemens-Framatome-Atomenergoexport. (**Nucleonics Week**, 29/1)
- In the **Czech Republic**, there is said to be concern that the first VVER-1000 reactor at the Temelin nuclear power station may not be completed as scheduled in April 1999, but possibly only three years later. This is said to be due to a large extent to far-reaching changes in the cabling system necessitated by the replacement of the original Soviet instrumentation and control package by western equipment. Another consequence, reportedly, is a cost overrun amounting to an estimated 20 per cent over the 1997 completion figure. According to comments from Austria, which is strongly opposed to the project, the upgrade work now underway, with the help of western firms, will still not raise the safety level of the plant to an acceptable degree, while the cost overrun will make operation of the facility uneconomical. The Austrian province of Oberösterreich is nominating an official to study, with the help of eight persons selected from among environmentalists and nuclear opponents, the cost-effectiveness of the plant. The Czech government has once again confirmed that Temelin will be completed but the recently appointed environment minister, who opposes

the project, has said that he will seek an independent evaluation. It is noted that the current Czech government will be in place only until June, when elections will take place. (*Die Presse*, 4/12/97; *East European Energy Report*, January, in *UI Newsbriefing* 98.04; *Salzburger Nachrichten*, 17/1; *Nucleonics Week*, 5/2; 5/3)

- In **France**, the Phénix fast-breeder reactor has been pronounced safe to resume operation and the French Commissariat à l'Energie Atomique has said that it will be able to start in late March or early April. The nuclear safety authority, DSIN, has proposed that it could initially operate at two-thirds of nominal capacity and after a review of the initial structure, among other things, would be able to operate either at two-thirds or full power for at least another five years.

On 2 February, the French government finally took its decision to shut down the Superphénix fast-breeder reactor. Advocates for the continued operation of the plant are said to have received the news with resignation but some trade union leaders have called for further debate before any irreversible decision is made; several unions have announced that they will prevent dismantling personnel from entering the facility at least until the issue has been debated in Parliament. The number of persons who will lose their jobs as a result of the shut-down is now estimated at 2,000. The fact that several supposed final dates for the decision had gone by without news had given rise to talk about a possible decision to keep the plant in operation for another few years, to allow for the preparation for an orderly decommissioning. Reportedly, decommissioning will start in 2005 and will cost 16.5 billion francs (US \$2.7 billion). This includes disposing of 5 MT of highly reactive sodium, for which there do not yet seem to be concrete plans.

(*Libération*, 23/12/97, 2/2; *Kurier*, 30/12/97; *NucNet News*, 6/1, 3/2, 5/2; *Nucleonics Week*, 8/1, 15/1, 22/1, 5/2, 19/2; *Le Monde*, 31/1, 1/2, 2/2; *Reuters*, 2/2; *New York Times*, 3/2; *Enerpresse*, 4/2; *Neue Zürcher Zeitung*, 4/2; *SFEN Correspondance Nucléaire*, 6/2; *Libération*, 10/2)

- In **Germany**, the first transport of spent fuel from light water reactors to the repository at Ahaus, in the province of North Rhine-Westphalia, was completed on 20 March; it was the largest spent-fuel transport in Germany so far, involving 60 MT of waste. The plans had been opposed by the Green Party, which governs the province in a coalition with the Socialists. In mid-March, several peaceful protest marches were held near the repository and in the vicinity of the power plant at Neckarwestheim, from which irradiated fuel rods were to go to Ahaus. In expectation of the first transport, anti-nuclear protestors earlier sabotaged overhead railroad cables, causing a high speed express train to pull them down. Among other protest actions, automatic ticket dispensers were sabotaged at 33 railway stations. The transport had been scheduled for 24–25 March. Protest groups had announced they would block the rail link to the storage facility. By advancing the dates, officials took would-be demonstrators by surprise and avoided major clashes, although some demonstrators had time to chain themselves to tracks and had to be removed; one police officer guarding a rail line was killed by a passing train. Reportedly, shortly before the actual transport took place, police had found an underground cache of explosives near a rail line

over which the transport was expected to pass, raising fears of sabotage. After the move, German rail traffic is reported to have been widely disrupted by a rash of bomb threats, alleged to have come from groups whose efforts to stop the transport had been frustrated by the change in the dates. German law-enforcing bodies had mobilised a total of 30,000 officers to protect the transport.

It is expected that a victory in this Autumn's elections of Gerhard Schroeder, the newly-named candidate of the Social Democratic Party (SPD), over current Chancellor Helmut Kohl, will help solve present political problems relating to the disposal of nuclear waste. Supposedly, an SPD government or SPD-led coalition would adopt a moratorium on nuclear power and thereby reduce current public opposition to waste management projects. The next fuel shipment to the Gorleben repository is not expected to take place until after the elections.

(*Frankfurter Allgemeine Zeitung*, 28/1; *Nucleonics Week*, 5/2, 5/3, 26/3; *Guardian*, 4/2 in *UI News Briefing*, 98.06; *Reuters*, 3/3, 15/3; *International Herald Tribune*, 4/3; *Süddeutsche Zeitung*, 11/3; *NuclearFuel*, 23/3)

- It has been announced that nuclear-generated energy accounted for 12.3 per cent of the total primary energy supply in **Japan** in 1996.

Japan has reported that on 31 December 1996 it had an inventory of 5,000 kgs separated plutonium and an estimated 49,500 kgs contained in spent nuclear fuel. Of the latter amount, some 48,000 kgs were inside reactors and 1,000 kgs at the reprocessing plant. In addition, 15,100 kgs of separated plutonium was stored outside Japan.

The Japan Atomic Industrial Forum has completed a report on integrated systems in nuclear ships. The report predicts that the demand for large size, high speed and high volume will boost the call for nuclear-propelled merchant ships even though these have not been found economically advantageous as compared with fossil-fuel powered vessels. The report includes recommendations for bringing the first nuclear ship into operation in the early 2010s, and for the construction of the first commercial vessel to sail at 50 knots and hold 6,000 containers. Japan has gained experience and technology through the construction and operation of the nuclear ship *Mutsu*.

(*Atoms in Japan*, December 1997; *Nucleonics Week*, 8/1)

- The Environment Commissioner of the European Union has said that the Ignalina nuclear power station in **Lithuania** will have to be shut down as a condition of that country's entry into the European Union. Both substance and style of the statement have led to strong criticism both in and outside the country. (*Nucleonics Week*, 19/3)
- There has been another four-week delay in the date of commissioning of the first upgraded unit of the VVER-440/213 power station at Mochovce, in the **Slovak Republic**. Reportedly, this will permit implementation by western contractors of some additional safety measures before start-up. Fuel loading is scheduled for April and the plant should be in full operation in July. In May, an international commission sponsored by the Austrian government will pay a three-day visit to the

facility. Given the presumed anti-nuclear bias of that group, the Slovak Republic has also called for a visit by an IAEA commission. Mochovce-2 should start up in March 1999. Meanwhile, expectations, held particularly in Austria, that the two older VVER-440 power reactors at Bohunice would be shut down once Mochovce is completed, are proven to have been unrealistic, given the news that they are currently being refuelled. There appears to be no decision yet as to whether the other two units of Mochovce, which are not yet half complete, will ever be built. Reportedly, interest in the use of nuclear power is waning in the Slovak Republic. (*Kourier*, 27/11/97; *Die Presse*, 28/11/97; *Standard* [Vienna], 28/11/97; *Nuclear Engineering*, January; *Nucleonics Week*, 22/1, 19/3; *NucNet News*, 4/2; *Salzburger Nachrichten*, 7/2; *Die Presse*, 21/2, 4/3; *Czech News Agency CTK*, 3/3. See also *Newsbrief* no. 40, page 7)

- The debate in Sweden over the shut-down of the Barsebäck reactors has not yet abated. The law adopted by Parliament late last year, which provided for the phasing-out of nuclear power and for the right of government to expropriate power reactors if no agreement could be reached on compensation, is currently under court review. On 5 February, shortly after the plant's management had called on the government to postpone the definitive decision until after Swedish and European courts had completed their review, it was announced that the operating license of Barsebäck-1 had been revoked as of 1 July 1998. A spokesman for the plant's owners, Sydkraft AB, has warned that the shutdown could result in additional CO₂ emissions of five to ten per cent. The Uranium Institute has warned Sweden's Prime Minister that the closure of the plant will result in a contradiction to the commitment made at the Kyoto climate-change conference to reduce greenhouse gas emissions. The reactor's operating company, Barsebäck AB, has filed an application with Sweden's Supreme Administrative Court for the submission of the case to the European Court of Justice, challenging the constitutionality of the shut-down law and arguing that the closure violates European Union (EU) regulations; pending the outcome of the case it is seeking an injunction against the closure. Sydkraft AB, as Barsebäck's parent company, has brought an official complaint to the European Commission, claiming that the decision contravenes EU rules on competition by giving an improper advantage to a government-owned electricity producer; the government has one month to respond. The company has also asked the Swedish Supreme Court for a judicial review of the decision. It was announced in early March that Sydkraft AB had placed a major order for fuel for four of its reactors, including both Barsebäck units. (*Le Monde*, 5/2; *Nucleonics Week*, 5/2, 12/2, 26/2, 5/3; *Reuters*, 5/2; *Ux Weekly*, 9/2 and 2/3, in *UI News Briefing* 98.06 and 98.09, respectively; *Sydkraft AB*, 23/2, in *UI News Briefing* 98.08; *NucNet News*, 2/3; *UI News Briefing* 98.13. See also *Newsbrief* no. 40, page 7)

- In Ukraine, the discovery of new cracks in the piping of reactor unit-3 at the Chernobyl nuclear power station means that its restart, which had already been delayed until March 1998 will have to be delayed for several more months. In December, a crack was found at Chernobyl-1. This unit has been down since November 1996 and its piping is kept warm in winter by circulating coolant.

There are contradictory reports about the condition of the sarcophagus covering the ruined fourth unit of the Chernobyl power station. Some experts maintain that the foundations of the structure are weakening. They say, however, that while the structure is becoming seriously unstable, the sarcophagus is not in immediate danger of collapsing. Others are quoted as saying that a collapse is becoming "more and more likely"; one Ukrainian source claims that there is "imminent danger" that the roof of the shell might cave in as a result of melting snow penetrating the many cracks. It appears that the quantity of radioactive dust in the former reactor hall is greater than initially thought, and even a partial collapse would release a radioactive cloud that might affect the surrounding area. Reportedly, Ukrainian experts hold that none of the currently available repair options can be implemented without subjecting personnel to high doses of radiation. Repair work should start in April, but a last-minute problem is said to have arisen in the fact that new legislation on liability does not apply to the sarcophagus as it is not officially a nuclear installation; unless this point is resolved, western participation in the Chernobyl Shelter Implementation Plan (SIP) may be in question. Several west-European firms have already submitted bids for the job of managing the Plan.

(*Independent*, 8/1; *Nucleonics Week*, 8/1, 19/2, 26/2; *Die Presse*, 8/1; *Standard* [Vienna], 8/1; *International Herald Tribune*, 9/1; *El Pais*, 11/1; UNIAN news agency Kiev, 15/1, in *BBC Monitoring Summary of World Broadcasts*, 23/1; *Europe Energy*, 23/1, in *BBC Monitoring Summary of World Broadcasts*, 23/1; *Nuclear Engineering International*, February. See also *Newsbrief* no. 40, page 7.)

- In the United Kingdom, a scientific committee of the Royal Society on "Management of Separated Plutonium" has reported that the country does not have a strategy to deal with the 54 tons of mostly reactor-grade plutonium stored at the Sellafield nuclear establishment. The stockpile, already said to account for one fourth of the world's plutonium inventory, is expected to reach more than 100 tons by 2010. One way of reducing the growth of the stockpile would be to reduce reprocessing, but it is noted that this would not be feasible without closing the UK's magnox reactors earlier than planned. The report, which expresses concern about the radiotoxicity and proliferation risks associated with the amount of plutonium on hand, recommends that the UK government commission an independent and comprehensive review of options to stabilise and reduce the plutonium stockpile. (*Times* [London], 5/2; *NuclearFuel*, 9/2; *SpentFuel*, 16/2)

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

- Russia is said to be deploying a new strategic ballistic missile, the Topol-M, which it claims does not have its equal anywhere in the world. With one warhead and a range of over 10,000 kms, the weapon is said to be able to describe a trajectory that makes interception virtually impossible, while the warhead is so robust that it would survive even a close nuclear explosion. Reportedly, a total of 270 of these missiles will be produced over ten years. (*Süddeutsche Zeitung*, 28/12/97)
- Also in Russia, former security advisor and presidential candidate, retired General Lebed has once again raised

the issue of portable nuclear weapons. Lebed is quoted by French sources as having said that nuclear weapons of minimal dimensions (allegedly 40 cm [16"] long and 30 cm [12"] high) had been manufactured in Russia and that, in their current financial distress, scientists at the facility in question would be ready to produce such weapons for anyone interested. (*Frankfurter Allgemeine Zeitung*, 22/1)

- The President of the **United States** is reported to have approved a new strategy directive that should allow the country to maintain a nuclear defence posture with fewer strategic missiles. The measure is said to be taken in anticipation of the ratification by the Russian Duma of START II and the beginning of negotiations on START III, which would cut the number of nuclear warheads on each side to 2,000–2,500. Apparently concepts for START III have been discussed between the two countries but the US has said that it would not begin negotiations until START II has been ratified. The Senior Director for Defense Policy of the National Security Council is quoted as saying that the nuclear arsenal will be maintained as a "hedge against an uncertain future, with sufficient nuclear weapons to deter any hostile foreign leadership with access to nuclear forces". He added that the directive leaves unchanged the conditions under which the US might use nuclear weapons first: if there is an attack by a country with nuclear weapons; if the attacking country has violated the NPT; or if it is allied to a nuclear power. (*Associated Press*, 7/1)
- In the **United States**, DoE is preparing an environmental impact statement with respect to the possible use of one or more reactors of the Tennessee Valley Authority (TVA) to produce tritium. Reportedly, TVA has proposed completing its Bellefonte plant for the purpose. Although so far no specific option has been adopted for the production of tritium, DoE is said to consider the use of existing commercial reactors for this purpose as in any case a back-up for alternative methods. As previously reported, American arms control experts have raised objections to the use of a commercial facility for this purpose, which would conflict with traditional non-proliferation policies. Opponents have also expressed concern that the plant would be used to burn MOX fuel, which some environmental and non-proliferation advocates are said to consider too expensive and too risky. (*NuclearFuel*, 26/1; *Nucleonics Week*, 29/1. See also *Newsbrief* no. 40, page 8)
- A report by the Natural Resources Defense Council (NRDC) has revealed that DoE is financing an 'Academic Strategic Alliances Program' in support of the Accelerated Strategic Computing Initiative which aims at the development by the year 2004 of a supercomputer capable of performing 100 trillion calculations per second, to simulate nuclear explosions. Research centres have been created for this purpose at five universities. The NRDC criticises the "erosion of the distinction between classified and non-classified information" inherent in the program. Officials of some of the academic institutions involved deny the military implication of these activities. (*New York Times*, 25/1)
- In Washington, a 16-member panel of civilian and military experts, headed by a former Air Force Chief of Staff, has completed a report in which it is said to have

expressed sharp criticism of the progress so far achieved by the **United States** Department of Defense in its development of an anti-missile weapons system. The report is said to warn against a "rush to failure" and to speak of poor planning, insufficient testing, premature inauguration of defensive systems, delays and cost overruns. Republican defence experts in the US Congress are said to have dismissed the findings and continue to express strong support for anti-missile systems. A contractor responsible for building the national anti-missile system is to be selected in April. (*Reuters*, 21/3; *Washington Post*, 22/3)

h. Proliferation-Related Developments

- The food shortage in the **Democratic People's Republic of Korea** (DPRK) remains a long-term problem. Official sources in Pyongyang have said that so far 2.8 million people have died as a result of "natural calamities", which is taken as referring both to the floods and the droughts that have destroyed the crops, as well as to the resulting famine. Reports in March estimated that the country had grain left for only two more weeks and most other domestic food stocks would be depleted by April. The government in Pyongyang is calling for the immediate supply of several million tons of grain. The UN's World Food Programme (WFP) has launched the biggest campaign in its history, calling for 658,000 metric tons of foodstuffs, at a cost of \$378 million; in March the WFP supplied 98,000 tons of grain. The current campaign is said to be intended in particular to provide food for children, pregnant women, hospital patients, and other vulnerable sectors of the population. In response to an appeal by the WFP, South Korea has offered to donate 50,000 tons of food and says it would consider offering more if necessary; it is also considering a donation of 200,000 tons of fertilizer. In the US Congress, Republican representatives reviewing the Administration's proposed budget for international assistance have insisted on having US monitors check the way American aid is employed.

In Geneva, the second round of negotiations on a peace agreement on the Korean Peninsula, in which representatives from China, the DPRK, the RoK, and the US participated, adjourned on 21 March. No date was set for the next meeting, but the Chinese delegate was quoted as saying that he expected a new round to be held in the summer. Reportedly, after good initial progress and agreement on an agenda, the meeting ran into difficulties over the issue, raised by the DPRK, of the presence of US armed forces in the RoK, with the US responding that it would not consider negotiating about the withdrawal of its troops. At that point, the DPRK is said to have threatened to leave the discussions. Earlier, Pyongyang had presented Seoul with a letter proposing a dialogue between political parties from the two Koreas. At the four-party peace talks, the DPRK is said to have said that it was ready to resume the DPRK–RoK dialogue in the near future. In late March, rumours circulated that the DPRK's position at the talks might have been connected with internal problems in Pyongyang.

A week before the start of the Geneva talks, Pyongyang announced that it had begun a "wartime mobilisation". The statement referred to the four-party peace talks as possibly "a smokescreen aimed at attacking us". Observers from China are said to have spotted no unusual

military activities. The South Korean Defence Ministry said that the "mobilisation" was part of normal annual military exercises, and that it was usually held when food reserves were low and there was danger of rioting. Some analysts in Seoul expressed the view that the move was an attempt to demonstrate military strength ahead of the four-party talks; others pointed to a possible connection between the exercises and reports of unrest in the DPRK.

The RoK has advised the Clinton Administration that it will not be able to pay its full share of the cost of the two 1000-MW light-water reactors which have been promised to the DPRK under the Agreed Framework. The current financial situation in the country is said to dim the outlook for early reunification of the two Koreas and industry appears to be less interested in the construction of a nuclear power station that will not benefit the South for a long time to come. At a meeting of the Korean Peninsula Energy Development Organization (KEDO) in January, the RoK said that as a result of the drop in value of the Korean currency (won) by over 50 per cent against the US dollar, it would have to cut its share in the project — which had been tentatively fixed at 70 per cent — by more than half. In a meeting of KEDO in early February, Seoul asked the US and Japan to assume a greater part of the cost of early construction of the reactors but no agreement has been reported and the issue was put over to a meeting on 19 March; no information is available on the results. Earlier, a spokesman for Japan's Ministry of Foreign Affairs had warned that Japan would not assume the RoK's share of the project; in a KEDO executive meeting held last December, Japan had pledged to make a lump sum payment of US \$1 billion. So far, the US Administration, which had only sought a 1998 budgetary allocation of \$35 million for oil for the DPRK, has taken the view that it would not assume any of South Korea's obligations; Washington is said to expect that the present economic emergency in the South will be over by the time the project nears completion (an assumption that is questioned by financial analysts) and the full contribution by the RoK will merely be delayed until then. A spokesman for the State Department has said that reports that the RoK is unable to pay its share are incorrect, that Seoul has the necessary funds for the first year of the project and that the second year's expenses are relatively low, and manageable for both the RoK and for Japan. Apparently, Japan and South Korea share the view, however, that in the end, the US will have to assume a substantial portion of the total costs, although the Congress has repeatedly refused to consider assuming any of the direct construction costs and officials in Washington have denied a report from Seoul that the US would spend about \$300 to \$400 million for the purpose. At one point, the US Administration was said to be concerned that Seoul was slowing the project, which might give the North arguments to break its commitment to halt its 'nuclear-weapon programme'. However, Secretary of State Albright has stated that she had been told by RoK officials that their country would continue to pay for the reactors and was going to be able to fulfill its responsibilities.

In mid-February, however, the implementation of the Agreed Framework seemed to have suffered a serious setback, when an application by the US firm ABB Combustion Engineering for the export of two light-water reactors to the DPRK was withdrawn because it was realised that legally the US may not export nuclear technology to a country with which it does not have an agree-

ment for nuclear cooperation, and it cannot have such an agreement with the DPRK because that country is not considered to be an NPT party in good standing. Allegedly, at the time the Agreed Framework was concluded it was believed that the RoK would pay for the reactors, and that unification between the two Koreas was close and likely to have occurred by the time the reactors were built. Critics of the US Administration have announced that if the matter comes up for discussion and the export request is renewed they will try to promote a nation-wide debate. *Nucleonics Week* has reported that there is a view in the DPRK that the US must take charge of the light water reactor project. According to this view, KEDO is only an intermediate entity and the US is responsible for delivering the reactors. It was also said that the DPRK insisted that export licenses would have to be issued by the US and not by the RoK. The latter are said to have urged the US to find a shortcut around American export legislation but Washington sources are reported to deny that any such move is planned.

There are reports from Washington that the Congress is preparing to ask the Administration about the state of commitments by Japan, the RoK and the US to pay for the reactor project. There is also talk of an impending request by the Senate Governmental Affairs Committee for a legal review by the Congressional Research Service. The intention appears to be to prevent US funding of any of the reactor construction. With Japan indicating that it might be willing to pay a greater share in the project if the RoK is unable to pay its full portion, the question is what will happen if the US Congress prevents the Administration from contributing. Some critics reportedly seek to have the light-water reactors replaced by non-nuclear generating equipment — an option rejected by the DPRK when the Agreed Framework was discussed.

Meanwhile, to meet the requirements of the pertinent appropriations act, President Clinton has certified that parties to the Agreed Framework between the DPRK and the US are taking steps to ensure that progress is made on the implementation of the Joint Declaration on the Denuclearization of the Korean Peninsula; that the DPRK is complying with the other provisions of the Agreed Framework; that it is cooperating fully in the canning and safe storage of all spent fuel from its graphite-moderated nuclear reactors and that such canning and safe storage is scheduled to be completed by 1 April 1998; and that the DPRK has not significantly diverted assistance provided by the US for purposes for which it was not intended.

Questions have been raised, however, how it will be possible to make certain of all this, given the lack of any progress in the safeguards situation. The Agreed Framework provides that before an agreement can be completed for the supply of key nuclear components, the DPRK must satisfy the IAEA that all its nuclear materials are under safeguards, and it is understood that before delivery of such components the DPRK is held to come into full compliance with its safeguards agreement. Discussions between Agency safeguards officials and the DPRK, which have been held every few months during the last four years, have not yet yielded any progress. As four years have passed since the large graphite reactor was defuelled, the Agency is said to be unable to satisfy itself of the nuclear material inventory by conventional safeguards methods of analysis. Reportedly, the IAEA earlier rejected for technical reasons a US proposal to es-

time the neutron flux in the reactor on the basis of analyses of the graphite from the reactor core, and so calculate plutonium output. This approach might not be affected by the time elapsed. However, to make it meaningful, complete operating records would be needed. In March, a DPRK official told *Nucleonics Week* that his country was not obliged to provide the IAEA with any operating data from its graphite reactor or spent fuel reprocessing programme, and would not do so. The situation is further complicated by the fact that the DPRK has refused to help the IAEA determine where the fuel rods discharged from the reactor had been positioned in the core, so that it is impossible to be confident whether all the spent fuel has been accounted for. Failure by the IAEA to reconstruct the history of Pyongyang's nuclear programme and assure continuity of safeguards would cast doubt on the feasibility of the implementation of the Agreed Framework. There are suggestions that it would in any case take five to seven years to meet the verification demands, even if the IAEA could find a way to account for all the nuclear material in the DPRK; this, it is said, might postpone completion of the first light-water reactor at least to the year 2008.

At a meeting in Washington in late February, the Director General of the IAEA, Mohamed ElBaradei, said that the IAEA was confident a freeze was in place in the DPRK, and that the organisation has three inspectors full-time at the Yongbyon complex, where they have supervised the canning of fuel rods from the DPRK's 25-MW research reactor. He acknowledged that Pyongyang had not made progress in complying with the complete safeguards agreement. The basis for ElBaradei's confidence has been questioned by western officials and experts. Intelligence information about the DPRK is said to be scarce and sometimes faulty. Thus, the capabilities of the refuelling machine at the Yongbyon graphite reactor had been "crucially underestimated" by the CIA so that the amount of weapons-grade plutonium which could have been unloaded may have been assessed too low. Some experts estimate that the DPRK could have hidden as much as eight to ten kg of plutonium, i.e., more than enough for one nuclear weapon. There seems to be information that some plutonium separated in hot cells was converted into metal, suggesting that the DPRK had, and may still have, a weapons research and development programme. American intelligence sources also believe that the DPRK has hidden weaponisation facilities, had previously tried to test equipment to be used in a nuclear explosive, and has conducted high-explosive tests, presumably in some of the many underground military complexes in the country. American officials note that IAEA inspectors at Yongbyon would not be able to detect such activities.

The Atomic Energy Council of Taiwan has denied that it will cancel its plans to ship nuclear waste to the DPRK. Reportedly the realisation of the plan is delayed pending the submission and review of documentation of the Korean disposal site, construction of which has not yet been completed. Proposals for a suitable site within Taiwan are also said to be under consideration. There is still speculation, however, that the plan to dispose of nuclear waste in the DPRK may be abandoned. The DPRK is reported to have notified Taipower, the company that had agreed to ship the waste to the DPRK, that it will sue it in a Taiwan court if the shipment does not take place.

(**Central News Agency [Taipei]**, 13/12/97, in **BBC Monitoring Summary of World Broadcasts**, 16/12/97; **Nucleonics Week**, 1/1, 8/1, 12/2; 19/2, 26/2, 5/3, 26/3; **Yonhap News Agency**, 3/1, in **BBC Monitoring Summary of World Broadcasts**, 5/1; **Reuters**, 6/1, 24/2, 27/2, 2/3, 13/3, 16/3, 18/3, 21/3, 23/3; **USIA Transcript**, 6/1, 3/2, 5/2, 10/2; **NucNet News**, 7/1; **Times [London]**, 7/1; **International Herald Tribune**, 9/1; **New China News Agency**, 21/1; Letter to the editor of the **Washington Post**, 26/1; **Korea Times**, 3/2, 32/3; **Kyungghyang Shinmun**, 4/2; **New York Times**, 5/2, 1/3, 9/3, 21/3, 22/3; **Associated Press**, 9/2, 11/2, 25/2, 6/3, 13/3, 15/3, 18/3, 21/3; **CRS Issue Brief: North Korea's Nuclear Weapons Programme**, 9/2; **Indonesian Observer**, 20/2; **NuclearFuel**, 23/2; **United Press International**, 2/3, 9/3; **Dow Jones Newswires**, 6/3; **Wall Street Journal**, 16/3; **Nikkei Shimbun**, 19/3; **Yonhap News**, 19/3; **Sankei Shimbun**, 27/3. See also **Newsbrief** no. 40, pages 9 and 10.)

- In **India**, the Hindu nationalist Bharatiya Janata Party (BJP), which emerged from the recent national elections as the party with the greatest number of seats in Parliament, but which is 100 seats short of a majority, has become the dominant element in a government based on a coalition with 20 regional parties. The BJP had previously published a manifesto which includes a call for the country to publicly opt for nuclear-weapon status. On 18 March, the new government issued a 'National Agenda for Governance' where the commitment was made to review India's armed forces, as part of which the government would reevaluate India's nuclear arms policy "and exercise the option to induct nuclear weapons". On 28 March the new coalition government won its first parliamentary vote of confidence, by 274 votes to 261 which, as observers note, will give it adequate backing to adopt a nuclear stance — a move expected to receive wide domestic support. Commentators also point out that neither the BJP manifesto nor the 'National Agenda' mention the conduct of nuclear tests, allegedly to avoid the imposition of US sanctions, and that it is as yet unclear what the government intends to do and when it plans to do it. (**Reuters**, 11/12/97, 18/3; **International Herald Tribune**, 12/12/97; **Financial Times**, 12/12/97; **Economist**, 7/2, 28/3; **New York Times**, 13/3, 16/3, 19/3, 29/3)
- There has been an allegation in the British press that **Iran's** supposed efforts to develop an indigenous nuclear weapons capability is proceeding with the involvement of the country's military, its Ministry of Defense and its Atomic Energy Organization. The senior religious leadership, including Ayatollah Khamenei, is understood to support the effort; the weapons programme is said not to be under the control of President Sayed Mohamad Khatami. According to these reports, Iran has been conducting a large-scale purchasing operation to obtain "an array of weapons of mass destruction". An investigation by UK customs and intelligence services is reported to have revealed that the British part of the purchasing network was run by an Iranian-born businessman living in the **United Kingdom**, and that there had been plans to purchase material for the production of missile casings and centrifuges. At the same time, the UK government is said to be trying to bridge the gap between the approaches to Iran by the US and by the European Union (of which the UK currently holds the presidency), in hopes of

liberalising the former's treatment of Iran while seeking to prevent that country from acquiring weapons of mass destruction.

Israeli sources claim that Iran is only two years away from acquiring a nuclear weapon capacity.

In early February, US authorities announced that they had stopped the provision of nuclear technology and fuel to **Ukraine** until that country cancelled its plans to provide Iran with turbines for the Bushehr nuclear power plant. On 6 March, during a visit to Kiev by US Secretary of State Madeleine Albright, the two countries initialled an accord that will prevent the export of the turbines from taking place. This has cleared the way for approval of a US-Ukraine agreement for peaceful cooperation. American officials are understood to have said that they will help the Ukrainian company whose export plans were thwarted find similar business in the West. A spokesman for the Atomic Energy Ministry of the **Russian Federation** has said that Russia will now build the turbines itself, at a plant near St. Petersburg, but US experts say that this factory will first have to be retooled. The possibility of nuclear cooperation between Ukraine and the US is understood to be particularly relevant as it would enable American firms to bid on the completion of the VVER-1000 power reactors of Soviet design, at Khmel'nitski-2 and Rovno-4, which would serve to replace the units of the Chernobyl power station that are still operable and are to be shut down shortly.

The Russian Federation has issued regulations banning the provision of materials and technical services to foreign programmes aimed at producing missiles or nuclear, chemical or biological warheads. The directive issued by then-Prime Minister Chernomyrdin is said to have arisen from recent talks between him and US Vice President Gore and to have been devised with special reference to Iran. Reportedly, Washington understood the measure as an unambiguous commitment not to export nuclear items to Iran. However, Moscow has since made it known that it plans to expedite the completion of Bushehr and that eventually it aims to provide Iran with two further, 640-MW power reactors of a type still under development; agreement in principle is reported to have been reached between Iran and Russia for the supply of these units once Bushehr has been completed. While Washington is said to be concerned in the first place about the possible export to Iran of uranium enrichment and plutonium separation technology, it is also opposed to the provision of power reactors, as they would presumably enable Iranian technicians to acquire expertise applicable in a nuclear-weapons programme.

In February, there was a report in the German daily newspaper, *Frankfurter Allgemeine Zeitung* that representatives of Russia's Ministry of Atomic Affairs (Minatom) were talking with Iran about the possible supply of a 40-MW research reactor. The report was said to have been confirmed by the IAEA. The article also mentioned an Israeli allegation that Teheran was trying to buy heavy-water in Moscow; this the IAEA saw as speculation.

There is also still concern in Washington about assistance Russia is said to be giving Iran in the development of missiles. Allegedly, the Russian Federal Security Service has recruited scientists to train Iranian technicians in missile construction. According to reports in the US press,

the Russian experts were permitted to travel to Iran notwithstanding existing restrictions on the travel of persons possessing such specialised knowledge. Moscow has denied official knowledge of these arrangements which it says are made on a "free-lance" basis. Iran is thought to be working on a new missile, the Shahab-3, which is said to be capable of carrying a one-ton warhead over a distance of about 850 miles. This missile is believed in Washington to be based largely on the Nodong missile of the DPRK, but there also appears to be an increasing flow of missile technology from Russia. In February, Special US Envoy Frank G. Wisner, Jr. was said to have obtained concrete promises from Moscow to stop Russian companies and scientists from assisting Iran's ballistic missile programme. More recently Robert Gallucci, the US official mainly responsible for the conclusion of the 'Agreed Framework' with the DPRK, was named as Special Envoy to Russia on the missile technology issue.

The issue of Russian assistance to Iran in the development of ballistic missiles was also discussed at the meeting between Messrs. Chernomyrdin and Gore, in mid-March. Reportedly, in return for an undertaking to stop this assistance, the US offered Russia an opportunity to expand its satellite launching business beyond limits set in 1996 in an agreement also signed by Messrs Chernomyrdin and Gore. Apparently those limits were adopted for the protection of American companies from Russian competition but most of those companies have since teamed up with Russian institutions to do joint work in the field.

In the American trade press the possibility is raised that the departure of Russian Atomic Energy Minister Mikhailov from the number one position in Minatom (see page 19) is connected in the first place with his over-active efforts to sell nuclear technology to Iran. Apparently, the US Administration hopes that it will be possible to persuade his successor, Yevgeni Adamov — assuming that he will be part of the newly-formed Cabinet — to cease cooperation with Iran.

(*Sunday Times*, 21/12/97, 18/1; *Times* [London], 14/1; *Financial Times*, 15/1; *Nucleonics Week*, 15/1, 29/1, 12/3; *New York Times*, 16/1, 7/3, 9/3, 12/3; *Standard* [London], 18/1; *International Herald Tribune*, 26/1, 9/2, 7-8/3; *Washington Post*, 8/2, 23/3; *Miami Herald*, 9/2, in *UI News Briefing* 98.06; *Frankfurter Allgemeine Zeitung*, 23/2; *Reuters*, 4/3; *NuclearFuel*, 9/3; *Economist*, 14/3; *SpentFUEL*, 16/3)

- The International Atomic Energy Agency announced on 15 January that it had submitted a report to UN Secretary-General Kofi Annan about a visit to **Iraq** by a team of six technical specialists on 19–21 December 1997. The purpose of the visit had been "to seek clarification of a number of matters so as to provide further assurance that the technically coherent picture of Iraq's clandestine nuclear programme [was] comprehensive and to tailor IAEA on-going monitoring and verification (OMV) activities appropriately". The report said that the IAEA was currently focusing most of its resources on the implementation and strengthening of its OMV plan, but that "it [would] continue to exercise its right to investigate any aspect of Iraq's clandestine nuclear programme and [would] give high priority to the investigation of any indication of direct acquisition of weapon-usable nuclear material or nuclear weapon-related technology."

Subsequently, it was reported that the IAEA has more questions about Iraq's nuclear-weapons programme, specifically the stage it may have reached in the design of such weapons. Apparently the Agency has documentary evidence that in 1991, Iraq specified the precise dimensions of high-explosive shaped charges for a nuclear implosion bomb. This seems to have led the IAEA to believe that specifications must also have been arrived at with regard to the design of the weapons internals, implying that Iraq was farther along the way of completing a nuclear weapon than had been believed. Reportedly also, in late 1990, an exact mockup of a nuclear weapon had been produced; so far, it seems that the IAEA has not been able to locate this. Iraq has denied that it had made decisions regarding key weapon components and says it did not carry out practical experiments to support any particular design, but it is reported that evidence in the hands of the IAEA indicates otherwise. The situation is said to have led the United Nations Special Commission (UNSCOM) to believe that Iraq may only have been about a year away from producing a nuclear weapon and has persistently misinformed the IAEA about the progress it has made. The IAEA, on the other hand, is seen as taking the view that the existence of the model does not necessarily mean that Iraq could have produced a working weapon; weapons experts consulted by the Agency apparently still believe that Iraq was perhaps four years away from a full nuclear capability. At the same time, there are reports that Iraq is still trying to buy fissionable material abroad, in violation of UN sanctions. Available data seem to confirm the impression that so far these attempts, consisting largely of purchases of samples of assumed fissionable material from smugglers and confidence men, have not led to the acquisition of significant quantities of weapons-usable material; reportedly, however, UNSCOM and the IAEA are concerned that Iraq might eventually succeed in obtaining some such material abroad, possibly by theft. The IAEA has questioned Iraq on the role the country's intelligence agency, the Mukhabarat, has played in clandestine attempts to smuggle nuclear material and components, as it did in Iraq's pre-Gulf war nuclear procurement programme.

It has been reported in Germany that, Karl-Heinz Schaab, a former employee of MAN Technologien AG, one of the partner firms in the Urenco centrifuge enrichment enterprise, who was indicted in that country on charges of high treason for the sale to Iraq of classified design know-how, has accused senior management from MAN of having been behind the sale. While, reportedly, German investigators have not been able to ascertain the veracity of this claim, they are said to be assured that a number of former experts from MAN worked secretly for Iraq. Several of them have since gone to Brazil and may have supplied that country also with centrifuge information.

Reports from Vienna during the controversy about access to 'sensitive sites', in February, noted that, although that debate centered mainly upon possible sites of production and storage of chemical and biological weapons, it was also pertinent to the IAEA's efforts to clarify the status of Iraq's nuclear-weapons programme. In addition to the preoccupations referred to, the IAEA was said to be concerned that a quantity of uranium, enriched by the electromagnetic isotope separation (EMIS) process, appears still to be missing, as are presumed weapons components and the mockup mentioned before, and might have been hidden at one of the 'presidential sites'.

Recent developments in Iraq with regard to inspection access by the IAEA and by UNSCOM are expected to delay moves made mainly by France and Russia to terminate the Agency's investigations of that country's nuclear-weapons programme. At the beginning of the year, the issue of UN weapons inspections in Iraq once again became acute. While at the end of November 1997 the issues of access and of the composition of inspection teams seemed to have been largely settled, early in the second week of January Iraq refused admission to suspected weapons sites to a 16-member inspection team that had a high proportion of US and UK citizens and was led by a former US marine officer. For the fourth time in two months, the Security Council expressed its full support for UNSCOM and its Chairman, and found the failure of Iraq to provide UNSCOM with "full, unconditional and immediate access to all sites" unacceptable and "a clear violation of the relevant resolutions". It reiterated its demand "that Iraq cooperate fully and immediately and without conditions or restrictions with the Special Commission in accordance with the relevant resolutions, which constitute the governing standard of Iraqi compliance". The Council did not, however, give any indication of action that would be taken in the case of further non-compliance.

At that time, Ambassador Richard Butler, Executive Chairman of UNSCOM, was preparing to go to Baghdad for discussions; the UN Secretary-General called on Iraq not to take precipitous action. A few days later, having once again been refused access, the 16-member inspection team left the country; other UNSCOM teams were permitted to continue their work. Also in early February, UNSCOM obtained Iraq's concurrence with its plans to dig up some sites where chemical weapons and missile warheads were said to be buried.

On 17 January, the seventh anniversary of the start of the war in the Persian Gulf, President Saddam Hussein announced that all UN arms inspectors would be expelled six months from that date if by then the UN had not cleared Iraq of all accusations and the sanctions had not been lifted. UNSCOM declared this ultimatum to be unacceptable: inspections would have to continue until the UN was convinced that Iraq had stopped all its work on weapons of mass destruction and all equipment and materials had been disposed of. It said that this could be done more quickly if Iraq cooperated fully. At the same time, however, Ambassador Butler, by then in Baghdad, indicated he might be willing to reconsider the composition of inspection teams, although he stressed that the choice of team members was determined by expertise and experience rather than nationality. Further, upon the request of Iraq, it was agreed that technical evaluation teams would begin reviews of Iraqi records about various aspects of the country's weapons programmes. The first issues to be evaluated would be data on missile warheads built to deliver biological and chemical weapons; the next topic would be the VX nerve agent programme. As reported, several technical teams would be set up to evaluate documentary evidence which Iraq hoped would convince UNSCOM that it had stopped producing the items involved. Each evaluation team would be chaired by an UNSCOM specialist and would be composed of experts from the five permanent members of the Security Council and from Germany. The evaluations would start in February.

These arrangements did not suffice to solve the controversy. On 21 January, President Saddam Hussein called for a two-month freeze on all inspections and a moratorium on any talks about access to 'sensitive sites'. Ambassador Butler, still in Baghdad, said that UNSCOM was unable to agree to this, and repeated the requirement of unconditional access. The day after, he reported to the Security Council in New York, saying, reportedly, that he was not certain that it would ever be possible to verify that Iraq had stopped making weapons of mass destruction. During deliberations in the Council the French delegate, in his capacity of President of the Council, stated that Iraq's demands were unacceptable. Russia once again called for careful diplomacy, as did China, which suggested that more be done to take Iraq's interests into account.

In a meeting with the press after his return from Baghdad, Butler described the difficulties met by UNSCOM in the execution of its tasks in Iraq. He claimed that Iraq had never cooperated fully with the UN and its declarations had always been incomplete. He sketched ways in which Iraqi personnel obstructed inspections and either hid or destroyed data on its various weapon efforts. Butler confirmed earlier reports of evidence that Iraq had missiles with warheads loaded with biological warfare agents. These could be put on mobile launchers that would be driven away in case of air attack. He said that his team did not know how many missile systems Iraq still possessed.

The US had meanwhile been adding to the military forces it had deployed in the area ever since the crisis of November 1997 over UNSCOM inspection access, which had ostensibly been resolved by the intervention of Russian foreign minister Primakov. As the controversy with Iraq grew sharper, American armed forces began to prepare for a strike, intended to force Iraq to comply with its obligations under the various Security Council resolutions of 1991, and the US made clear that it would act if it considered that doing so would bring the desired result. In the course of the discussions in the Security Council, however, it became obvious that the majority of members were opposed to the use of force against Iraq. Of the permanent members (P-5), the UK and the US were prepared to use military force, but China, France and Russia stressed that only diplomacy would be able to solve the current controversy. In the Middle East, the League of Arab States came out strongly against military action. Several west-European states made the point that the wish to enforce the Security Council's resolutions on Iraq would not justify a military strike. Russia's President Yeltsin twice commented publicly that American military action might lead to a world war; a spokesman for the US State Department took this opportunity to assert that the US had "no plans or intentions of using nuclear weapons against Iraq". Russia, which had repeatedly demanded that UN inspections should be accelerated so that a long-term monitoring system could be put in place and the sanctions could be lifted, sent a special envoy to Baghdad. There were reports in Moscow that its diplomatic intervention produced Iraq's agreement to let UN teams inspect eight presidential sites that had previously been proscribed to them. This announcement was quickly contradicted by Iraqi officials but was shown to have been at least partially correct when on 11 February, Iraq's Deputy Prime Minister Tariq Aziz proposed opening eight "presidential sites" to international inspection for sixty

days, with the stipulation that the inspectors should report direct to the UN Secretary-General rather than to UNSCOM. The location of the sites was not immediately disclosed. There were said to be further conditions, in relation to the composition of the inspection teams, which would have to consist of diplomats chosen by the Security Council, rather than of UNSCOM personnel, and with regard to areas around the indicated buildings, which, it seems, were to be excluded from inspection. Ambassador Butler had told the Security Council on 5 February that proposals of this kind would not meet UNSCOM's requirements. Similar statements were later made in Washington, where Tariq Aziz's proposal was rejected by President Clinton, who saw it as undermining UNSCOM and discrediting the evidence it had discovered, and who repeated his demand for "free, unfettered and unconditional inspections", in line with his resolve, expressed in his State of the Union Address on 27 January, "to deny Iraq the capacity to use weapons of mass destruction." In the Security Council, the British Foreign Secretary stated that the offer fell "well short".

Some other governments, however, saw Iraq's suggestions as pointing to a possible way towards a non-violent solution; the Secretary-General urged all parties to the conflict to be flexible and called for a diplomatic solution that would not humiliate Saddam Hussein. France, which like Russia, had sent a special envoy to Baghdad, stressed repeatedly that a diplomatic solution was essential and said it would not participate in any military strike; Washington sources claimed, however, that if all efforts at a peaceful solution failed, France would not stand in the way of such action. The Secretary-General, meanwhile, despatched an expert team, including two surveyors, to Iraq, to map the so-called presidential sites and clear up the confusion that existed about their location, size and nature. He also stated that he would be willing to go to Baghdad to discuss a peaceful solution to the crisis, provided the Security Council as a whole would want him to do so, and that Iraq indicated that such a visit would be productive.

While, reportedly, neither the UK nor the US had as yet decided to seek Security Council support for a resolution that would reinforce earlier authority to take action against Iraq, the UK — whose Prime Minister during a visit to Washington in early February had reaffirmed his country's readiness to support the US, and which had meanwhile added an aircraft carrier to its naval force in the Persian Gulf — was reported to have begun consultations on a draft Security Council resolution that would find Iraq in breach of its obligations but which, by being tied to an expansion of the oil-for-food programme to \$5.2-billion worth of oil every six months, would give it a chance to back down gracefully. However, Iraq's foreign minister was reported to have expressed objections to several aspects of the proposal, including the allocation of additional funds to UN administrative costs and the earmarking of aid for specific elements of the population like the young and the needy, because, as he said, the distribution of the funds was Iraq's province.

The question of an increase in the amount of oil Iraq should be allowed periodically to export had already been the subject of sustained discussion. On 7 January, Iraq had been given the go-ahead for its plans to export the regular three-monthly \$1-billion worth of oil; in late January, France had called for a doubling of the quota. In

February, the UN Secretary-General asked the Security Council to raise the six-month limit of Iraqi oil sales to \$5.2 billion for the first six months of the current year, mostly to help meet acute humanitarian needs. A decision to this effect was adopted on 20 February in resolution 1153 (reproduced in section IV. **Documentation**) which among other things set some conditions, including that of UN observation of the distribution of goods purchased with the proceeds of oil sales. Apparently, Iraq was unable, at first, to profit fully from the new quota because many of its pumps, which had long been idle and had not been adequately maintained, malfunctioned. Baghdad used its need to purchase new equipment as an argument for the lifting of sanctions.

In mid-February, as the likelihood of a resort to force increased and a number of western states, including Australia, Canada and Italy, as well as the three candidates for membership in NATO: the Czech Republic, Hungary and Poland, rallied to the support of the US, and Germany offered support short of military participation, Washington continued to stress that it aimed above all at a diplomatic solution. At the same time, it pursued its preparations for what it called "substantial military action". Reportedly, the US Administration had adopted the view that, while express support from the Security Council for such action would be helpful, an endorsement by the Security Council was not essential because the resolutions so far adopted, seen in conjunction with the UN Charter, gave it the right to intervene militarily, without further Council approval. A large task force had been amassed, concentrated around three aircraft carriers, supported by a naval force equipped with cruise missiles and by land-based air forces stationed in Bahrain, Kuwait and Diego Garcia. Altogether, the US was said to have almost 400 warplanes ready to participate in a strike. One option apparently considered in both London and Washington was a sustained, three- or four-day air attack on suspected biological and chemical weapon sites.

In the first instance, however, the US Administration engaged in what it called a "final round of diplomacy"; military action would be put off as long as possible and was not expected until late February. Missions by a number of senior US officials, including the Secretaries of State and of Defense, to Middle East governments and other former partners in the Gulf War coalition, to gain backing for the possible use of force against Iraq, were said to obtain "measured support" from some states in the region, notably Bahrain and Oman, with only Kuwait explicitly endorsing a military action; all other countries in the region expressed their objection to such action, although the Gulf Cooperation Council, comprising Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates, expressed the view that the current crisis was a result of Iraq's "reluctance to cooperate". Among Arab states, Syria, Egypt and Morocco were particularly strong in their opposition. Given the apparent hesitation also on the part of Saudi Arabia, US authorities were said to have decided not to ask that country for the use of its air bases in the case of a conflict.

In a visit to Moscow, the US Secretary of Defense reportedly met with a cool reception; his Russian counterpart warned that a strike on Iraq could undercut relations between Moscow and Washington. Relations were also tested by allegations published in Washington, that in 1995 the Russian government had agreed to sell Iraq

prohibited equipment, including a large biological fermentation vessel: a dual-use installation, designed for the production of animal feed, which could also be utilised for the cultivation of biological warfare agents. Russia "decisively" denied the report as a crude invention. The US government first said it had no independent confirmation of the matter but the allegation was soon afterwards said to have been confirmed in Iraqi documents discovered by UNSCOM. At the same time, there were reports in a number of western newspapers that a part of the growth media and of the equipment used by Iraq in its production of biological and chemical warfare agents was imported from Europe and the US; a total of 1,360 kg of biological growth medium was said to have been obtained through the intermediary of UN bodies, including WHO and FAO. There were reports also that a number of the Iraqi scientists who had worked on the development of biological weapons had been trained in the UK.

The progress Iraq had made in the manufacture of chemical and biological weapons was described in well-documented reports in the western press. According to a UK government report submitted to Parliament, UNSCOM had determined that Iraq had produced 4,940 gallons (19,000 litres) of botulinum toxin, 2,184 gallons (8,400 litres) of anthrax, and 520 gallons (2,000 litres) of aflatoxin. These figures were, reportedly, only those to which Iraq had admitted; an American report spoke of the existence of even larger quantities of each of these agents. The British report further stated that 4,000 metric tons of chemical weapon precursors were not accounted for, and neither were 31,000 chemical-weapon munitions. UNSCOM had also found that Iraq had produced four metric tons of VX nerve agent, and had the capability of producing this substance in industrial quantities. The report said that 600 metric tons of VX precursors, sufficient to produce 200 metric tons of VX, were still unaccounted for — a quantity said to be enough to wipe out the world's population; that Scud-type missiles armed with chemical and biological agents might still be concealed; and that critical missile components, warheads and propellant were also not yet accounted for; neither were 17 metric tons of growth medium for the production of anthrax. In mid-February, the UK Ministry of Defence claimed that at the time of the Gulf War, Iraq may have had large stocks of a chemical substance hitherto not mentioned, and known as 'Agent 15'. The substance, which was not known to have been used, was described as causing disorientation, visual hallucinations, loss of coordination and stupor.

There were allegations also that Iraq had tested biological warfare agents on prisoners. According to UN sources, however, there was not enough evidence to substantiate these claims. Some media sources alleged that it was when UNSCOM inspectors were getting close to evidence of this nature that Iraq prevented the team in question from making further inspections. There were also reports that Libya was being helped by Iraqi scientists in the development of biological weapons. A dozen Iraqi scientists were said to have joined other Iraqi researchers who had been in Libya since 1991, where, reportedly, a biological warfare complex has been established in what is officially known as a medical facility. Reports in the international press further alleged that, to protect them from air attack, Iraq had moved some of its stocks of warfare agents abroad; supposedly, chemical agents were being stored in Sudan, biological weapons in

Libya, and highly enriched uranium in Algeria. Algeria subsequently issued a strong denial that any nuclear material from Iraq was stored on its soil.

Back in the US, the Congress supported the President in his preparations for the use of military force against Iraq, although, reportedly, there was disagreement between the parties as to what results such action should aim at. The Administration publicly down-played expectations and urged realism; the force would be used only to compel Iraq to allow "unfettered and unconditional access" by UN weapons inspectors to all suspect sites. Republican Congressional leaders, on the other hand, insisted that the action should be powerful enough to remove President Saddam Hussein, but reputedly President Clinton held that "the UN mandate" did not extend that far.

Public discussion in the US, meanwhile, revealed growing doubt about the advisability of the use of force, and even open opposition. There were warnings from the military that the available forces would not be sufficient to achieve the goal of substantially reducing or delaying Saddam Hussein's ability to develop and deliver weapons of mass destruction. Military analysts expressed the view that limiting the action to known and suspected weapon sites might make political sense and could reduce collateral damage but would leave the armed forces with a mission of marginal value, given the effort involved. While technical improvements introduced since the Gulf War, including a laser-guided "bunker-busting" gravity bomb developed recently, had improved the chances of hitting identified targets, the danger of misidentification remained and with it that of missing the goals aimed at, while increasing risks of damage to civilians. The American press also warned that even limited air strikes could cause heavy collateral damage, and there seemed to be increasing doubt among the US public, including prominent members of the clergy, about the morality of military action. Some experts in the field warned the US Administration that if any air strikes hit weapon storage or production facilities, they might cause the release of toxic substances, with unpredictable and possibly widespread effect; a spokesman for the US Defense Department told Reuters news agency that there was major concern over the possible spread of chemical or biological agents from bomb or missile attacks. In the meantime it was reported that US military personnel were being vaccinated against anthrax; however, following a finding by American pathologists that samples taken from the material that leaked from the Sverdlovsk research centre in 1979 showed the existence of at least four different strains of anthrax, doubts were raised about the efficacy of the available vaccine. On 23 March, the UK Prime Minister's office said that the country's air and sea ports had been put on alert to the threat of anthrax being smuggled into the country from Iraq, following a threat in an Iraqi paper that Britain would be flooded with the substance hidden in a range of consumer articles.

Throughout the second week of February, the Secretary-General continued to consult members of the Security Council in preparation for a possible mission to Baghdad. The first two of the technical evaluation teams of "qualified and objective" experts, including several from China and Russia, which Iraq had urged to be called in to examine its records, expecting that they would reach conclusions more favourable than UNSCOM had, came back with reports that were said to support UNSCOM's con-

tentions that Iraq had consistently tried to mislead it and had withheld information about past production of biological and chemical weapons. The chemical experts were reported to have confirmed the earlier finding that Iraq still had the know-how and the equipment, and possibly components, to manufacture as much as 200 tons of VX. The group that had looked into documentation on warheads was said to have found confused accounting and concluded that further verification was needed. The biological team was expected to submit its findings later. The technical survey team sent to map the 'presidential sites' also returned. Press reports claimed that it had found the area of those sites considerably smaller than expected and to be taken up to a large extent by guest houses.

All the while, reports from Washington claimed that the US was gearing up for four days of around-the-clock air strikes. At the same time senior members of the Administration were said to have increasing misgivings about the wisdom of military action, given the limited effect it was likely to achieve; the number of casualties it might cause — estimates of 1,500 dead were heard; the possibility that the conflict might spill over into a ground war in or near Kuwait; the adverse public opinion an air strike would engender both domestically and abroad; the harm it would do to future inspections; the expected loss of support for continuing sanctions against Iraq; and the costs, in which, reportedly, none of America's allies would be willing to share. As time passed, it was noted that the White House seemed to adopt ever more modest objectives. In November 1997, the President had demanded that UN inspectors should be able to "proceed with their work without interference, to find, destroy and prevent Iraq from rebuilding nuclear, chemical and biological weapons and the missiles to carry them". Apparently reappraising the relatively limited effects that might be expected from an air strike, the President said on 13 February that the US wanted to "significantly diminish the capacity of the Iraqis to reconstitute, to develop, to deploy their weapons of mass destruction and to threaten their neighbours." This last formulation was taken to imply the possibility of striking at conventional military targets; the President had not used it when he spoke at an earlier press conference. Around the time the UN Secretary-General was travelling to Baghdad, the US President stated that he wanted to "seriously diminish the threat posed by Iraq's weapons of mass destruction" and "seriously reduce his capacity to threaten his neighbours"; the media commented that, depending on the definition of "seriously", this was an objective that the US should have little trouble achieving. Questions were also raised in the US Congress about the exact objective the government had in mind, and the press reported on wide-spread criticism of the apparent inconsistency, also between civilian and military elements in the Administration.

By mid-February, mediation efforts by Arab states, France, Russia and Turkey had failed and it became increasingly clear that only the UN Secretary-General would be able to obtain a solution. Mr. Annan was said to have consulted delegations of the P-5 as well as the ten non-permanent members about a mission to make a final offer to Iraq and avert a military strike. Reportedly, there were discussions on a compromise plan that would include adding diplomats or outside scientific experts to UNSCOM teams inspecting so-called 'presidential sites'.

On 17 February, after extensive consultations, the P-5 were said to have collectively agreed on advice to be given to the Secretary-General on the arrangements that would be acceptable. American press reports at the time claimed that the US Administration had been actively involved in drafting the plan Mr. Annan was to offer to the Iraqi leadership. More recent reports point to Russia's foreign minister as its principal author, together with France. The P-5's advice was seen to leave Mr. Annan limited maneuverability, although there was said to be recognition that minor concessions might have to be made, for instance on special procedures under which diplomats would accompany inspectors at 'presidential sites'. The American UN delegate, Richardson, said the US would challenge any arrangement that did not allow UNSCOM inspectors to operate without hindrance, conditions or time limits, and that did not respect the integrity of the UNSCOM process. On 18 February, the Council President issued an oral statement endorsing the mission. The Secretary-General himself stressed that he had not asked for a mandate and was acting on the basis of his own authority.

On 19 February, Mr. Annan flew to Paris, reportedly to meet Iraq's foreign minister and get his assurance that Iraq would accept the outlines of a solution allowing unlimited inspection of 'presidential sites'. He also met with President Chirac and senior ministers, and received strong support for his mission. Press reports noted that it had been France in particular which had persuaded the other members of the P-5 to agree to Mr. Annan's proposals. Iraq, meanwhile, had sent the French government a list of 'presidential sites' that could be inspected without a time limit; the Secretary-General was heard to say that this gave him the feeling that Iraq was serious about finding a solution.

On 20 February, Secretary-General Kofi Annan, who had been preceded by a staff of 28 officials who made the preparations for his mission, was welcomed at Baghdad airport by Iraq's Deputy Prime Minister, Tariq Aziz, who wanted to meet with him immediately. Reportedly, it was obvious from the first that the question of time limits on inspections, on which Iraq insisted, would be a contentious point. Talks between the Secretary-General and Mr. Aziz went on that same evening. The only formal meeting between the full delegations was held in the morning of the 21st. Private negotiations resumed in the evening of that day and continued almost uninterrupted until early the next morning. Talks were resumed later on the 22nd, and dealt with all outstanding issues except that of a time limit on inspections of 'presidential sites'. That afternoon, the Secretary-General met with President Saddam Hussein. During that conversation, which was described as "tough, but also constructive", it appears that the outstanding issue of a time limit on inspections was resolved to the Secretary-General's satisfaction. According to the Secretary-General's spokesman, this left only "minor textual and drafting matters to clean up", which was done at a meeting that evening, at the end of which, the Iraqi news agency reported that an agreement had been struck; this was confirmed by the UN delegation. The full text of the agreement (formally called 'Memorandum of Understanding' and reproduced in section IV. **Documentation**) was not released until it could be submitted to the Security Council, but an outline emerged shortly after the meeting.

Also according to his spokesman, throughout the weekend the Secretary-General had been in touch with all five permanent members of the Security Council, in some cases with their heads of state. The Secretary-General had felt that he had their confidence and support for the deal, which he felt was clearly within the guidelines, however narrow they were, that the P-5 had given him. On his return to New York, the Secretary-General expressed confidence that the document would be acceptable to all 15 members of the Council, but it was noted at the time that although there was no legal need for Security Council approval, this was desirable in political terms.

Official reactions around the world were generally positive. France hailed the agreement as complying fully with UN resolutions and abiding with the P-5's recommendations and the foreign ministers of the other members of the European Union, meeting in Brussels, expressed their support. Britain said it was encouraged but wanted more details. Russia expressed much satisfaction; China called the agreement 'a balanced and comprehensive document'; Egypt and other Arab states were quick to express their joy at the outcome.

In Washington, President Clinton who, in a telephone conversation with France's President Chirac was said to have agreed that the accord was "all right", stated that he would give it a chance to work but stressed he would not pull US military forces out of the region of the Persian Gulf and that any failure by Iraq to comply and to allow UNSCOM the necessary access would have "serious consequences". Reports from the Pentagon indicated that the military build-up was continuing.

American press media were quick to point to what they saw as potential problems in the Memorandum of Understanding, asserting that this only appeared to settle the matter of the eight 'presidential sites' but did not talk about the issue of other presidential properties. The spokesman had explained that a regime for such other sites had been negotiated previously by UNSCOM's former Chairman, Rolf Ekéus, and that following the present agreement, inspection was possible of all sites in Iraq. The US press also drew attention to the provision that senior diplomats appointed by the Secretary-General would accompany UNSCOM personnel on inspections at the eight 'presidential sites', and raised the question of the authority of UNSCOM's Executive Chairman as against that of the Commissioner who would head these inspections. In this context it was explained that it was Mr. Butler who would decide when any of these sites would have to be inspected; he remained in charge.

Skepticism was expressed by republican members of the US Congress; Senate majority leader Lott accused the Administration of capitulating to President Saddam Hussein and abdicating its foreign policy to the UN Secretary-General whom, in a later statement, he strongly criticised; he urged President Clinton to reject the deal. The Chairman of the Senate Foreign Relations Committee, Helms, made similar comments. Republican members of both houses, however, joined most Democrats in expressing the wish to give the agreement a chance to work, notwithstanding the doubts of many about some of its provisions; there were calls from both parties for a prompt test of Iraq's promise to allow unconditional inspection access.

In a press conference on his return Secretary-General Kofi Annan had expressed his confidence that the agreement would be adhered to; it had, he said, been negotiated with President Saddam Hussein himself who "wants cooperation and wants it done". He assured his audience that after details had been worked out and explanations made he would have the Security Council's unanimous and strong support. He used the occasion to thank the US and its allies, whose military force in the Persian Gulf region had provided the muscle behind the negotiations.

On 26 February, the Secretary-General announced that he had appointed Jayantha Dhanapala, his Under-Secretary-General for Disarmament Affairs, as the Commissioner heading the 'special group' that would be set up in consultation with the Executive Chairman of UNSCOM and the Director General of the IAEA, according to 'special procedures' agreed on for inspections (referred to as 'tasks mandated') at the eight 'presidential sites' in Iraq, and which would comprise senior diplomats to be appointed by the Secretary-General. Richard Butler, UNSCOM's Executive Chairman, gave a news briefing, ostensibly directed at critics of the agreement, in which he addressed "misunderstandings and misrepresentations" and denied that the special procedures would undermine his authority. He expressed delight at Mr. Dhanapala's appointment, a longtime friend, who, although senior to him in rank, would report to him and through him to the Secretary-General.

These comments, however, did not suffice to allay misgivings in Washington. The Administration was said to be concerned that the agreement deviated in some respects from the 'guidelines' set for Mr. Annan's mission by the P-5. In particular, there appeared to be doubt about the scope of the inspections to be made by the special group, which the P-5 were said to have wanted limited to presidential residences and not taking in outlying buildings; those were to be left to UNSCOM to inspect. Reportedly, however, this was done as a result of findings by the surveying team sent out earlier — which within its extremely short timetable, through helicopter overflights, aerial and ground photographs, and visits, was able to define the perimeters of all eight sites, and determine the approximate number, size, character and purpose of the structures within each site — that contrary to previous belief, the sites had multiple dwellings within their walls, not one main building. In most of the sites it was not possible to single out one structure as the principal building. The reason why in its earlier assessment UNSCOM had over-estimated the area covered by the presidential sites is now found to have been due to their practise of drawing the perimeters for those sites on the basis of the spots where they had been stopped — often, in fact, far outside the actual walls. Another point of criticism was said to be the composition of the special group, which was to have been under Butler's operational control; instead, the accord had given the Secretary-General the authority to select and appoint its chairman and members.

In the US, President Clinton warned Iraq that if it reneged on the accord, America would be justified in responding at a time and place and in a manner of its own choosing. The Administration made it clear that US forces would stay in the Persian Gulf for two or three more months. Other members of the P-5, however, were understood to reject the view that the US would be automatically

authorised to take military action in the case of non-compliance by Iraq with the agreement. When, on 2 March, the Security Council discussed the text of a resolution endorsing the agreement, a majority of the members, including China, France and Russia, opposed the inclusion of a clause to that effect; the US was said to have found it difficult even to get agreement for the inclusion in the text of a reference to "severest consequences" in case of a violation. In the event the Security Council adopted a resolution 1154 (1998) — reproduced in section IV. **Documentation** — in which it commended the initiative by the Secretary-General and endorsed the memorandum of understanding; requested the Secretary-General to report as soon as possible on the "finalization of procedures for Presidential sites"; stressed that "compliance by Iraq with its obligations, repeated again in the memorandum of understanding, to accord immediate, unconditional and unrestricted access to the Special Commission and the IAEA ... is necessary for the implementation of resolution 687 (1991), but that any violation would have severest consequences for Iraq". Referring to the lifting of sanctions imposed in 1991, the resolution said that Iraq's failure so far to comply with its obligations had delayed the moment when the Council could do so.

US officials were quick to say that "severest consequences" referred to military action; the President stated that the resolution provided authority to act in case of non-compliance. Again, this view was disputed by members of the Security Council, some of whom said they had supported the resolution for the very reason that it did not call for automatic military action. During a subsequent visit to Washington of the Secretary-General, President Clinton was said to have repeated the view that the resolution gave the US the authority "to take whatever actions are necessary", but also to have assured Mr. Annan that the US would consult the Security Council before taking any military action against Iraq.

On 9 March, detailed procedures for the inspection of 'presidential sites' in Iraq, that had been drawn up by UNSCOM Chairman Butler, Under-Secretary-General Dhanapala and Mr. Gary Dillon of the IAEA safeguards department — which made available ten staff members to form part of the special team — were presented to the Security Council. That day, Ambassador Dhanapala left for Baghdad to prepare for the operation, which was expected to begin two weeks later. The Secretary-General announced the appointment of Ambassador Prakash Shah of India as his political representative in Baghdad.

Almost from the start, US media reported about problems in the implementation of the agreement. Iraq's permanent representative at the UN in New York asserted on American television that the teams that would inspect the 'presidential sites' would be subordinate to the diplomats appointed by the Secretary-General. This claim was answered, also on CNN, by Richard Butler, who reconfirmed that it was he who had over-all responsibility. Further, Iraq's foreign minister was said to have asked the Secretary-General to have UNSCOM inspectors disciplined for talking to the press in breach of a promise not to do so — a promise UN officials denied had ever been made. Also, Russia asked the Secretary-General to appoint one of its nationals as co-deputy chairman of UNSCOM, alongside the present deputy chairman, Charles Duelfer, a US citizen. The US expressed "serious reservations" about this move.

Inspections, however, appeared to be going well. On 6 March, a team of 50 inspectors, of 11 nationalities and headed by the same ex-marine officer who had been refused access to Iraqi installations before, arrived in Baghdad and resumed their inspections. An allegation in an Iraqi newspaper that Mr. Annan had not been consulted on the dispatch of the team was categorically denied by the latter's spokesman. At the end of the first day of the team's presence they were reported to have made inspections at several sites, including military barracks, intelligence establishments and government ministries, labelled by Iraq as 'sensitive', without meeting any impediments. Some days later, UNSCOM's Executive Chairman reported that there seemed to be a new spirit of cooperation and that inspectors had been given unprecedented access, in terms of places, numbers of inspectors and the way in which those places were entered. He announced that inspections at the eight 'presidential sites' would start before the end of March; since the sites included a total of 1,068 buildings and were of different sizes and dispersed around the country, he declined to speculate when the work would be completed.

On 19 March, it was announced in New York that the Under-Secretary-General Dhanapala, the Commissioner of the special group of diplomats who would accompany the UNSCOM and IAEA inspectors to eight 'presidential sites' in Iraq, had identified the 20 senior diplomats concerned; 18 of them arrived in Baghdad on 24 March while two were resident there. Mr. Butler, who had returned to Baghdad on 21 March, announced that it was the plan first to have 'rapid-fire' inspections of the 'presidential sites' to determine which should be the target of subsequent short-notice spot-inspections. The inspectors would have with them the reports of the technical evaluation teams that had newly concluded how far Iraq still was from fully accounting for its biological and chemical weapons and its special warheads. UNSCOM's Deputy Executive Chairman Charles Duelfer was to lead the inspections, which would be carried out by 58 inspectors and were expected to take about two weeks.

During his stay in Baghdad in March, Ambassador Butler had extensive discussions with Iraqi authorities on UNSCOM's future activities, reportedly with good results. A UN source spoke of a new spirit of cooperation being reflected in the talks; the same impression was reported from participants in the inspections of presidential sites. Mr. Butler was said to have agreed that new technical evaluation meetings would be held in the areas of chemical weapons and missiles. Meanwhile, however, UN sources spoke of concern that, given Baghdad's apparent assumption that "several months of good behavior will lead to the lifting of the sanctions", the realisation that the inspection of the disputed sites would not be a mere one-step affair — on which Iraq had initially insisted — but might be the start of a further lengthy verification process, could lead to fresh controversy. So far, however, there has been no evidence to bear out this apprehension.

The first inspection of a 'presidential site' began on 26 March and took place at President Saddam's Radwaniya Palace. That day all went well. On the second day some disagreement was reported about the perimeters of the objects to be inspected, but this issue appears to have been quickly settled. As of the day of publication of this issue of the *Newsbrief*, initial inspections had been made

at six of the eight 'presidential sites'; a palace in Basra was visited twice. The possibility of subsequent visits remains.

A potential setback in the investigation of Baghdad's biological weapons programme may have been caused by the arrest, reportedly in early March, of Dr. Nassir al-Hindawi, a prominent biochemist. Dr. Hindawi is said to have been arrested when he was trying to leave the country illegally on a forged passport, presumably on his way to an unidentified "rogue" nation; Iraqi officials claim that they stopped him to prevent the proliferation of weapons of mass destruction.

In the US Congress meanwhile, the Senate, with 96 votes and none against, adopted a resolution urging the creation of a UN tribunal to try President Saddam Hussein as a war criminal; in November 1997 the House of Representatives adopted a similar resolution with 396 votes against two. Iraq's parliament was quick to respond by making the same demand with respect to President Clinton and Vice-President Gore. There were reports from Washington that the CIA had drawn up plans for sabotage and subversion in Iraq, with a view to unseating its President. Reportedly, the plan still needed President Clinton's approval, which was not thought to be assured.

In response to speculations in the international press about Israel's likely reaction to any chemical and biological attack by Iraq, Israeli authorities have stressed that their country was "not part of the confrontation" but repeated the statement often made before that if a country fires missiles at Israel its response will be "100 times stronger". This wording has been taken by the media as implying the possibility of the use of nuclear means, in particular 'neutron weapons'. Israeli political analysts have come to the same conclusion. There had already been suggestions in Israel to publicly acknowledge the existence of its nuclear arsenal. Reportedly, however, for the present the country's authorities are adhering to the doctrine of nuclear ambiguity even though, according to commentators, foreign press reports have "pushed Israel 80 per cent down the road from deliberate ambiguity to overt deterrence".

(*Jane's Foreign Report*, 13/11/97; *Observer*, 16/11/97, 25/1; *Sunday Telegraph*, 16/11/97, 15/2; *International Herald Tribune*, 16-17/12/97, 24/1, 31/1-1/2, 13-17/2, 24-27/2, 2/3, 4/3, 11/3; *Times* [London], 22/12/97, 6/1, 9/1, 14/1, 15/1, 17/1, 27-30/1, 4/2; *New York Times*, 4/1, 7/1, 9/1, 12-31/1, 1-27/2, 1-5/3, 7/3, 12-14/3, 22/3, 24-28/3; *Daily Telegraph*, 15/1, 31/1, 16/2; *Financial Times*, 15/1, 19/1, 21/1, 11/3; *IAEA Press Release* PR 98/2, 15/1; *Economist*, 17/1, 7/2, 14/2, 28/2; *Sunday Times*, 18/1, 15/2; *Guardian*, 24/1, 31/1, 3/2, 17/2; *Times* [London], 24/1; *Salzburger Nachrichten*, 28/1, 16/2; *Reuters*, 29/1, 1/2, 10/2, 17/2, 18/2, 21/2; *UK Government Press Release*, 4/2; *NuclearFuel*, 9/2, 23/2; *Nucleonics Week*, 12/2, 19/2, 26/2; *US News & World Report*, 14/2; *Daily Telegraph* [Australia], 16/2; *Frankfurter Allgemeine Zeitung*, 19/2; *Indonesian Observer*, 19/2, 20/2; *Jakarta Post*, 19/2; *Agence France Presse*, 21/2, 22/2, 24/2; *Nation* [Bangkok], 21/2; *Figaro*, 26/2; *CRS Issue Brief Iraq-U.S. Confrontation 1997-1998*, 27/2; *Washington Post National Weekly Edition*, 28/2, 9/3; *Independent*, 4/3; *Washington Post*, 8/3; *Ha'aretz* [Jerusalem], 13/3; *Associated Press*, 26/3, 31/3; *UN Press Releases*

SG/SM/6436, 12/1, SC/6468, 14/1, SG/SM/6470, 24/2; UN Document S/PRST/1998/1, 14/1; SG's Spokesman Daily Press Briefing, 24/2, 6/3, 24/3; Security Council Documents S/1998/166 and /Add.1, 27/2. See also Newsbrief no. 40, pages 11-15.)

- Reacting to the formation in India of a government led by the Hindu nationalist BJP, Pakistan's foreign minister is reported to have said that if the new Indian government pursues aggressive designs and its leaders continue to behave as they did during the election campaign, Pakistan would have to reconsider its nuclear policy. Following the publication of the National Agenda by the new government of India, a similar statement was made by a foreign ministry spokesman in Islamabad, who called the situation "fearsome" and "dealing a grievous blow to global and regional efforts at nuclear non-proliferation". The former head of the Atomic Energy Commission of Pakistan, Munir Ahmed Khan, has alleged in a newspaper interview of 14 March that the country's claims of nuclear capabilities are "groundless". He is quoted as calling Pakistan's capability "real but limited". (Reuters, 19/3; Nucleonics Week, 19/3; Washington Post, 20/3; Economist, 28/3)
- Ukraine's President Kuchma has said that his country would be prepared to get rid of the old strategic bombers stationed there, but that it will insist on keeping all its medium-range ballistic missiles. (International Herald Tribune, 4/3)

i. Nuclear Material Trafficking and Physical Security

- In Lithuania, police have arrested two men who were offering 10 kg radioactive material for sale, alleged to be uranium (there was no indication of the enrichment level). (Reuters, 15/1)
- According to an article in the American trade press, no cases of illicit trafficking in plutonium or high-enriched uranium were reported in 1997. On the other hand, a British newspaper article speaks of a sting operation in Romania that involved 380 grammes of uranium (there was no indication of the enrichment level) and of ten containers of radioactive material that supposedly arrived in Southern Italy early in the year on an Albanian naval vessel. (Independent, 25/11/97; Nucleonics Week, 8/1)
- In the United States, DoE's Office of Non-Proliferation and National Security has released its Material Protection Control & Accounting Strategic Plan for 1998, which describes its efforts to work with Russia, other former Soviet republics and the Baltic states to improve the security of the roughly 650 MT of weapons-usable material in forms other than assembled nuclear weapons, i.e., metals, oxides, solutions and scrap. The Director of the Office, Rose Gottemoeller, has announced that the plan sets the strategies and schedules needed to complete the goals of the programme by the end of 2002. By then, expenditures would have totalled \$800 million. (Office of Non-Proliferation and Security, DoE, 23/1; USIA: DoE, 25/2)
- At the United Nations in New York an Ad Hoc Committee established by the General Assembly met from 17 to 27 February to consider a Russian draft for a Convention on the Suppression of Acts of Nuclear Terrorism. Ar-

guments that have prompted the call for an instrument of this nature are said to include the consideration that the scope of application of the 1980 Convention on the Physical Protection of Nuclear Material is limited to nuclear material in peaceful uses and does not cover nuclear material of a military nature; that the Convention does not distinguish acts of nuclear terrorism from other criminal acts involving nuclear material; and that it is necessary to deal with a wider range of measures for combatting nuclear terrorism than are covered in that Convention. There appears to be support for the idea of drawing up a new international convention for this purpose; even though the probability of nuclear terrorism is low, the consequences would be extremely serious, not only of acts of terrorism but also of threats. Among issues said to have been under discussion in particular were the questions of avoiding overlap with existing international instruments and of the role of other international bodies, in particular the IAEA. The Ad Hoc Committee is an open-ended body set up pursuant to General Assembly resolution 51/210 of 17 December 1996. (General Assembly Document A/AC.252/L3, 28/1/1997; Jane's Defence Weekly, 11/2; direct information)

j. Environmental Issues

- On 10 March, a British ship, the *Pacific Swan*, carrying vitrified high-level reprocessing waste (HLW) from France, arrived at the Japanese port of Mutsu-Ogawara. The governor of Aomori prefecture, in which that port is situated, initially refused it permission to dock pending a promise from the Prime Minister that a permanent storage facility for high-level waste will be built elsewhere. The ship was later allowed to dock so that its crew need not suffer the worsening weather and rough seas, but it was not allowed to unload its cargo until Japan's Prime Minister offered assurances that the waste would eventually be moved from the village of Rokkasho. The way the arrangement was made is considered a risky precedent for possible similar moves on the part of other provincial governors.

The *Pacific Swan* was carrying a load amounting to 30 MT of HLW, contained in 60 canisters. It had left Cherbourg harbour on 20 January, sailing westward through the Panama Canal. The anti-nuclear activist organisation Greenpeace and Washington's Nuclear Control Institute (NCI) had earlier raised strong public objections against the shipment. In a press conference held on 13 January, one week before the *Pacific Swan*'s departure, speakers for both institutions alleged that the shipment would pose serious security and environmental risks. They claimed to have obtained copies of a "secret diplomatic government cable" (presumably from France) which indicated the *Pacific Swan*'s route, as subsequently confirmed. As it prepared to transit the Panama Canal, protesters from Greenpeace boarded the ship to draw attention to its supposedly dangerous cargo, attaching a banner to its side saying 'Stop Plutonium'. The Panama Canal authorities are reported to have down-played the risk of the shipment, saying that much more dangerous cargo is routinely shipped through the Canal and that rigorous safety regulations, specifically the International Maritime Organization code for the Safe Shipping of Nuclear Fuel Waste, Plutonium, and High-Level Radioactive Waste, were in place for nuclear shipments. A list of dangerous cargo is in use by the Panama Canal Commission in which plutonium in radioactive waste is number seven,

with flammable liquids such as liquified petroleum gas being number three. A safety official of the Commission is quoted as saying that "the greatest threat to the *Pacific Swan* transit [was] Greenpeace itself".

A number of interest groups based in Puerto Rico had previously filed a lawsuit seeking to prohibit the transit of the *Pacific Swan* through the Panama Canal or the Mona Passage of Puerto Rico, on the basis of supposed violations of US laws. Reportedly the suit was helped by friends-of-the-court briefs by Greenpeace and NCI. The US District Court for Puerto Rico failed to rule on the suit before the shipment entered the Canal, thus making it moot, but it has called for a briefing on future plans for nuclear shipments.

The actions by Greenpeace and NCI, specifically the announcement of details of the route long before the ship's departure, and the total number of radioactive waste shipments expected over the next decade, are denounced by observers as prone to draw the attention of potential terrorists to supposedly attractive targets. Critics wonder about the motives of these bodies in publicising these events without regard to possible consequences.

At a meeting held on 4 February, the Council of OPANAL adopted a "Joint Declaration Concerning Radioactive Waste Transportation", regarding the passage through the Zone of Application of the Treaty of Tlatelolco (Caribbean Sea and Panama Canal) of the shipment under reference. The text is reproduced below in section IV. **Documentation.**

(**Reuters**, 12/1, 30/1, 6/2, in **UI News Briefing**, 98.06; **Associated Press**, 13/1, 12/3, 13/3; **Nucleonics Week**, 15/1, 22/1, 12/3, 19/3; **SpentFUEL**, 19/1, 26/1, 16/2; **BNFL/Cogema**, 19/1; **Guardian**, 22/1; **NuclearFuel**, 26/1; **OPANAL Document S/Inf. 715**, 5/2; **Journal of Commerce**, 17/2; **BNFL/Cogema**, 24/2 in **UI News Briefing**, 98.09; **Reuters**, 10/3)

- Joining **Norway** and **Sweden** in their nuclear waste clean-up activities in the Murmansk region in **Russia**, the **United States** has promised a contribution of \$500,000 towards transportation of spent fuel from the Russian submarine *Lepse*. (**Nucleonics Week**, 22/1)
- In **Russia**, military journalist and former naval officer Grigory Pasko, who was arrested in November for publishing articles on nuclear waste dumping by the Russian navy, is being held in jail pending his trial on the grounds of high treason. Retired naval captain Alexandr Nikitin, who has been detained on the same grounds, is in his St. Petersburg residence also awaiting trial. (**Moscow Times**, 23/1. See also **Newsbrief** no. 40, page 16.)
- **United States**: A report by the General Accounting Office (GAO) released on 23 March finds that leaks from underground tanks containing radioactive waste at the Hanford nuclear reservation, which for over 50 years, were officially said to be insignificant, are now thought to be leaching into the subsoil and may eventually pollute the water of the nearby Columbia River. According to the GAO, DoE's understanding of radioactive waste migration through the soil at Hanford is inadequate, and there is no strategy in place for improving that understanding. It now seems that measures to facilitate clean-up of the surface soil appear to have increased the flow of

rainwater through the contaminated dirt, speeding up the movement of radioactivity. Reportedly this will necessitate additional clean-up measures now estimated to cost \$50 billion, and may further delay the completion of clean up at Hanford. (**New York Times**, 23/3; **PBS Newshour**, 30/3; **SpentFUEL**, 30/3. See also **Newsbrief** no. 40, page 16.)

k. Miscellaneous

- On 14 January, the Secretary-General of the United Nations announced the appointment of Jayantha Dhanapala of Sri Lanka as Under-Secretary-General for Disarmament Affairs. (See also under **Proliferation-related Developments**, Iraq, page 16) Ambassador Dhanapala, who, until 1 February when he assumed his new functions, had been diplomat-in-residence at the Center for Non-Proliferation Studies of the Monterey Institute of International Studies in California, has held diplomatic posts in London, Beijing, Washington and New Delhi. In 1984-1987, he was Sri Lanka's Permanent Representative to the United Nations in Geneva and a member of the Conference on Disarmament. He was Chairman of Main Committee I of the 1985 NPT Review Conference. During 1987-92, he was Director of the United Nations Institute for Disarmament Research; he was President of the 1995 NPT Review and Extension Conference; and in 1996, he served as a member of the Canberra Commission. From the founding of PPNN in 1987 until assuming his duties at the United Nations, Ambassador Dhanapala was a member of PPNN's Core Group. (**UN Press Release SG/A/661 BIO/3125**, 14/1; **UN Press Release SG/SM/6439** (Transcript of Press Conference), 14/1; **direct information**)
- Richard Kennedy, former member of the Nuclear Regulatory Commission (NRC) who served as US Non-Proliferation Ambassador-at-large under Presidents Reagan and Bush, and as Special Advisor on Non-Proliferation Policy and Nuclear Energy Affairs to the Secretary of State from 1982 to 1993, died on 12 January at the age of 78. He was a long-time member of the IAEA's Board of Governors, and also served as Chairman of the Steering Committee of the OECD's Nuclear Energy Agency. (**NEI Infowire**, 14/1; **SpentFUEL**, 19/1; **ENS NucNet**, 22/1)
- On 2 March, it was announced in **Russia** that Viktor Mikhailov had been relieved from his post of Minister for Atomic Energy. His successor is Yevgeni Adamov, hitherto head of the Science Research Institute of Energy Technology, who is said to have been recommended for the post by his predecessor. No reason was given officially for Mikhailov's departure and press reports did not make clear whether he resigned voluntarily or was dismissed. Mikhailov was quoted as saying that he had been tired of being criticised for promoting nuclear exports and of coping with administrative matters and inadequate funding, and wanted to switch his focus to nuclear research. On 16 March, the announcement came that Mikhailov had been appointed to First Deputy Minister and chairman of Minatom's scientific council. Press comments indicated that he would retain considerable influence, particularly with respect to nuclear weapon issues. As of this writing, it was not clear whether Mr. Adamov would be part of the new Russian cabinet, but observers in Moscow expected that he would. (**NucNet News**, 20/2, in **UI News Briefing** 98.08; **Reuters**, 2/3,

3/3; **International Herald Tribune**, 3/3; **New York Times**, 3/3, 5/3, 17/3; **Nucleonics Week**, 5/3, 26/3; **NuclearFuel**, 9/3)

- **Austria** is reported to be considering including in its constitution a ban on nuclear power. It has said that it will use its presidency of the European Union during the second half of the year to discourage the use of nuclear power in Europe. (**Nucleonics Week**, 15/1)
- The government of the **Russian Federation** is said to have approved the development of nuclear reactors for orbiting space stations and nuclear powered motors for space travel. According to the report from the Russian news agency *Itar-Tass*, a prototype should be ready by 2010; Minatom has not confirmed the report. (**New York Times**, 10/2)
- In the **United States**, Joseph Cirincione has been appointed as Senior Associate for Non-Proliferation in the Carnegie Endowment for International Peace. Mr. Cirincione succeeds Leonard S. Spector, who was appointed head of DoE's Office of Arms Control and Non-Proliferation. (See also **Newsbrief** 40, page 16). For the last four years Mr. Cirincione was a Senior Associate at the Henry L. Stimson Center, in Washington, D.C., where he had a leading role in activities to promote the indefinite extension of the NPT in 1995. Earlier, he served on the professional staff of several committees of the US House of Representatives. (**Carnegie Endowment Press Release**, 17/3; **direct information**)

II. PPNN Activities

- From 27 February to 1 March 1998, at the Imperial Palace Hotel, Annecy, France, PPNN held a briefing seminar on **The 1998 Preparatory Committee Session for the 2000 NPT Review Conference: Issues and Options**, for members of permanent missions in Geneva expected to take part in the second session of the Preparatory Committee for the 2000 NPT Review Conference. The seminar was attended by 54 participants and observers, from 48 states.

The seminar was chaired by Ben Sanders, Executive Chairman of PPNN. Speakers and paper writers for the sessions included members of PPNN's Core Group, staff members of international organisations, and serving and retired national officials.

The seminar was made up of three plenary sessions, a series of four working group sessions, and a final plenary session.

The first plenary session comprised a presentation on *Energy Needs and the Nuclear Option in the Twenty-First Century* by Samuel Thompson; the second a presentation on *The Programme to Strengthen the Effectiveness and Improve the Efficiency of Safeguards* by Jill Cooley; and the third a presentation on *Returning to Compliance with the Non-Proliferation Regime* by Ronald Walker.

Each working group held four two-hour sessions, each devoted to a specific issue cluster. At every session, short initial presentations were made by members of the briefing teams followed by a discussion period.

The clusters of issues examined and the related briefing teams were:

- **Issue Cluster A: The Review Process**: chaired by Ben Sanders; presentations by Hannelore Hoppe on *The Functioning of the PrepCom* and by Peter Goosen on *The Role of the Principles and Objectives*;
- **Issue Cluster B: Approaches to Disarmament**: chaired by Sverre Lodgaard; presentations by Harald Müller on *Strategies for Disarmament*, and by Makarim Wibisono on *Disarmament: the Next Steps*;
- **Issue Cluster C: Peaceful Uses of Nuclear Energy**: chaired by Jiri Beranek; presentations by Raja Adnan on *International Cooperation*, and by Lewis Dunn on *Export Controls*;
- **Issue Cluster D: Other NPT Issues**: chaired by Mahmoud Karem; presentations by Olu Adeniji on *Security Assurances and Nuclear-Weapon-Free Zones*, and by Thérèse Delpech on *NPT Universality*.

The seminar concluded with a plenary session, at which a panel made up of the working group chairmen highlighted key issues from the working groups sessions.

- **Issue Review 12** on *Nuclear Non-Proliferation and Nuclear Disarmament* by Harald Müller and Makarim Wibisono; **Issue Review 13** on *A Fissile Material Cut-Off* by Harald Müller; and **Issue Review 14** on *Issues at the 1998 Preparatory Committee for the 2000 NPT Review Conference* by John Simpson will be published and distributed before the second session of the Preparatory Committee.
- Members of PPNN's staff will attend the second session of the Preparatory Committee as NGO observers, and distribute briefing materials.
- PPNN will hold its next Core Group meeting in Southampton, United Kingdom, on 29 May. On 30–31 May a workshop will be held there with invited participants, to review the outcome of the session of the Preparatory Committee. This will be co-sponsored by the Monterey Institute for International Studies (MIIS).

III. Recent Publications

Books

Graham T. Allison, Owen R. Coté, Jr., Richard A. Falkenrath, and Steven E. Miller, *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material*, MIT Press, 292 pp.*

James Brown, Ed., *Arms Control Issues for the Twenty-First Century*, Seventh Annual International Arms Control Conference proceedings, Sandia National Laboratories, Albuquerque, New Mexico, SAND97-2619, 333 pp.

Andrew and Leslie Cockburn, *One Point Safe: A True Story*, Anchor, 288 pp.*

Articles

William M. Arkin and Hans Kristensen, 'Dangerous Directions', *Bulletin of the Atomic Scientists*, Vol. 54, No. 2, March/April, pp. 26-31.

Eric Arnett, 'Norms and Nuclear Proliferation: Sweden's Lessons for Assessing Iran', *Nonproliferation Review*, Vol. 5, No. 2, pp. 32-43.

Seth J. Axelrod, 'The Pitfalls Of Rogue Country Analysis', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 3/4, No. 4/1, Fall 1997/Winter 1998, pp. 6-11.

Luther J. Carter and Thomas H. Pigford, 'Getting Yucca Mountain right', *Bulletin of the Atomic Scientists*, Vol. 54, No. 2, March/April, pp. 56-61.

Avner Cohen and Joseph F. Pilat, 'Assessing Virtual Nuclear Arsenals', *Survival*, Vol. 10, No. 1, Spring, pp. 129-144.

Avner Cohen, 'Israel and the Evolution of U.S. Nonproliferation Policy: The Critical Decade (1958-1968)', *Nonproliferation Review*, Vol. 5, No. 2, Winter, pp. 1-19

Avner Cohen, 'Nuclear Arms Control in the Middle East: Problems and Prospects', monograph under preparation for the US Institute of Peace.

Committee on Nuclear Policy, Final Report, *Henry L. Stimson Center*, Washington, D.C., February 1 1997-February 27, 1998, unnumbered pages.

Fu Cong, 'Export Controls in the People's Republic of China: An Introduction To China's Export Control System', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 3/4, No. 4/1, Fall 1997/Winter 1998, pp. 17-19.

Richard T. Culpitt, Commentary on 'Regulations Of The People's Republic Of China On the Control of Nuclear Exports', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 3/4, No. 4/1, Fall 1997/Winter 1998, pp. 32-35.

Pete V. Domenici, 'The Dominici Challenge', followed by four responses: Wolfgang K.H. Panofsky, 'Mixed message'; Paul L. Leventhal, 'A pox on MOX'; Gerald Marsh, 'Nuclear power, yes'; Kosta Tsipis and Philip Morrison, 'All to the sea'; *Bulletin of the Atomic Scientists*, Vol. 54, No. 2, March/April, pp. 40-49.

Pete V. Domenici, 'Future Perspectives on Nuclear Issues', Keynote address, American Nuclear Society, Albuquerque, N.M., November 17, 1997, *Journal of Nuclear Materials Management*, Vol. 26, No. 2, Winter, pp. 13-16.

Yair Evron, 'Weapons of Mass Destruction in the Middle East', Occasional Paper No. 39, *Henry L. Stimson Center*, March, 43 pp.

Nancy W. Gallagher, 'The Politics of Verification: Why "How Much?" Is Not Enough', *Contemporary Security Policy*, Vol. 18, No. 2, August 1997, pp. 138-170.

Richard L. Garwin, 'The Future of Nuclear Weapons Without Nuclear Testing', *Arms Control Today*, Vol. 27, No. 8, November/December 1997, pp. 3-11.

Bates Gill, 'U.S., China And Nonproliferation: Potential Steps Forward', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 3/4, No. 4/1, Fall 1997/Winter 1998, pp. 27-32.

Charles Glaser, 'The Flawed Case for Nuclear Disarmament', *Survival*, Vol. 40, No. 1, Spring, pp. 112-128.

Joseph Goldblat, 'No-First-Use: A Prerequisite for Nuclear Disarmament', *Security Dialogue*, Vol. 28, No. 3, September 1997, pp. 265-270.

Camille Grand, 'A French Nuclear Exception?', *Occasional Paper No. 38*, Henry L. Stimson Center, January, 42 pp.

Brian Hall, 'Overkill is Not Dead', *New York Times Magazine*, 15/3, 13 pp.

David Hoffman, 'Cold-War Doctrines Refuse to Die: False Alert After '95 Rocket Launch Shows Fragility of Aging Safeguards', *Washington Post Foreign Service*, 15/3, reprinted from internet.

David Hoffman, 'Downsizing A Mighty Arsenal Moscow Rethinks Role As Its Weapons Rust', *Washington Post Foreign Service*, 16/3, reprinted from internet.

Ryuhei Hosoya, 'Cyberspace and virtual diplomacy: The end of the nation-state?', *IIPS Policy Paper 180JE*, December 1997, 18 pp.

Richard Weixing Hu, 'Play By International Rules: The Development Of China's Nuclear Export Controls', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 3/4, No. 4/1, Fall 1997/Winter 1998, pp. 19-26.

'Improving Nuclear Materials Security at the Institute of Nuclear Physics — Tashkent, Uzbekistan', Russia/NIS Nuclear Material Task Force, Office of Arms Control and Nonproliferation, United States Department of Energy, June 1997, 5 pp.

'Improving Nuclear Materials Security at the SOSNY Science and Technical Center — Minsk, Belarus', Russia/NIS Nuclear Material Task Force, Office of Arms Control and Nonproliferation, United States Department of Energy, June 1997, 5 pp.

Rebecca Johnson, 'British Perspectives on the Future of Nuclear Weapons', *Occasional Paper No. 37*, Henry L. Stimson Center, January, 57 pp.

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Rebecca Johnson, 'Multilateral Arms Control: Can the CD Break the Impasse?', *Arms Control Today*, Vol. 27, No. 8, November/December 1997, pp. 17-21.

Rebecca Johnson, 'Nuclear Arms Control Through Multilateral Negotiations', *Contemporary Security Policy*, Vol. 18, No. 2, August 1997, pp. 83-115.

Gennady Khromov, 'The Threat Of Cruise Missile Proliferation Requires Urgent Coordinated Actions', *The Monitor: Nonproliferation, Demilitarization and Arms Control*, Vol. 3/4, No. 4/1, Fall 1997/Winter 1998, pp. 3-5.

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Mitsuru Kurosawa, 'Regional Security and Nuclear Weapons in North-East Asia: a Japanese Perspective', *Security, Arms Control and Defence Restructuring in East Asia*, Ashgate, p. 101-115.

Marie-Hélène Labbé, 'Y a-t-il une politique européenne de non-prolifération nucléaire?', *Politique Etrangère*, 3/97, pp. 307-319.

Robert A. Manning, 'The Nuclear Age', *Foreign Policy*, No. 109, Winter 1997/1998, pp. 70-84.

'Materials Protection, Control and Accounting (MPC&A) Programme Strategic Plan', Russia/Newly Independent States/Baltics Nuclear Material Security Task Force, US Department of Energy, January, 21 pp.

Jack F. Matlock, Jr., 'Russia's Leaking Nukes', (Review of books marked with an asterisk *, above), *New York Review of Books*, Vol. XLV, No. 2, February 5, pp. 15-18.

Alexandra von Meier, Jennifer Lynn Miller, and Ann C. Keller, 'The Disposition of Excess Weapons Plutonium: A Comparison of Three Narrative Contexts', *Nonproliferation Review*, Vol. 5, No. 2, pp. 20-31.

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IV. Documentation

a. Security Council Resolution S/RES/1153 (1998), 20 February 1998

The Security Council,

Recalling its previous relevant resolutions and in particular its resolutions 986 (1995) of 14 April 1995, 1111 (1997) of 4 June 1997, 1129 (1997) of 12 September 1997 and 1143 (1997) of 4 December 1997,

Convinced of the need as a temporary measure to continue to provide for the humanitarian needs of the Iraqi people until the fulfilment by Iraq of the relevant resolutions, including notably resolution 687 (1991) of 3 April 1991, allows the Council to take further action with regard to the prohibitions referred to in resolution 661 (1990) of 6 August 1990, in accordance with the provisions of those resolutions, and emphasizing the temporary nature of the distribution plan envisaged by this resolution,

Convinced also of the need for equitable distribution of humanitarian supplies to all segments of the Iraqi population throughout the country,

Welcoming the report submitted on 1 February 1998 by the Secretary-General in accordance with paragraph 7 of resolution 1143 (1997) (S/1998/90) and his recommendations, as well as the report submitted on 30 January 1998 in accordance with paragraph 9 of resolution 1143 (1997) by the Committee established by resolution 661 (1990) of 6 August 1990 (S/1998/92),

Noting that the Government of Iraq did not cooperate fully in the preparation of the report of the Secretary-General,

Noting with concern that, despite the ongoing implementation of resolutions 986 (1995), 1111 (1997) and 1143 (1997), the population of Iraq continues to face a very serious nutritional and health situation,

Determined to avoid any further deterioration of the current humanitarian situation,

Reaffirming the commitment of all Member States to the sovereignty and territorial integrity of Iraq,

Acting under Chapter VII of the Charter of the United Nations,

1. Decides that the provisions of resolution 986 (1995), except those contained in paragraphs 4, 11 and 12, shall remain in force for a new period of 180 days beginning at 00.01 hours, Eastern Standard Time, on the day after the President of the Council has informed the members of the Council that he has received the report of the Secretary-General requested in paragraph 5 below, on which date the provisions of resolution 1143 (1997), if still in force, shall terminate, except as regards sums already produced pursuant to that resolution prior to that date;
2. Decides further that the authorization given to States by paragraph 1 of resolution 986 (1995) shall permit the import of petroleum and petroleum products originating in Iraq, including financial and other essential transactions directly relating thereto, sufficient to produce a sum, in the 180-day period referred to in paragraph 1 above, not exceeding a total of 5.256 billion United States dollars, of which the amounts recommended by the Secretary-General for the food/nutrition and health sectors should be allocated on a priority basis, and of which between 682 million United States dollars and 788 million United States dollars shall be used for the purpose referred to in paragraph 8 (b) of resolution 986 (1995), except that if less than 5.256 billion United States dollars worth of petroleum or petroleum products is sold during the 180-day period, particular attention will be paid to meeting the urgent humanitarian needs in the food/nutrition and health sectors and the Secretary-General may provide a proportionately smaller amount for the purpose referred to in paragraph 8 (b) of resolution 986 (1995);
3. Directs the Committee established by resolution 661 (1990) to authorize, on the basis of specific requests, reasonable expenses related to the Hajj pilgrimage, to be met by funds in the escrow account;
4. Requests the Secretary-General to take the actions necessary to ensure the effective and efficient implementation of this resolution, and in particular to enhance the United Nations observation process in Iraq in such a way as to provide the required assurance to the Council of the equitable distribution of the goods produced in accordance with this resolution and that all supplies authorized for procurement, including dual-usage items and spare parts, are utilized for the purpose for which they have been authorized;
5. Requests the Secretary-General to report to the Council when he has entered into any necessary arrangements or agreements, and approved a distribution plan, submitted by the Government of Iraq, which includes a description of the goods to be purchased and effectively guarantees their equitable distribution, in accordance with his recommendations that the plan should be ongoing and should reflect the relative priorities of humanitarian supplies as well as their inter-relationships within the context of projects or activities, required delivery dates, preferred points of entry, and targeted objectives to be achieved;
6. Urges all States, and in particular the Government of Iraq, to provide their full cooperation in the effective implementation of this resolution;
7. Appeals to all States to cooperate in the timely submission of applications and the expeditious issue of export licences, facilitating the transit of humanitarian supplies authorized by the Committee established by resolution 661 (1990), and taking all other appropriate measures within their competence in order to ensure that urgently required humanitarian supplies reach the Iraqi people as rapidly as possible;
8. Stresses the need to ensure respect for the security and safety of all persons directly involved in the implementation of this resolution in Iraq;
9. Decides to conduct an interim review of the implementation of this resolution 90 days after the entry into force of paragraph 1 above and a thorough review of all aspects of its implementation prior to the end of the 180-day period, on receipt of the reports referred to in paragraphs 10 and 14 below, and expresses its intention, prior to the end of the 180-day period, to consider favourably the renewal of the provisions of this resolution as appropriate, provided that the reports referred to in paragraphs 10 and 14 below indicate that those provisions are being satisfactorily implemented;
10. Requests the Secretary-General to make an interim report to the Council 90 days after the entry into force of paragraph 1 above, and to make a full report prior to the end of the 180-day period, on the basis of observation by United Nations personnel in Iraq, and on the basis of consultations with the Government of Iraq, on whether Iraq has ensured the equitable distribution of medicine, health supplies, foodstuffs and materials and supplies for essential civilian needs, financed in accordance with paragraph 8 (a) of resolution 986 (1995), including in his reports any observations he may have on the adequacy of the revenues to meet Iraq's humanitarian needs, and on Iraq's capacity to export sufficient quantities of petroleum and petroleum products to produce the sum referred to in paragraph 2 above;
11. Takes note of the Secretary-General's observation that the situation in the electricity sector is extremely grave, and of his intention to return to the Council with proposals for appropriate funding, requests him to submit urgently a report for this purpose prepared in consultation with the Government of Iraq to the Council, and further requests him to submit to the Council other studies, drawing upon United Nations agencies as appropriate and in consultation with the Government of Iraq, on essential humanitarian needs in Iraq including necessary improvements to infrastructure;

ensure implementation of this resolution, and to secure peace and security in the area.

d. Joint Declaration Concerning Radioactive Waste Transportation

[Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, S/Inf.715, February 4, 1998]

Members and Observer States of the Council of OPANAL and in general the States Parties of the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco), facing the imminent passage through the Zone of Application of said Treaty of a shipment of radioactive waste from France to Japan through the Panama Canal and having in mind their standing good relations with the Governments of Japan, France and Great Britain,

DECLARE

1. To reiterate their profound concern for the risks that this high level radioactive nuclear waste transit represents for the health and life of their peoples as well as for the preservation of the marine and land environment of the region.
2. Furthermore, to express their deep concern for the probably use in the future of this or other maritime routes near their coasts of this kind of shipments with similar high level radioactive material, which expose risks not only to the national maritime spaces but particularly to their inhabitants and in general to the environment in a region recognized as the First Nuclear Weapon Free Zone of the world.
3. To confirm their intention to consider, if necessary, the adoption of measures conferred to them by International Law, as well as by their own national laws on the matter, in order to prevent and protect the health of their inhabitants and their marine environment.
4. To make an appeal to the International Community to strengthen through the International Organizations the strict regulation of transportation of radioactive material so as to include legal obligations in order to grant safety measures guarantees, pollution prevention dispositions, contingency plans in case of disasters and opportune interchange of information among the involved countries.
5. To make a firm appeal to the Governments of France, Japan, and United Kingdom to respect fully the international legal requirements on the matter, specially the statutory provisions of the International Maritime Organization (IMO) and the International Atomic Energy Agency (IAEA).
6. Finally, reaffirm their support to the Statements issued by the General Conference of OPANAL on the matter, specially Resolution CG/Res.299 (XIII) "Prevention of the Radioactive Contamination of the Marine Environment within the Framework of the Treaty of Tlatelolco", adopted May 17, 1993; Resolution CG/Res.331 (XIV) "Maritime Transport of Radioactive Waste", adopted March 29, 1995; and Resolution CG/Res.368 (E-XII) "Strengthening of OPANAL" adopted November 14, 1997, as well as all legal international statutory

provisions issued by other International Organizations on the subject.

V. Comments From Readers/Corrections

- **Newsbrief** 40, fourth quarter 1997, page 4, reported that the document certifying China's non-proliferation credentials would have to lie before the US Congress for 120 days. This was incorrect: the usual 30-day period of continuous session obviously applied in this case. Ed.
- John W. Beare, P.Eng., an engineer formerly with Canada's Atomic Energy Control Board, writes:

Under the item about Russia contemplating purchase of CANDU reactors Newsbrief No. 40 (page 5) also mentions criticism originating with the New York Times regarding the "quality of CANDU reactors". This is primarily an allusion to the possible shut down of several Ontario Hydro CANDU reactors. The cause of Ontario Hydro's problems has been its past corporate failure to understand the requirements for lifetime management of nuclear generating stations and the consequent failure to develop strategic planning and resourcing appropriate to such a mission. The shut down of seven operating units has been proposed to free staff to bolster the operation of the remaining twelve units and thereby correct the effects of an ill-considered and badly implemented thirty percent downsizing of operations and support staff about five years ago.

The problems are not unlike the problems experienced by Tennessee Valley Authority in the 1980s and several other nuclear utilities in the USA, which resulted in several nuclear reactor units being shut down for extended periods. The team of consultants finally brought in to advise Ontario Hydro Nuclear to turn around its declining performance consists largely of American consultants with experience in rescuing those American nuclear utilities. There was no suggestion in those cases that the need for improvement in the American utilities reflected on the quality of their reactors, per se. The problems and solutions are unrelated to the type of reactor, both in Canada and the USA.

The lesson for export sales is that assisting the receiving country to develop the infrastructure to achieve lifetime excellence in operation and maintenance should be part of the export contract.

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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