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Programme for Promoting Nuclear Non-Proliferation, Newsbrief, Number 26

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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

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Editorial Note

This issue of the **Newsbrief** reports on events relating to the non-proliferation of nuclear weapons, that took place, or that came to the editor's attention, in the three-month period between 24 March, when **Newsbrief** No. 25 had to go to press, and 23 June when, again due to circumstances beyond the editor's control, the present issue had to be concluded.

The **Newsbrief** is published four times a year by the Programme for Promoting Nuclear Non-Proliferation (PPNN) to help foster awareness of the issues related to the spread of nuclear weapons and of developments that may help constrain that spread. Using publicly available material derived from reputable and generally reliable sources, the **Newsbrief** seeks to present an accurate and balanced picture of pertinent developments, including events relating to the peaceful uses of nuclear energy.

The limited size of the **Newsbrief** makes it necessary to choose among items of information and to present them in condensed and simplified form. Subheadings, which may vary from one issue to another, are chosen for ease and logic of presentation; they do not necessarily imply a judgement on the nature of the events referred to. For convenience, related items of information may be combined under a single subheading, even though some might fit also into other categories of subjects identified in the **Newsbrief**.

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 work.

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

Unless otherwise stated, sources referred to and publications listed in this issue date from 1994.

I. Topical Developments

a. Background

- With regard to the **Democratic People's Republic of Korea (DPRK)**, the period covered by this **Newsbrief** starts one week after the disclosure that inspectors of the International Atomic Energy Agency (IAEA) at the Yongbyon radiochemical laboratory (reprocessing plant) were prevented from completing their attempts to verify, in accordance with the safeguards agreement between that organisation and the DPRK and as agreed between them before the inspection, whether nuclear material had been diverted since the last inspection. On 21 March, the IAEA's Board of Governors met to consider the situation and adopted a resolution in which, among other things, it found the DPRK in further non-compliance with its safeguards agreement, called upon it immediately to allow the IAEA to complete all requested inspection activities and asked its Director General to transmit the resolution and his report to all members of the Agency, to the Security Council and to the General Assembly. Libya voted against the resolution and Brazil, China, India, Indonesia and Lebanon abstained. The text of the resolution is reproduced below in **Section IV. Documentation**.

The US Administration responded to these developments by urging Pyongyang to allow the inspection to resume, stating that under present circumstances there could be no question of a third round of high-level diplomatic consultations. At that time it ordered the despatch of a battalion of *Patriot* interceptor missiles to South Korea; its arrival, on 18 April, was condemned in Pyongyang as 'an open aggressive act'. Other military options, such as sending additional troops to strengthen the US forces in Korea, were said to be under consideration, but US officials, spearheaded by the Secretary of State, Warren Christopher, stressed that meanwhile the

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Administration was continuing to pursue diplomatic moves. The question of a resumption of the joint *Team Spirit* exercises — which, as South Korea's President assured Beijing, would be of a purely defensive nature — was discussed, but apparently not finally settled. Sources in Washington spoke about their preparedness to face the DPRK over the nuclear issue. The Secretary of Defense, William Perry, warned Pyongyang that Washington intended to stop it from developing a substantial arsenal of nuclear weapons even at the potential cost of another Korean war. Sources at the Pentagon also asserted, however, that the United States had no intention of taking pre-emptive action; the US Department of Defense was quoted as believing that it would not be feasible to eliminate the DPRK's nuclear potential by remote military means such as air strikes or artillery. If, however, the DPRK should respond to international sanctions by attacking the Republic of Korea (RoK), the United States would have to be ready to defend its ally. In commentaries published in the United States, estimates of the relative strengths of the two sides in terms of conventional weapons generally gave the edge to the North. The belief expressed by some American observers that in an armed conflict DPRK forces would 'overwhelm' those of the South within a few days was contradicted by analysts who pointed to the advantages enjoyed by the RoK in the quality of its forces and equipment.

Reputedly deterred by the expectation that China would veto any Security Council resolution calling for economic sanctions against the DPRK, the US Administration was initially seen as trying to gain support for a resolution merely criticising Pyongyang and hinting at the eventual adoption of economic measures. It seems that at the time (late March/early April) China — although said to be concerned about the DPRK's nuclear stance and wishing to see the Korean Peninsula turned into a denuclearised area — was not the only country in the region to feel that undue pressure on Pyongyang would only encourage it to stiffen its negative attitude and possibly take military action. Both Japan and South Korea — which has traditionally adopted a conciliatory attitude towards the North — were said to share the view that economic sanctions would have little impact and might lead to military conflict. The resignation in early April of Japan's Prime Minister Hosokawa added a complication in that the minority government of former foreign minister Hata, which replaced the Hosokawa cabinet, was believed to be relatively weak. The opposition Socialist party, which is said to have long-standing ties to the DPRK, was expected to press the new Prime Minister to avoid entanglement in an armed conflict with the DPRK. Reportedly, the Socialists might also see any attempt to stop the flow of hard currency to Pyongyang, now rated at \$600-million to \$1.6-billion a year, as violating individual rights (although in mid-May Japanese banks were seen to have stopped handling remittances of US dollars to the DPRK — Ed.). In that light, observers expected that Japan's attitude in the Korean issue would remain ambiguous and tend towards conciliation rather than confrontation. On the other hand, statements emanating from Pyongyang, accusing Japan of planning to use its

large stocks of plutonium for the production of nuclear weapons, were condemned in Tokyo as 'malicious propaganda'; the claim made by the DPRK's ambassador to India in a press interview, that if his country were to produce nuclear weapons, it would be to deter Japan, also did not contribute to the improvement of relations between the two states. The situation was further complicated by the statement Prime Minister Hata made in the Diet, in mid-June, that Japan had the capacity to make nuclear weapons but had not done so in light of the three non-nuclear principles it had imposed on itself, i.e., not to own, make or import nuclear weapons, and because it was a party to the NPT. The Prime Minister is since reported to have corrected his statement by adding that in fact Japan had neither the expertise or the experience, and therefore lacked the capability to make nuclear weapons. Press reports spoke of discussions in the Diet about the need for Japan to support US sanctions against the DPRK, if necessary even outside the United Nations' framework. In this connection it was reported that the new government was giving thought to the possibility of seeking a change in the law restricting the use of Japanese forces abroad, but this is seen as unlikely under present domestic political conditions.

As reported, Russia shared the view of other countries in the area that at the time, sanctions might still be counter productive, although South Korean newspapers carried a quote from the Russian Ambassador in Seoul, that Russia would not oppose a United Nations move to impose punitive action. Russian prudence in the matter was ascribed in part to the presence in the DPRK of Siberian enterprises doing construction work there, over which the Russian government was said to have little control. Supposedly seeking a higher political profile in the region, Russia has proposed an eight-party conference in which, besides itself, China, the DPRK, Japan, the RoK, the United States, the IAEA and the United Nations would participate, with the aim of enforcing the NPT and avoiding confrontation. Washington's initial reaction to the proposal was said to be cool, but the idea appears to have recently gained some support there.

In late March, after intensive consultations in the framework of the Security Council, agreement was reached on the text of a statement by the Council's President, which *inter alia* asks the DPRK to allow IAEA inspectors to complete the inspection activities agreed upon, as a step in fulfilling its obligations under its safeguards agreement with the IAEA 'and in honouring non-proliferation obligations of the Treaty'. This statement, which is understood to have been based largely on a text proposed by China, was delivered by the Council's French President on 31 March. In declarations on 2 and 4 April, the DPRK, which had previously harshly condemned the Agency's reports on the difficulties it had encountered during the inspection, rejected the statement as 'unjustifiable' and said it had done enough to meet its obligations to the IAEA. Shortly after, on the occasion of his birthday, the DPRK's leader, Kim Il Sung, gave a press conference attended by foreign media representatives, at which he stated, once again, that his country did not need nuclear

weapons, did not have the capacity to make them and had no plans to do so. He expressed anger at foreign media calling on the DPRK 'to show what it did not have'.

While the armed forces of both the DPRK and the RoK were said to have been put on alert, the United States and the DPRK were still seen to have left an opening for further informal contacts. In mid-April it was announced that Assistant Secretary of State Robert Gallucci had been named to head the US Administration's senior policy steering group on Korea, dealing with the DPRK nuclear issue. Mr. Gallucci visited Beijing where he reportedly urged the Chinese government to try and persuade Pyongyang that it should open its nuclear installations to international inspection, but was told, apparently, that China's influence on the DPRK was limited. On 15 April it became known that the RoK would be prepared to drop its insistence on the exchange of envoys with the DPRK, to discuss the implementation of the bilateral agreement of 1991 which banned nuclear-weapons related work — on the condition that the IAEA would be able to resume its inspections; apparently, the DPRK had already made an offer to that effect, *inter alia* in a letter to Assistant-Secretary Gallucci. It also became apparent that the joint *Team Spirit* exercises would be put off at least until November and might not be resumed after all. The DPRK was reported to have proposed a resumption of the working-level bilateral talks at Panmunjon, which had been interrupted in March. It was also said to have proposed replacing the 1953 armistice agreement with a peace treaty between itself and the United States, a proposal that was rejected in both Seoul and Washington with the argument that the dispute over nuclear inspections would have to be settled first. Meanwhile, cabinet-level statements made in Washington, that the United States were willing to pursue negotiations with the North for another six months, caused surprise abroad. Some press reports had it that the Administration's attitude was originally shaped by the belief that Pyongyang's nuclear programme had been frozen; that attitude might be changed, it was thought, by the latter's announcement, on 21 April, that the core of the 5-MW reactor was about to be replaced, meaning that the DPRK's nuclear programme was in fact moving ahead. According to US Secretary of Defense Perry, this would mean that Pyongyang would soon be able to extract plutonium for another four to five weapons. Once the second reactor (which is expected to start up in 1995 — Ed.) — would be in operation, the number would increase to ten or twelve a year, as Secretary Perry was reported to say.

At a conference of the Japan Atomic Industrial Forum, in Hiroshima, in mid-April, the IAEA's Director General revealed that he had advised Pyongyang that inspectors needed to return to the nuclear facilities at Yongbyon by early May. Dr. Blix was also quoted to have said that even in the case that Washington persuaded the DPRK to allow minimal nuclear inspections, the Agency would probably need broader access to fully assess the scope of Pyongyang's nuclear activities. A week later, the Agency said it had been

requested by the DPRK to send staff to Yongbyon to break safeguards seals on the reactor so that the refuelling could get started. The reactor was reportedly shut down on or about 10 April — unplanned, as Pyongyang implied, and as a result of technical problems. Reportedly, visas had been issued for two inspectors to witness the extraction of the core from the reactor. The communication from the DPRK reputedly made no mention of allowing the taking of samples or any other tests that would help verify the history and age of the irradiated fuel. In response, the Agency is said to have listed the verification measures it would have to take, and to have made it clear that its inspectors would not go to the facility unless there was assurance that they could make a proper inspection which, it was reported from Vienna, would have to involve random sampling and non-destructive examination of part of the 8,000 fuel pins in the reactor core. Apparently, the Agency would have wished, but had little hope of being permitted, to also do some destructive assays on the fuel. According to press reports, the Agency's response did not raise the matter of the interrupted inspection of the preceding month, when its inspectors were prevented from examining key points in the plutonium extraction process that might have revealed links to a non-declared second processing line, nor, apparently, did it refer to the issue of access to the two sites which the Agency had targeted for special inspections in 1993.

On 27 April it was reported that the DPRK had rejected the Agency's demand to sample the fuel at the reactor, claiming that a limited inspection during refuelling, including item counting, radioactivity measurement and filming, and the Agency's application to the extracted fuel of containment and surveillance measures, would be sufficient to deter any future diversion of nuclear material. In a Foreign Ministry statement, Pyongyang harshly condemned the demand for sampling, calling it 'a sinister political invention'. Reportedly the DPRK's statement left a possibility that the material might be sampled later, as part of a package deal to be made in bilateral talks with the United States; it also indicated that it might allow inspection of the 'radiochemical laboratory', depending on the 'future behaviour' of the IAEA. The question at the time was whether the IAEA would use the opportunity of making a limited inspection, as the US Administration was reported to prefer, or would insist on carrying out a full inspection, failing which it would refrain from visiting the facility at all. Experts were quoted as saying that a postponement of the sampling might lead to greater uncertainty about the age of the material, thus raising doubt about the value of the present exercise.

In early May, in response to expressions of dissatisfaction with the DPRK's decision by both the United States and the IAEA, the DPRK reportedly advised Assistant Secretary of State Gallucci and Dr. Blix, that it would proceed with the fuel change. Press reports quoted the former as expressing doubt that it would be possible to reach a diplomatic solution to the problem. However, he urged the continuation of diplomatic efforts because the alternatives, of

launching a pre-emptive military strike or unilaterally imposing sanctions, would be more dangerous. A report from *United Press International* in Seoul said that China had advised the DPRK not to start refuelling the reactor before IAEA inspectors were able to attend. At the time, reports from Seoul and Washington hinted at indications that Pyongyang might be willing to continue the negotiations, and had given indications that it might discuss a package of incentives offered by the United States. Almost simultaneously, however, it announced its intention to leave the joint armistice commission — a move seen in Seoul as a violation of the armistice agreement of 1953. On 12 May, it was announced in Vienna that the IAEA, which had apparently reached a loosely worded understanding with the DPRK on the inspection procedures that would be tolerated, was now ready to send a team of inspectors to finish the testing and sampling at the reprocessing plant that had been interrupted in March, and to carry out what procedures it could during the fuel-change operations at the reactor.

In mid-May Pyongyang announced that in light of the 'unreasonable demands' by the IAEA, it had no choice but to break the seals on the reactor and begin withdrawal of fuel from the reactor 'for safety reasons', without waiting for the presence of IAEA inspectors. Washington reacted sharply, called on Pyongyang to defer the start of the fuel-change operation until the arrival of the Agency's inspectors and warned that the unmonitored removal of fuel rods would imperil further bilateral diplomatic contacts. Calls were heard from both Houses of the US Congress and both parties, that the time had come for the United States to take a hard-line approach and proceed to sanctions, if necessary outside the United Nations. Both Japan and the Republic of Korea expressed concern at the news and China was also said to have urged the DPRK not to continue with the refuelling in the absence of the IAEA's safeguards inspectors. The US Administration decided, however, to suspend judgement pending the results of the inspection, which had started on 18 March. The inspection confirmed that the operator had begun to extract fuel rods. The initial report was that about 5 per cent of the 8,000 fuel pins had been removed and placed in a cooling pond which was being monitored by IAEA inspectors. As quoted in the American press, the IAEA had concluded that there was no indication that any of the fuel so far removed was unaccounted for. There was no word, however, as to whether the DPRK authorities were complying with the request to set aside some randomly selected fuel pins for later sampling as part of an eventual package of reciprocal concessions; it seemed that no effort had been made to mark or segregate the rods so far withdrawn, which the IAEA considered essential to permit eventual sampling for the purpose of determining the history of the fuel use. It was also reported that Agency inspectors had been allowed to complete their previously interrupted inspection of the radiochemical laboratory/reprocessing plant without, however, having been allowed to sample the dissolver liquids.

At that juncture apparently contradictory reports emerged from Washington and Vienna. On 20 May it was reported from Washington that on the basis of information received from the IAEA, the US Administration had concluded that the DPRK had met its key demands with regard to the inspection, and it had decided to resume the high-level talks with Pyongyang. The IAEA, on the other hand, informed the authorities at Pyongyang that it considered its action as a serious violation of the safeguards agreement and said that if the withdrawal of the fuel was continued it would result in irreparable loss of the Agency's verification ability. Since, however, it might still be possible to implement the required safeguards measures, the IAEA announced that it would send a second team of senior safeguards officials to clarify means of implementing the requisite safeguards measures in Pyongyang. These consultations were duly held, but apparently the DPRK refused the IAEA's demand to be allowed to tag discharged fuel pins to record their position in the reactor core. Around the same time it was announced that the pace of the fuel removal was stepped up and that about half the rods had already been removed from the reactor. It seems that the speed with which the operation was carried out was a surprise both to the IAEA and the United States, which had apparently not known that the DPRK had indigenously produced refuelling equipment that allowed it to remove irradiated fuel pins within days, where it had been expected to need weeks. In the result, by the end of the month of May, the operator was said to be unloading the fuel in a day-and-night effort, placing the pins in the baskets at random and moving the baskets at random into the spent fuel pond. Among the pins discharged at that time were those in the pre-selected cross section, which led the IAEA to conclude by early June that it was no longer able to make a meaningful reconstruction of the irradiation history of the fuel, and had been prevented from ascertaining how much fuel had been irradiated since the reactor was started up in 1986. Thus, the IAEA reportedly became unable to verify the DPRK's claim that the fuel now being removed was the original reactor core, as against the surmise of a number of experts, that the reactor was refuelled in 1989, when it was known to have been shut down for 100 days, and the fuel that was then unloaded used for the extraction of plutonium. Repeated demands by the IAEA for the operation to be halted, and for inspectors to be allowed to select, segregate and secure fuel pins for later measurements were turned down, although the DPRK apparently did say it might place the discharged fuel under surveillance to preserve the possibility of future measurements, as part of a future package deal. As reported, consultations between the DPRK and the IAEA were concluded on 27 May, and the team returned to Vienna day later; two inspectors were left in place to report on further developments.

At this time, the IAEA's Director General informed the Security Council of the situation, stressing that if the fuel discharge operation of the reactor continued at the same rate, the IAEA's opportunity for future measurements would be lost 'within days'. In that case, he said, the Agency would not be able to verify with

any degree of confidence that all nuclear material in the DPRK subject to safeguards was in fact under safeguards; specifically, the Agency would not be in a position to verify the amount of plutonium produced there. Following consultations with the members of the Security Council, on 30 May its President made a statement on behalf of the Council, strongly urging the DPRK only to proceed with the discharge operations at the reactor in a manner which preserved the technical possibility of fuel measurements in accordance with the IAEA's requirements in this regard. The statement also called for immediate consultations between the IAEA and the DPRK. The full text is reproduced below in **Section IV. Documentation**. It is noted that in their final declaration on 3 June, the ministers for foreign affairs of the member states of the Non-Aligned Movement, meeting in Cairo, called on the DPRK to cooperate with the IAEA.

Subsequently, on 3 June the Agency's Director General informed the Security Council that the DPRK persisted in its uncooperative attitude with regard to verification of its past nuclear activities. All but 3,000 of the 8,000 fuel pins had by then removed, including those the IAEA would have wished to sample. The fuel had by then been so mixed up that the previous location of the various fuel pins in the reactor could no longer be established. Dr. Blix concluded that the IAEA was no longer in a position to verify Pyongyang's declarations regarding its discharge operations and therefore could not say whether nuclear material had been diverted: the opportunity for meaningful analysis had thus been lost.

At this juncture, reports from Washington indicated that the US Administration had concluded that the situation called for global sanctions against the DPRK. It was not clear, at the time, what measures would be involved, nor what support a call for punitive action would receive. China, in particular, remained an unknown factor in this regard. Some reports indicated that while it consistently opposed sanctions in order not to endanger the Pyongyang government's stability, it privately urged the latter to show more cooperation. The position of South Korea had allegedly hardened. Japan — which had expressed regret over the DPRK's actions — was understood to favour issuing a formal warning before sanctions were imposed. Russia seemed not to be in favour of strong sanctions but was not expected to veto a moderate resolution on that subject; it continued to call for a high-level conference on the Korean situation. Reports from Washington in early June, about diplomatic efforts to solicit support for a resolution on sanctions — including intensive high-level consultations with Russia, China and the Republic of Korea — indicated that the Administration was aiming at the adoption of a graduated range of punitive actions, to be chosen not only on the basis of their effectiveness but also of the support they might receive. Reportedly, in this approach, a first resolution might call for the suspension of scientific and cultural exchanges, the reduction of DPRK missions abroad, and a voluntary embargo on arms trade and of cargo flights to and from Pyongyang. The possibility of suspending UN industrial assistance was also mentioned. A full-fledged trade embargo and a ban on

financial transactions — including the cessation of the all-important currency transfers from Japan — would be contemplated only if, after a grace-period (expected to be 30 days) set in the first resolution — the initial effort did not bring the desired results. Press reports suggested that it could take weeks to garner enough support for sanctions to be adopted, but some sources in Washington hinted that the Administration was already counting on getting the necessary backing and might try to advance Security Council action. Meanwhile, it was reported that China had told Japan's foreign minister that it was still opposed to sanctions and had expressed regrets at the action taken by the IAEA's Board of Governors.

The Government in Pyongyang continued to warn that sanctions would mean a 'pitiless' war: a warning taken seriously especially in Japan, which was said to fear that its large Korean community might retaliate by causing urban disruptions or even by armed terrorism. On 10 June the IAEA's Board of Governors suspended the \$250,000 worth of technical assistance to the DPRK, as provided in the Agency's Statute in case of non-compliance with a safeguards agreement. Pyongyang was reported to have countered by saying it would no longer guarantee the continuity of measures intended to safeguard the security of its nuclear facilities, and on 13 June it announced its immediate withdrawal from the IAEA, and said that the two Agency inspectors still at Yongbyon would have nothing further to do in the country. It did not, however, specify whether the monitoring cameras at the site would have to be taken down, nor when the inspectors would have to leave.

Amidst growing tension; life in the Republic of Korea seemed to continue as usual. There was said to be little evidence in the South that Seoul had put its civil defence forces on alert and was calling up its six million reservists for a military drill, as reported in Western media. The United States was reported to be sending additional armour and aircraft to Korea and its Department of Defense announced it was 'significantly increasing' its intelligence assets in the Peninsula and was studying scenarios in which the DPRK might start a war using weapons of mass destruction.

On 14 June, former US President Jimmy Carter left for Pyongyang on what was characterised as a 'private trip', but reportedly at least in part to act as an 'unofficial' emissary for the Administration. As of the time this was written the results of his two lengthy talks with the DPRK's leader, Kim Il Sung, were not yet entirely clear. Press accounts of the proposals Carter carried and the concessions he obtained vary. Reportedly, the former president offered the DPRK 'friendship, trade and diplomatic relations', in return for 'full transparency' of its nuclear programme. Subsequent reports speak of Pyongyang's willingness to discuss a verified freeze on the completion of its new natural-uranium reactor and on its reprocessing facility, in return for American assistance with the construction and financing of a light-water reactor. In the short term, the DPRK had reportedly promised to let the two IAEA inspectors continue safeguarding the reactor and the

spent fuel pool at Yongbyong, and had agreed to the sustained use of monitoring cameras. The DPRK was also said to have made an offer for a presidential-level meeting with the RoK, without preconditions, and to have proposed the withdrawal of armed forces from the border as well as their eventual reduction. It was also understood to have repeated its demand for American security assurances and for the right to inspect US bases in the South, to ascertain the absence of tactical nuclear weapons.

It was reported that ex-President Carter told Pyongyang that Washington would be willing to resume high-level diplomatic discussion on condition that Pyongyang would freeze its nuclear activities, in particular desisting from reprocessing the spent fuel it had just unloaded from the 5-MW reactor. He was thought to have said that talks on assistance in nuclear matters would be possible, and that security assurances might be given; it appeared to be understood that the DPRK would be expected to abide by the 1991 agreement with the South on the denuclearisation of the Korean Peninsula.

While Mr. Carter said that his visit had ended the crisis on the Korean Peninsula, the US Administration was said to be more skeptical. Criticism of the visit was expressed in the media, especially in the United States, where some feared it might have given unwarranted credit to a regime in clear-cut violation of its treaty obligations, thus helping that regime gain time for its nuclear efforts. Other analysts, however, felt that the visit seemed to have brought the parties back to the negotiating table even if some of the 'concessions' reputedly made by Kim Il Sung were in fact 'repackaged' proposals previously rejected by the US Administration. Mr. Carter himself advised the authorities in Pyongyang that a rapprochement would be possible only if its promises were confirmed in writing. Both in Washington and in Seoul, contradictory accounts of the event seemed to have caused some confusion, *inter alia* about Mr. Carter's reported statement that sanctions were being held in abeyance. The White House has denied this and said that consultations were continuing at UN Headquarters. It was also stressed that the Administration had not 'provisionally agreed' to go ahead with the high-level talks, as stated by Mr. Carter, until it was assured that the DPRK had indeed frozen its nuclear programme by refraining from reprocessing, not refuelling the reactor, and allowing inspection to continue. As this *Newsbrief* went to press, there were reports that written assurances to this effect had been received and that Washington would consent to a resumption of the talks. Apparently, the US Administration no longer insists on the prior condition that the DPRK should make it possible for the IAEA to take measurements to determine past plutonium production. That, according to advice said to have been given to the IAEA recently by American experts, might to some extent still be possible if the Agency could inspect the waste sites to which it was previously denied access, and if it was given access to more reliable operating records than it has so far been shown. It is also understood to be theoretically possible to reconstruct the radiation

history of the discharged fuel by a detailed examination of all the fuel pins, but this would be costly and time consuming.

The offer of a presidential-level meeting between North and South was reportedly accepted in Seoul, where preparations were meanwhile set in motion. It was not held as certain there, where and when the event would take place. The questions whether it was held at all was seen as a first test of the success of ex-President Carter's discussions in Pyongyang.

Recent developments were widely seen to confirm earlier assumptions by the American intelligence community, that the DPRK had in the past extracted enough plutonium to manufacture several explosive devices. The plutonium that could be extracted from the fuel just withdrawn from the reactor was believed in Washington to be enough for four or five more weapons. Late reports indicated that the low level of iodine-131 in the irradiated fuel would permit reprocessing to begin almost immediately. American analysts were said to believe that the reprocessing of the newly extracted fuel would take six to nine months. Chinese and Russian sources still expressed doubt that Pyongyang had actually managed to go beyond plutonium production, to produce nuclear weapons; one high-level Russian source was quoted as saying that it would take the DPRK between three and seven years to make a nuclear bomb. Other observers, however, saw the accelerated development by the DPRK of its medium-range missile *Nodong-1* as a sign that it was already thinking of the means of delivery for its weapons, and that it might even be far enough advanced to try and compress the size of the device to where it would be useable as a missile warhead. There was also speculation that the main purpose of the DPRK's nuclear programme was to sell nuclear weapons, or perhaps even just plutonium, for convertible currency. The wish to earn hard currency through the sale of arms was seen by some analysts also to have accelerated the development of the *Nodong* missile, and of a cruise missile with a reported range of 100 miles, an improved version of the Chinese-designed *Silkworm*, apparently designed as an anti-ship weapon, which the DPRK was thought to have tested on 31 May. A South Korean press report quoting American sources also made mention of the ongoing development of a long-range missile named *Taepodong*, said to be capable of targeting all of Japan. The purchase by the DPRK recently of decommissioned missile-capable submarines from Russia, together with a supply of spare parts, is cited in further support of the theory that its nuclear effort may simply be part of a wider effort to bolster its armed force. In any case, in the past weeks the hypothesis that the DPRK was merely using the nuclear situation as a bargaining device to obtain economic and political concessions has lost ground, given the length to which it is evidently ready to go to obtain weapon-grade material and thwart international efforts to deter it.

Meanwhile, the country's nuclear development, notably reactor construction and fuel fabrication, appears to be proceeding apace. It reportedly has

fabricated a new core for the 5-MW reactor and is said to be working on the fuel for the two large reactors still under construction. According to American and European sources quoted in the United States, the first core for the 50-MW reactor at Yongbyon, which is to start operations in 1995, is almost ready, and fabrication of the first core for the 200-MW reactor, at Taechon, is expected to start right away; start-up of that reactor is planned for 1996. Both reactors are seen as intended primarily for plutonium production. In addition to the plutonium from the core of the 5-MW reactor and the material that may already have been reprocessed, the second Yongbyon reactor is said to be capable of producing 50–60 kg/yr, and the reactor at Taechon 160–200 kg/yr. The DPRK has notified the IAEA that in addition to the initial core of the 5-MW reactor which has now been withdrawn, and which it claims has been in place since start-up, it has produced one other core in a pilot fuel fabrication facility at Yongbyon. The IAEA apparently feels that it does not have enough information to be sure that the pilot fabrication facility where the first core was produced was shut down in 1986, as the DPRK claims, and was dismantled before 1990. There have been further reports that the Agency has evidence that the capacity of the reprocessing installation is being expanded by the introduction of a second line. The DPRK has apparently not notified the IAEA of this expansion, which is expected to be completed within six months.

(*Washington Post*, 19/3, 22/3, 25/3, 30/3, 31/3, 4/4, 5/4, 16/4, 17/4, 21/4, 22/4, 24/4, 1/5, 4/5, 7/5, 8/5, 14/5, 15/5, 16/5, 19/5, 20/5, 22/5; *Washington Post National Weekly Edition*, 13-19/6; *New York Times*, 22/3, 23/3, 28/3, 30/3, 31/3, 1/4, 2/4, 3/4, 5/4, 15/4, 21/4, 22/4, 24/4, 1/5, 6/5, 7/5, 9/5, 13/5, 15/5, 16/5, 18/5, 19/5, 20/5, 21/5, 22/5, 23/5, 28/5, 29/5, 30/5, 31/5, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6, 7/6, 8/6, 9/6, 10/6, 11/6, 12/6, 13/6, 14/6, 16/6, 17/9, 19/6, 20/6; *International Herald Tribune*, 25/3, 1/4, 2/4, 4/4, 8/4, 9/4, 14/4, 16/4, 4/5, 11/5, 13/5, 22/5, 24/5, 2/6, 3/6, 4-5/6, 15/6, 16/6, 17/6, 18-19/6, 20/6, 21/6, 22/6; *IAEA Press Releases*, PR 94/7, 16/3, PR 94/9, 21/3, PR 94/22, 21/5, PR 94/24, 28/5; *IAEA Information Circulars (INFCIRC)* 437, 438, 439, 440, all 14/4; *Independent*, 25/3; *Associated Press*, 25/3, 13/4, 27/4, 28/4, 31/5, 2/6; *Guardian*, 25/3, 2/6; *Times* [London], 25/3, 29/3, 4/4; *Süddeutsche Zeitung*, 30/3, 2/4, 11/4, 3/5, 21/5, 24/5; *Financial Times*, 30/3, 7/4, 9/4, 15/4, 30/4-2/5, 3/5, 20/5, 21/5, 24/5, 16/6, 20/6; *Le Monde*, 30/3, 5/4, 30/4; *UPI*, 31/3; *USNews & World Report*, 4/4; *KBS-1 Radio*, [Seoul], 6/5, in *JPRS-TND-94-009*, 14/4; *Daily Telegraph*, 6/4, 29/4, 3/5, 1/6, 2/6, 21/6; *Nucleonics Week*, 7/4, 11/4, 28/4, 26/5, 2/6, 9/6, 16/6; *Die Presse*, 9/4; *US State Department Briefing*, 11/4; *Die Welt*, 11/4; *Yonhap* [Seoul], 12/4, in *JPRS-TND-94-010*, 5/5; *Standard*, 15/4; *BBC World Service*, 15/4; *Newsreview* [Korea], 16/4; *United Press International*, 6/4, 16/4, 13/5, 19/5; *Nihonkeizai Shimbun*, 17/4, 28/4; *Neue Zürcher Zeitung*, 17/4, 3/5; *NuclearFuel*, 9/5, 6/6; *Reuter*, 10/5, 11/5, 3/6; *Japan Times*, 26/5, 27/5, 29/5, 1/6; *Economist*, 28/5, 4/6; *Asahi Shimbun*, 30/5; *Security Council Documents S/PRST/1994/28*, 30 May, Press Release 5850, 30 May, UN Press Release

DH/1658, 3 June; *Mainichi Daily News*, 31/5, 1/6; *McNeil/Lehrer Newshour*, PBS [New York], 13/5, *Telegraaf*, [Amsterdam], 17/6)

- According to reports from **Russia**, that country's authorities claim that allegations in the press about the use of a substance called 'red mercury' as an important forerunner in the production of boosted nuclear weapons, are based on a hoax. An investigation by Russia's prosecutor-general's office is said to have concluded that there is no such substance in nature nor has it ever been synthesised; stories about the supposedly highly valuable strategic commodity have apparently been circulated by confidence tricksters to promote clandestine trade in what is said to be ordinary mercury dyed red. Reportedly, the British Ministry of Defence and the IAEA have come to a similar conclusion. The Russian Ministry of Defence has dismissed as absurd and absolutely groundless assertions by scientists, aired on British television, that the compound exists and has been used by Russia in the construction of a simple, cheap and clean pure-fusion weapon or neutron bomb, the size of a tennis ball. (*Daily Telegraph*, 19/3; *Channel Four Television, Dispatches*, 13/3; *Associated Press*, 13/4; *Times* [London] 13/4; *N.Y. Post*, 13/4; *Financial Times*, 14/4; *Die Presse*, 14/4; *Izvestia*, 15/4, 18/4; *ITAR-TASS*, 13/4, 15/4, in *JPRS-TND-94-010*, 5/5)
- **USSR/USA**: Recently, a book entitled *Special Tasks: The Memoirs of an Unwanted Witness — A Soviet Spymaster*, written by a senior Soviet intelligence officer, Pavel Sudoplatov, with the help of his son Anatoly and former *Time* bureau chief in Moscow, Jerrold Schecter, and his wife Leona, was published in the United States and Great Britain, by Little, Brown and Company. It contains the allegation that some of the physicists involved in the development of America's first nuclear weapons, viz. Niels Bohr, Enrico Fermi, George Gamow, J. Robert Oppenheimer and Leo Szilard, deliberately gave the Soviet Union information regarding the Manhattan project. While some commentators consider it possible that some highly moral persons might have done so in the conviction that the nuclear secret should not be the monopoly of one country, many well-informed historians and physicists deny the charge; grave doubt is also expressed at the author's motives and character. It is noted that several of the persons named were not associated with the Manhattan Project. The official Russian news agency *ITAR-TASS* has called the book a 'mosaic of truthful events, semi-truths and open inventions'. (*Libération*, 18/5; *International Herald Tribune*, 19/5; *Washington Post*, 26/5, 1/1, 3/5; *Independent*, 26/5; *New York Times*, 1/5, 6/5; *New York Times Book Review*, 22/5; *New York Review of Books*, 9/6 [Thomas Powers], 23/6 [George Kennan])

b. NPT Events

- Argentina is expected to accede to the NPT in the foreseeable future. UN Secretary-General Boutros-Ghali is reported to have asked President Menem to expedite the move, as well as that of **Brazil**.

Argentine's President is said to have promised to hold talks with Brazil to this end. (*La Prensa* [Buenos Aires] 15/3, in *JPRS-TND-94-007*, 23/3)

c. Other Non-Proliferation Developments

- Prof. Lawrence Scheinman has been nominated to be Assistant Director for Non-Proliferation at the Arms Control and Disarmament Agency (ACDA). The appointment is subject to confirmation by the Senate. Prof. Scheinman is a consultant to the US Department of Energy and Professor of Government at Cornell University. He is a member of PPNN's Core Group. (*Washington Post*, 2/5; Direct information)
- The Nuclear Suppliers Group held a plenary meeting in Madrid on 11-14 April, at which it invited **Argentina** to join. This brings the membership of the NSG to 28. (*Arms Control Today*, Vol. 24, No. 4, May)
- The British Prime Minister has announced that the **United Kingdom** will not resell the 600-800 kg of highly-enriched uranium (HEU) of US origin which it has left of an initial amount of 1,000 kg supplied for use in research reactors twenty years ago. Reportedly, several western countries had sought to buy HEU from Britain. Among reactors affected by this policy is the German FRM-2, at Garching, near Munich, plans for which may have to be abandoned if no other supplier can be found. (See below, p. 12) (*NuclearFuel*, 23/5; *Nucleonics Week*, 2/6)
- On 16 May, **Brazil** ratified the Treaty of Tlatelolco. The Quadripartite Safeguards agreement between **Argentina**, Brazil, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Material (ABACC) and the IAEA entered into force on 4 March, upon completion of the ratification procedures. (IAEA Press Release PR 94/11, 8/4; *Nuclear Engineering International*, June)
- According to a report in the British *Sunday Telegraph*, a proposal for the establishment of a **new United Nations organisation** to help combat the threat of nuclear proliferation with the help of the intelligence services of major states, is under discussion. The plan would supposedly need Security Council approval. The executive chairman of the Special Commission of the Security Council on Iraq, Amb. Rolf Ekeus, is said to have had talks on the issue in various capitals. (*Nucleonics Week*, 9/5)

d. Nuclear Disarmament and Arms Limitation

- United Nations Secretary-General Boutros-Ghali has confirmed the appointment of Vladimir Petrovsky of **Russia** as Secretary-General of the Conference on Disarmament (CD) in Geneva and as his personal representative to the Conference. Deputy Secretary-General of the CD is Abdel Kader Bensmail, of **Algeria**.
- News has come from **Ukraine** that the first shipment of 25 tons of nuclear fuel to be exchanged for warheads has been received from **Russia**, and a third train-load of sixty ICBM warheads would now be sent to Russia for

dismantling pursuant to an agreement which reportedly obliges Ukraine over a ten-month period to transfer to Russia 200 warheads from SS-18 missiles, for which it should receive 100 tons of low-enriched uranium fuel, converted in Russia from the high-enriched uranium extracted from the warheads. The warhead shipment had been held up for several weeks pending the receipt of the fuel. The head of the Russian Strategic Rocket Forces has said that the warheads from all 46 SS-24 missiles in Ukraine have been de-activated by removal. When **United States** Defense Secretary William Perry was in Kiev in March, he promised Ukraine an additional \$100-million to help in dismantling nuclear warheads and converting Ukraine's military industries to civilian production. Part of the money is also intended to fund tighter security for the shipment and storage of nuclear weapons in Ukraine. During his visit, Secretary Perry was shown, among other things, a missile factory and a strategic missile base. The parliamentary elections of April do not seem to have led to a clear majority for any one policy nor to have given President Kravchuk a specific mandate. The latter suffered a major political defeat when his attempt to cancel presidential elections foreseen for 26 June was rejected by Ukraine's parliament. The worsening of relations with Russia over control of the Crimea and the division of the Black Sea fleet is also seen as a potential threat to Ukraine's early transition to non-nuclear status.

According to a report in the trade press, one result of the American undertaking to buy uranium from weapons previously deployed in Ukraine, has been to depress the uranium market.

(*Financial Times*, 22/3, 15/4; *Reuter's*, 22/3; *Washington Post*, 23/3; *Associated Press*, 7/4; *ITAR-TASS*, 13/4, 14/4, in *JPRS-TND-94-010*, 5/5; *United Press International*, 14/4; *ENS NucNet*, 15/4; *WirtschaftsWoche*, 26/5; *Arms Control Today*, Vol. 24, No. 5, June; *New York Times*, 3/6)

- In the **United States**, critics within and outside the Congress blame the Administration for being slow in finalising arrangements with **Russia** for the accounting for, and disposing of, fissionable material from nuclear weapons. Precious time is said to be lost in bureaucratic hold-ups, especially on the part of the Department of Defense, which is unwilling to exchange information with its Russian counterparts; observers fear that the delay endangers the chances of managing and disposing of excess Russian weapons material. In a reported effort to ensure that Russian nuclear material is properly accounted for and safely stored, Washington has asked Moscow for information on its stockpiles of plutonium and enriched uranium, as well as on the whereabouts of that material. A senior official of Minatom, the Russian Atomic Energy Ministry, has acknowledged that the interim storage of plutonium from dismantled nuclear weapons in Russia is not very safe and that there is no guarantee against theft. Apparently, his statement was connected with attempts to speed up the release of US funds for the design and construction of plutonium storage facilities. Plans exist

to construct such a facility at Mayak, one of the former USSR's weapon-construction sites.

Russia has reportedly agreed to phase out the production of weapons-grade plutonium. The last three reactors still operated to produce weapons-grade plutonium, one at Krasnoyarsk-26 in south-central Russia, and two at Tomsk-7 in Siberia, are dual-purpose facilities which also produce steam for heat and electricity generation. Russia has undertaken to stop operating them once it can replace them by other power sources, and the United States has promised to help obtain financing for the construction of alternative power plants. Reportedly, Russia's Ministry for Atomic Energy hopes to phase the three reactors out by 1997-98. Sources in Washington mention the possibility of converting the power plants to the use of coal or natural gas. Six other plutonium-production reactors — five at Kyschtym and one at Tomsk — were shut down in the period 1987-1990. Reportedly, Russia's nuclear authorities hope that the announcement that plutonium production would be halted will also help prompt Washington to give assistance in the construction of new storage facilities.

The talks between the United States and Russia on steps to ensure the 'transparency and irreversibility of the process of reduction of nuclear weapons', on which Presidents Clinton and Yeltsin had reached agreement in January, and which had been further elaborated between the US Secretary of Energy and the Russian Minister for Atomic Affairs, have continued in May. Reportedly, Russia has offered the Tomsk-7 facility as a subject for reciprocal visits but this is not a warhead dismantlement facility. In return, US officials seem uncertain as to whether Russians should indeed be allowed to the Pantex site and some would seem to find Rocky Flats, which is also not a dismantlement facility, more suitable for such visits.

The United States is running out of storage space for the plutonium derived from dismantled nuclear weapons. No final decision has been made on the eventual disposition of the approximately 50 metric tons of plutonium left over from the weapons programme. The Department of Energy reportedly wishes to retain 20,000 plutonium 'pits' from dismantled weapons. So far, 6,000 pits have been stored at the Pantex plant in Texas, but the Federal Government is said to have promised the State of Texas to limit storage there to 12,000 pits. Consideration is now being given to storage of further amounts of plutonium at military bases in the United States, both apparently at bases slated to be closed down and at active bases. Secrecy rules are expected to prevent disclosure of the actual storage sites. The Energy Department has started a nation-wide review of its 'vulnerabilities' in storing and handling plutonium, checking on conditions that could cause radiation hazards to workers, the environment and the public.

Uncertainties have arisen about the total amount of plutonium which the United States has produced. Estimates vary. In December 1993, the Department of Energy (DoE) disclosed that 53 metric tons of

weapons-grade plutonium and 13 metric tons of reactor-grade plutonium had been produced at Hanford, for a total of 66 tons. According to the National Resources Defense Council, however, 59.2 tons of weapons-grade plutonium was produced, 4.7 metric tons having been incorrectly labelled as reactor-grade material. Adding the remaining amount of reactor-grade material to the supposed stock of weapons-grade plutonium gives a total of 67.5 metric tons, which reflects a discrepancy of 1.5 metric tons unaccounted for. The media make much of the fact that the Department's procedures had been unable to spot the discrepancy, which involves enough material to make 300 bombs. DoE has since raised its calculation by 1.4 metric tons, which still leaves a gap of 100 kg. Energy Secretary O'Leary has ordered a comprehensive study of the precise amounts of plutonium on hand, which, according to some press reports, total 102 metric tons for all US facilities.

As announced by the Director General of the IAEA, the **United States** is planning to put a considerable quantity of plutonium from nuclear weapons under Agency safeguards. The amount involved is said to be 7 metric tons of plutonium scrap. The costs of safeguarding the material, which apparently will not just be stored but may also be fabricated into mixed-oxide (MOX) fuel or mixed with waste or disposed, will be paid by the United States.

(Associated Press [Washington], 17/3; **New York Times**, 17/3, 5/5, 20/5, 27/5; **International Herald Tribune**, 18/3; **Le Monde**, 19/3; **Nucleonics Week**, 14/4, 28/4; **NuclearFuel**, 25/4; **Post Soviet Nuclear Complex Monitor**, 3/5, in **Uranium News Briefing** 94/19; **United Press International**, 19/5; **Guardian**, 21/5; **Japan Times**, 25/5; **Presse**, 26/5; **Standard** [Vienna], 26/5; **Daily Yomiuri**, 28/5; **Arms Control Today**, Vol 24, No. 5, June)

- In the **United States**, the secret system of twenty or more so-called 'black programmes' providing means of communication, shelters, command airplanes, special forces, etc. which was to have enabled the government to keep operating after a sustained nuclear attack on Washington, will be halted as of 1 October. The *Doomsday Project* is said to have been in existence for 11 years, and to have cost \$8-billion. The project, which many military critics apparently saw as impracticable, had been the target of accusations that its secret nature gave room for widespread corruption. (**International Herald Tribune**, 19/4; **Times** [London], 19/4)
- Following the agreement reached between Presidents Clinton and Yeltsin in January, the strategic nuclear missiles of the **Russian Federation** and the **United States of America** are no longer targeted at each other's territories. This has reportedly been done by the removal of the target coordinates from the computer memories in the guidance systems, giving them a 'zero flight task'. It is said also to have the result that the missiles cannot respond to an unauthorised launch. Similar measures have been announced with respect to the Russian Federation and the **United Kingdom**.

(*Izvestiya*, 22/4, in *JPRS-TND-94-011*, 16/5; *Washington Post*, 31/6; *Mainichi Daily News*, 1/6)

- At a United Nations Conference on Disarmament Issues, held at Hiroshima, **Japan**, in May, Yohei Kono, president of the principal opposition party, the Liberal Democrats (who is widely seen as a future Prime Minister — Ed.) — called for a conference of the nuclear-weapon states, to be held at Hiroshima in 1995, to discuss the total abolition of nuclear weapons. (**Direct Information**; *Japan Times*, 24/5, 25/5; *Kyodo*, 28/5)

e. Nuclear Testing

- As reported in *Newsbrief 25*, the Conference on Disarmament (CD) decided on 25 January to re-establish an Ad Hoc Committee to negotiate a comprehensive nuclear test ban. The Chairman of the Ad Hoc Committee, Ambassador Miguel Marin Bosch of Mexico, has said that a comprehensive test ban treaty could be agreed in principle before the 1995 NPT Conference. The United States has gone on record as calling for a CTBT 'at the earliest possible time', while Russia has used the phrase 'as soon as possible'. China has said it seeks a CTBT 'no later than 1996'; it appears to favour a treaty that leaves room for 'peaceful' nuclear explosions (PNEs). France is understood to make its support for a CTBT depend upon a lengthy extension of the NPT; this is thought to be the UK's policy as well. France also reportedly wishes to reserve the right to conduct 'safety tests', even after joining a CTBT. Until recently this appears also to have been the policy of the United Kingdom, but it now says it will 'look for a verifiable and effective prohibition of all nuclear tests' and that to keep nuclear weapons safe and reliable it aims 'to use and develop alternative technologies'. Shortly before the CD adjourned the first part of its 1994 session, on 31 March, it received an Australian draft for a CTBT, which partly overlaps with an earlier Swedish text. Discussions resumed in mid-May. (**Disarmament, Newsletter of the United Nations Centre for Disarmament Affairs**, Vol. 12, No. 1, Jan-Feb; *Disarmament Times*, Vol. XVII, No. 1, February; *Financial Times*, 31/3; *Arms Control Today*, Vol. 24, No. 3, April, No. 4, May; statement by Amb. Hou Zhitong, **Press Release, UN Mission of the People's Republic of China**, 19/4; *Hansard (Commons)*, 14/6)
- On 9 June, **China** conducted an underground test of a hydrogen bomb at the Lop Nor site in the province of Xinjiang. The event had been awaited for some time and may have been delayed so as not to antagonise the US Administration when it was about to extend China's most-favoured-nation status. A foreign ministry spokesman in Beijing, announcing the test, repeated his country's support for 'the conclusion of a comprehensive test ban treaty no later than 1996'. The Verification Technology Information Centre (VERTIC) in London is cited in the media as believing that China will try to complete a further series of tests (the number discussed is 'five or six') before a test ban has been agreed in Geneva, including possibly one more in 1994. The tests are said to be for the purpose of

developing lighter and more compact warheads for MIRVed missiles, mobile ICBMs or submarine-launched ballistic missiles, while improving their yield. During a state visit to Kazakhstan, **China's** Prime Minister Li Peng was reportedly met with protests against his country's nuclear tests. Press reports from Almaty quote him as saying that his country 'might stop testing' by 1996. Reports from Washington indicate that the US Administration, concerned that additional Chinese tests might put the current moratorium at risk, has called on Beijing to refrain from further testing; Australia, Japan and the United Kingdom are also said to have expressed their displeasure at the event. (*Xinhua* [Beijing] 27/5, in *JPRS-TND-94-011*, 16/5; *Süddeutsche Zeitung*, 28/4; *Times* [London], 28/4; *International Herald Tribune*, 28/4; *New York Times*, 26/5, 11/6; *Japan Times*, 29/5; *Arms Control Today*, Vol. 24, No. 5, June; *BBC World Service*, 10/6)

- **France's** decision to delay until 2010 the deployment of the new long-range nuclear missile known as the M5 is reported to have reduced the need for an early resumption of French nuclear tests. The guidelines for the country's defence programme for the rest of the decade include increased financing for the simulation of nuclear tests. Defence Minister Léotard has once again called for the resumption of tests, citing support from the scientific community. Senate President Monory has expressed agreement with the view of President Mitterand, that the question of the resumption of France's nuclear tests depends on the actions of the major weapon powers. He is quoted as saying that if those states do not resume testing, neither will France, and if they do resume France will act likewise. (*Financial Times*, 8/4; *Standard* [Vienna], 22/4; *Le Monde*, 17/5; *International Herald Tribune*, 18/5)

f. Nuclear Trade and International Cooperation

- **Armenia** will get assistance from **Russia** for the restoration of its nuclear power station, which has been shut down since 1989. The European Bank for Reconstruction and Development has given Armenia a preferred credit of \$57-million towards the cost of reopening the station. (*Yerevan Radio*, 17/3, in *JPRS-TND-94-007*, 23/3; *NucNet News*, 30/3; *BBC Summary of World News*, 20 May, in *Uranium Institute News Briefing 94/21*)
- **Canada** is making an effort to sell **China** its Candu reactors. Seeing a potential market in China for seven 650-MW Candu plants, worth \$10.5-billion, Ottawa reportedly hopes shortly to conclude a nuclear cooperation agreement with Beijing. The fact that Chinese Vice-Premier Zou Jiahau recently toured a Candu facility in Canada and the good performance of this reactor type in South Korea have raised hopes that China might be interested in purchasing Canadian power plants. However, Canadian officials warn against overly optimistic expectations and point out that China has not yet asked for any bids. (*Citizen* [Canada], 28/5; *Toronto Star*, 29/5; *Nucleonics Week*, 2/6)

- **Hungary** is said to be conducting talks with **Germany** about taking over 235 slightly irradiated fuel assemblies from the VVER-440 power reactors at Greifswald, in the former **German Democratic Republic**, which were closed in 1990. The fuel would be used at the Paks station and be free of charge. There had been reports that Hungary would no longer send its spent VVER fuel assemblies back to **Russia**, whose environmental legislation now forbids imports of nuclear waste; instead, it was expected to keep its irradiated fuel in a dry vault storage facility, to be newly built. Another reason given for Hungary not to send the fuel back was the fact that **Ukraine** had in the past made difficulties about the transit of spent fuel through its territory, and had levied high charges. More recently, however, there was a report that on 1 April a Russo-Hungarian protocol was signed in Budapest, providing for the take-back by Russia of Hungarian spent fuel. Reportedly, the original agreement provided only for the supply of fresh fuel but not for the take-back of irradiated fuel. According to reports from Moscow, while Russia's ministry for the environment and the Duma consider the new agreement a gross violation of Russia's environmental protection laws, the office of President Yeltsin has said that the agreement — which is said to bring an annual revenue of \$40-million, is the logical consequence of the original agreement on the supply of the reactor and its fuel. (**NuclearFuel**, 28/3, 9/5; direct information)
 - **China** and **India** have reportedly agreed to supply the **Republic of Korea** with 100 metric tons of heavy water each, for use in the three 600-MW Candu-type reactors being built at Wolsung. **Canada** will supply the remainder. There are reports that the deal encourages the Indian authorities to consider constructing two new heavy-water production plants and expand existing capacity. (**BBC World Service**, 11/4; **Nucleonics News**, 14/4; **NuclearFuel**, 9/5)
 - Financing problems are said to delay the realization of **Iran's** plans to build several nuclear power stations. **Russia** is reportedly still prepared to help with the construction of a dual VVER-440-213 nuclear power plant near Bushehr and also to assist Iran in completing the two 1,200-MW reactors which the **German** firm Siemens was building there and has left unfinished. According to a spokesman for the Iranian Atomic Energy Agency, quoted by the *British Broadcasting Corporation*, the original Bushehr nuclear power plant could be completed within four years with Russian help. The French news agency *Agence France Presse* reported in April that according to an Iranian source, work under the agreement with Russia had already started, while a Russian source in Teheran indicated that the cooperation had not gone beyond a declaration of intent, that Russian technicians were in fact inspecting the site but that for the time being no actual construction was under way and that the final agreement had not even been signed. The implementation of the agreement with **China** for the purchase of two 300-MW power reactors is also said to be held up because of lack of finance. (**Agence France Presse**, 19/12/93 in **FBIS-NES-93-242**, 20/12/93; **Middle East News Agency (MENA)**, 13/4, in **JPRS-TND-94-010**, 5/5; **Enerpresse**, 15/4; **BBC Summary of World Broadcasts**, 23/4, in **The Uranium Institute News Briefing**, 94/17)
 - A report broadcast on **Pakistan's** radio in February, that **France** had offered to revive talks on the supply of a nuclear power plant, has not been confirmed. (It should be noted that unless Pakistan accepts international safeguards on all its nuclear activities, France would not be in a position to make such a supply — Ed.) — China, which is supplying Pakistan with a 300-MW PWR at Chasma, has started a training course for Pakistani reactor operators. (**Islamabad Radio Pakistan**, 21/2, in **JPRS-TND-94-006**, 16/3; **ENS NucNet**, 26/4)
 - In a lengthy report from Seoul, the American periodical *Nucleonics Week* describes how, in the face of growing internal resistance to the construction of new nuclear plants, the nuclear industry in the **Republic of Korea** is preparing to enter the export market for nuclear reactors. South Korea's nuclear industry is seen as capable of designing and producing virtually all parts of a pressurised water power plant, including the fuel; it claims that the only parts it does not make are those it finds uneconomical to make. (**Nucleonics Week**, 2/6)
 - **Russia's** Ministry of Atomic Energy and the **United States'** firm Westinghouse have concluded an umbrella accord that reportedly sets the stage for joint development of fuel cycle products and services in both countries. For the next three to five months joint teams will consider possible areas of cooperation. (**Energy Daily**, 5/4; **NuclearFuel**, 11/4)
 - **Thailand** has received an offer from **India** of a nuclear research reactor described as being 'of an advanced design'. (**Delhi All India Radio Network**, 16/12/93 in **FBIS-NES-93-240**)
 - The **United States** Administration has lifted export restrictions on the sale of most commercial computer and telecommunications equipment to China, Russia and Eastern Europe. The measure coincided with the end of Cocom (Coordinating Committee for Multilateral Export Controls). Reportedly, no agreement was reached at a meeting in the Hague between Australian, European, Japanese and United States officials on a successor to Cocom to control exports to 'countries of concern', including DPRK, Iran, Iraq and Libya. American observers comment on the need to expand the group of nations involved in the application of export controls, given the widening dispersion of sophisticated technologies and the need to seek the greatest possible support for control regimes. (**Washington Post**, 31/3, 4/4)
- g. Peaceful Nuclear Developments**
- **Bulgaria:** In addition to the \$50 million already spent on backfitting the four VVER-440 reactors at Kozloduy, there are plans for further upgrade work at a cost of \$200 million. Of these four reactor units, during the last month before the period reviewed in this issue, No. 1 was reported to have functioned near full

capacity; No. 2 was shut down for maintenance; No. 3 and No. 4 operated at 50 per cent of nominal power. The four reactors are among the ten operating VVER Model 230 units which are considered to be among the least safe of Soviet-designed power reactors. An expert report by the IAEA is said to have found that recent work has significantly reduced safety risks at these plants (of which there are also two at Bohunice in the Slovak Republic, and two each at Kola and Novovoronezh in Russia), but major generic issues remain to be dealt with. At a meeting in late May, energy ministers from European Union countries adopted a declaration calling on the Commission of the European Union, and on member states, to push for the shutdown of the 'least safe' nuclear power plants in Eastern Europe. (*Financial Times*, 13/5; *Enerpresse*, 21/4; *Nucleonics Week*, 26/5, 2/6)

- **Canada's** 540-MW Pickering-7 reactor on 11 April completed 714 days of unbroken service — a world record. During 1993 the reactor operated at an average capacity of 98.48 per cent. It will be shut down in September for scheduled maintenance. (*Nucleonics Week*, 14/4)
- **China** has announced that it will build an additional 30,000 megawatts of nuclear power by the year 2020 and 150,000 megawatts by 2050. At the end of the present decade it plans to have 10,000-MW of nuclear power in operation. It is planning to build two 600 megawatt units of its own design near the 300-MW(e) indigenous reactor at Qinshan, with construction of one starting early in 1995 and the second one year later; both should be ready around the start of the next century. At Daya Bay in Guangdong province a second 900-MW(e) power reactor of French design is expected to enter operation in June and a feasibility study will be made of building two further 900-MW units there. Other sites under consideration for nuclear power stations are Liaoning province (where two 1,000-MW(e) units of Russian design are planned), Zhejiang province (two 1,000-MW PWRs), Jiangxi (two 300-MW PWRs), Fujian (where a feasibility study has been completed of the construction of a power station consisting of six 900-MW(e) reactors — some reports speak of plans to build either two 600-MW or two 1,000-MW PWRs there), Shandong and Hainan. Work is also said to proceed on a series of research reactors, including a 65-MW (thermal) fast breeder reactor, gas-centrifuge and laser isotope enrichment technologies, the expansion of the indigenous fuel fabrication capacity, and reprocessing. (*ENS NucNet*, 23/3; *BBC Summary of World Broadcasts*, 27/4, 28/4, in *Uranium Institute News Briefing*, 94/18; *UIC Newsletter* [Australia] March/April; *Nucleonics Week*, 12/5)
- Environmental activists continue to express doubts about the feasibility of using Westinghouse technology to complete the two Soviet-designed VVER-1000 reactors at the Temelin power station in the **Czech Republic**. The White House has advised the US Nuclear Regulatory Commission (NRC) to issue a license requested by Westinghouse for the export of nuclear fuel for the plant, and approved \$317 million in

loan guarantees to finance the work. The NRC had already issued licenses for the export of instrumentation and control systems for the facility, but Westinghouse's application for export permission for the initial fuel cores and four reloads, reportedly amounting to a total of 342,000 kg of 4.5 per cent enriched uranium, is being challenged by American, Czech-Slovak and Austrian environmental groups. By press time the NRC had not yet ruled on the challenge. The Export-Import Bank loan for the transaction had earlier been challenged and was the subject of attempts by Austrian officials to persuade the US Congress to have the loan stopped see *Newsbrief* 25, p. 9. Some members of Congress are concerned that in case of an accident the United States might be held liable. The House Energy and Commerce Committee is said to be among Congressional committees looking into the matter; the General Accounting Office of the Congress is planning to make an extensive study of conditions at the site. Reports describing the project as dangerous and unjustified continue to appear in the Austrian press, which claims that the safety equipment Westinghouse would introduce into the station will be incompatible with its Russian design. Extensive articles speak of premature licensing procedures, inadequate supervision and control during construction, and incomplete documentation about quality control and safety analyses. Austrian environmental groups, supported by a variety of politicians, are still trying to have the project stopped, and there is a report that the Czech President, Havel, has promised his Austrian counterpart that once the two units at Temelin have been completed, the Czech Republic will not build any further nuclear power stations. A statement made in Prague by deputy prime minister Busek, who heads one of Austria's major coalition partners, the (christian-democrat) People's Party, that he saw no alternative to nuclear energy in the Czech Republic, has given rise to sharp criticism in the Austrian media; other politicians, including those from coalition parties, have vowed to continue the fight against the completion of Temelin and call for a referendum on the matter in the Czech Republic. Austria's nuclear experts see the country's anti-nuclear efforts as misplaced and say that the apprehensions about the risks arising from Temelin's completion come from people incompetent to judge the situation. According to these experts, Temelin will be one of the most modern and safest power plants in eastern Europe. Within the Czech Republic, 'green' politicians are also reported to oppose plans to complete the station. There are calls for further environmental impact studies before further construction takes place. The government plans to have in place legislation regulating the operation of nuclear plants, liability, governmental safety controls and responsibility for the disposal of spent fuel, before the station starts operation, presumably in 1997.

Major daily newspapers in Austria also condemn the upgrades, respectively completion, of Soviet-designed power stations in other states in that country's vicinity. One of the targets of their anger is the four-unit VVER-230/213 power station at Mochovce in the **Slovak Republic**, for which, reportedly, Russia will guarantee a \$450-million loan. An expert mission from

the IAEA in May is reported to have found the safety upgrades already carried out or planned at Mochovce to be generally satisfactory. The Austrian press also reflects concern at the decision of the Slovak government to backfit the old VVER-440 reactors at Bohunice, so as to keep operating them until the end of the decade. Vienna agitates as well for the shut-down of the American-design Krsko power station, which **Slovenia** says it will need until well into the next century, and which also provides power to **Croatia**. Krsko is depicted as having a number of inherent flaws and it is claimed that although the facility is sited in an earthquake area no seismic probes were made before construction started. Austrian media are now also beginning to express misgivings about the presence of twelve German and Swiss nuclear power stations at relatively small distances from the country's borders, claiming that a number of them are technically flawed. The City of Salzburg has formally protested in Munich against plans of the Technical University at Munich to build a 20-MW research reactor at Garching, near the Bavarian capital. Reports that eventually **Hungary** might wish to construct an additional nuclear power station have also led to anxious comment. A number of influential politicians in Vienna have expressed the opinion that for Austria to join the European Union as planned would run counter to the country's anti-nuclear policy. There seems to be some doubt if, once Austria is a member, its legal prohibition on the use of nuclear energy for power production could be sustained against a formal challenge.

(**Die Presse**, 22/3, 23/3, 14/4; **Kurier**, 23/3, 25/3, 20/4, 4/5, 15/5; **Nuclear News**, March; **WirtschaftsWoche**, March; **NuclearFuel**, 11/4; **Standard**, 14/4, 15/4, 19/4, 27/4, 29/4, 4/5; **Nucleonics Week**, 21/4, 19/5, 1/6, 2/6; **Salzburger Nachrichten**, 22/4, 24/4, 26/4, 27/4, 3/5, 4/5, 16/5, 20/5, 21/5; **SpentFUEL**, Vol. 1, No. 2, 25/4; **New York Times**, 21/5, 22/5; **Guardian**, 23/5; **NucNet News**, 24/5)

- In **France**, one person was killed and several others were injured in a chemical explosion during decommissioning operations at the first French breeder reactor, the 40-MW *Rapsodie*, at the Cadarache nuclear research centre. The event is described as non-nuclear and is thought to have been caused by the exposure to air of sodium coolant.

France's last remaining gas-cooled reactor, *Bugey-1*, was closed down for good on 27 May. The utility company *Electricité de France* decided in the late 1980s to phase out its French-designed gas-cooled reactors, because they demanded a dedicated fuel cycle and their operating costs were higher than those of PWRs.

Foreign utilities that form part of the consortium cooperating in the *Superphenix* project reportedly seek a change in the partnership agreement, to reflect the decision they say the French government has taken unilaterally, to use the reactor for research and development. It still does not seem to be certain if and when *Superphenix* will start up again. Whether it does or not, i.e., whether it will be operated or stopped for

good and decommissioned, the costs already incurred and those still to come are expected to be very high. Anti-nuclear groups, meanwhile, claim that the campaign to close the project down altogether.

(**Die Presse**, 31/3; **Corriere della Sera**, 31/3; **Le Monde**, 2/4; **Libération**, 2/4; **Süddeutsche Zeitung**, 2/4; **Nucleonics Week**, 7/4, 5/5, 12/5, 2/6; **New Scientist**, 23/4)

- **Germany's** Biblis-A reactor, where in early March a pump was damaged by fire, was given permission by the Federal government to restart, over the protests of the provincial government. The operation was briefly interrupted by a short-circuit in the motor of an auxiliary oil pump, but electricity production was resumed only to be aborted again after a small leak occurred in the pressuriser system. Unconfirmed press reports speak of ruptures in a steel pipe. Reports in the first week of April had it that the reactor would remain closed down for the time being, but a few days later operations were resumed once more, against continuing protests by environmentalist groups.

It has been announced that the new mixed-oxide (MOX) fuel fabrication plant of Siemens AG at Hanau, the completion of which was stopped three years ago by Hesse's provincial authorities when it was 95 per cent ready, will remain shut down. The Federal Ministry of Environment and Nuclear Safety had been paying the cost of keeping the plant on standby but will apparently no longer do so. The decision, which is blamed on the environmental policies of the provincial government, may have serious consequences also for the continuation of uranium fuel fabrication and thus for the employment situation in the area. Complaints are heard about plans to use sixteen MOX fuel elements that were previously manufactured at Hanau in the nuclear power station at Gundremmingen. The authorities are keeping the date and the route for the transport of the fuel elements secret.

(**Süddeutsche Zeitung**, 17/3, 25/3, 8-9/4, 23/4, 27/4; **Salzburger Nachrichten**, 17/3, 24/3; **NucNet**, 17/3, 18/3, 23/3, 22/4; **Frankfurter Allgemeine Zeitung**, 18/3, 24/3, 25/3, 9/4, 11/4, 23/4; **Die Welt**, 24/3, 25/3, 29/3, 9/4, 11/4; **Nucleonics Week**, 5/5)

- In **India**, Unit 1 of the Rajasthan Atomic Power Station (RAPS-1) has been shut down, following a sustained heavy-water leak. Construction work on four power reactors has been suspended, following the partial collapse of the inner containment dome of the Kaiga-1 reactor in Karnataka state. The other plants involved are Kaiga-2 and RAPS-3 and 4. The incident seems to have resulted from an unauthorised change in the design. Kaiga-1 is about half-finished. While the plant operator, the Nuclear Power Corporation said it still expected the plant to go critical as scheduled in 1996-97, some analysts say the accident could set back the Indian programme by a year. The Kaiga plant is said so far to have exceeded its budget by 200 per cent. (**NUCNET News**, 25/5; **Nucleonics Week**, 26/5; **Reuter's**, 25/5, 29/5; **Asahi Shimbun**, 30/5)

- Although **Indonesia's** Environment Minister had been quoted as saying that his country had no plans to build a nuclear power plant for another decade (see **Newsbrief** 25, p. 9) the discussions about the construction of a nuclear power plant at Mount Muria are obviously still going on. According to the director general of the national Atomic Energy Agency, Djali Ahimsa, a proposal to build two 600-MW light-water reactors will shortly be considered by the country's Energy Coordination Board. Ahimsa is quoted as admitting that there is domestic opposition to the plan. If approved, the power station may be built by a Japanese company; Indonesia would also be interested in obtaining fuel-cycle services there. Japanese environmentalists have appealed to the Indonesian government to reconsider the matter. According to a report from the Indonesian press agency *Antara*, quoted in the Australian press, the plans are likely to go ahead, despite objections by residents of the area. (**United Press**, 21/3; **Sydney Morning Herald and Courier Mail** [Queensland], 24/3; **Australian**, 14/4; **Nucleonics Week**, 21/4)
- **Japan's** prototype fast breeder reactor *Monju* achieved initial criticality on 5 April. The 280-MW plant will be connected to the grid in April 1995 and should be in full operation in December of that year. Spokespersons for the country's nuclear industry were cited as having used the event to confirm their intention to pursue in the plutonium area. At the meeting which the Japan Atomic Industrial Forum held in Hiroshima, in March, representatives of Japan's nuclear industry severely criticised the US Administration for its no-reprocessing policy and for the plans Washington is seen to hatch, to interfere with Japan's civilian plutonium programme. The US 'once-through' policy was ascribed to that country's putting nuclear deterrence before peaceful uses and wishing to deprive industry of the plutonium-fuel option. Speakers from Belgium and France were quoted as sharing this criticism. There are indications, however, that Japan's government may be considering reducing the use of plutonium as a fuel for commercial power stations. The Ministry of International Trade and Industry (MITI) has created an Advisory Committee on Energy which is expected to produce an interim report on the matter in early summer and a final opinion by the end of the year. In mid-April, Japan's Minister for International Trade and Industry gave a press conference at which he said that the Committee was moving towards 'a consensus against active use of plutonium'. It is expected that Japan's new long-term nuclear policy plan will provide for significant reductions in plutonium use over the next 16 years and postponement of new reprocessing plants and breeder reactors as compared to current plans. The amount of plutonium involved is now expected to be somewhat more than half of what was projected in 1987.

A fault in the design of the pilot reprocessing plant at Tokai Mura is said to have been responsible for difficulties in locating 154 lbs (70 kg) of plutonium. The material, which is in the form of plutonium dioxide powder, has now been traced with the help of what is described as 'new custom-built measuring equipment'.

It turns out to have been stuck inside complicated automated equipment. The operator, the Power Reactor and Fuel Development Corp (PNC), had stated that it was aware of the whereabouts of the material which had been accumulated in 17 glove boxes in greater than expected quantities. PNC all along considered the missing plutonium as 'hold-up material', and the IAEA stated formally that the material held up in the glove boxes was not missing and remained under full safeguards. The operator is said to be taking remedial measures, in consultation with the IAEA, and is replacing older glove boxes with ones equipped with surfaces to which the plutonium would stick less easily. The Nuclear Control Institute (NCI) of Washington, D.C., had spoken of 'missing material' and 'material unaccounted for', and had asked the US Government to seek the shutdown of the installation until the discrepancy had been resolved and operational problems were corrected. The US House of Representatives on 8 June defeated the so-called 'Markey Amendment' to the Defense Authorization bill, which would have required the United States to withdraw programmatic approval for Japan's Plutonium Fuel Production Facility until the plant is shut down and the plutonium dust in the gloveboxes is measured. The proposed amendment is said to have caused consternation in Japan as well as in Western Europe, where the European Union is currently negotiating a new Euratom-US agreement, which the latter would like to see based on programmatic approval. The Markey amendment might have made it less likely for agreement to be reached on that basis.

Japan's 46th nuclear power reactor (Genkai-3) started commercial operations in mid-March and the construction of a 54th power reactor, to be completed in 2002, has been approved. (**Atoms in Japan**, Vol. 38, No. 3, March; **ENS NucNet**, 22/3, 5/4, 13/5; **Nucleonics Week**, 7/4, 21/4, 12/5; **Kyodo** [Tokyo], 19/4, in **JPRS-TND-94-010**, 5/5; **Financial Times**, 20/4; **NuclearFuel**, 25/4, 23/5; **New York Times**, 11/5; **IAEA Press Release** PR 94/23, 25/5; **SpentFUEL**, Vol. 1, No. 8, 6/6, no. 9, 13/6)

- In **Lithuania**, talks have been held about the feasibility of building a third power reactor at Ignalina, jointly with the other Baltic countries and with Belarus, none of whom, presumably, would be able to finance a new reactor unit on its own. Safety improvement work is continuing, meanwhile, at the two 1,500-MW RBMK units at Ignalina, with the help of Sweden, which is reported to have increased the funds made available for this project. The assembly of the European Bank for Reconstruction and Development has approved funds for an in-depth safety assessment of the plant. (**Nucleonics Week**, 31/3, 16/6)
- There is a report that the **Russian Federation** has approved the construction of an advanced pressurised-water reactor called VVER-500. The reactor is said to use a 'passive' system which requires no operator action or off-site power for shut-down, cool-down or residual heat removal. It will have a double wall containment structure. The plant, which is

to be built at Sosnovy Bor, will have an electrical capacity of 630-MW. (*Nuclear Energy*, 1/94)

- An in-depth assessment at Ukraine's Chernobyl power station, made in March by an international expert team under the auspices of the IAEA, is reported to have found numerous safety deficiencies in the two units of the plant that are currently in operation and to have concluded that international levels of safety were not being met there. Apparently, backfits so far carried out do not necessarily ensure that units 1 and 3 will function safely; design deficiencies in unit 1, which is operating at 80 per cent of rated power, were said to cause particular concern. The deterioration of the sarcophagus around the destroyed unit 4 was seen to be accelerating, partly because of bad weather; a collapse of the casing does not seem to be ruled out and would have serious consequences. Reported calculations of the radioactive material still at the site vary widely — estimates range between 27 and 135 metric tons — but high radiation levels in and around the ruined reactor prevent accurate measurements. Increased neutron activity at the site was reportedly noted in 1992. A new report says that recurrences of such 'recriticality incidents' remain possible; it is considered unlikely, however, that the fuel mass remaining inside the reactor will again go critical.

Among the factors affecting overall plant safety at the units still in operation, as identified in the March report, were bad working conditions and loss of qualified staff at all levels. As shown by statements from experts involved in subsequent safety assessments at Chernobyl, pessimism about the mood among workers at the station is not generally shared. While agreeing that the station shows serious deficiencies, these experts are said to have found morale and working atmosphere better than they had expected. Concerns appeared to have worsened, however, after two incidents at the Chernobyl plant in April. In the first of these incidents, a reported technical failure in a lifting crane caused a container with fresh fuel for reactor unit 1 to hit a wall. In the second incident, reactor unit 3 was shut down automatically, following a malfunction in the cooling system.

On the basis of the findings of the IAEA expert mission, the Agency's Director General communicated his concern to President Kravchuk, who agreed to the proposal that a meeting of interested parties should be held to consider what actions should be taken to alleviate the situation. The meeting took place on 21–22 April. Invited to the meeting were representatives of the members of the Agency's Steering Committee on RBMKs (Canada, France, Japan, Lithuania, Russia, Spain, Sweden, Switzerland, Ukraine and the USA) as well as Finland, Germany, Italy and the UK and representatives of the organisations assisting in upgrading Eastern European reactors. Reportedly, participation was at the working level rather than at the senior level the IAEA had reputedly hoped for. Press reports speak of little immediate result beyond more awareness of Ukraine's growing energy needs, of the high cost of closing the station down, of Kiev's inability to meet those costs

and of the low likelihood that western states would give it large-scale assistance to do so. At the meeting the IAEA's Director General expressed much concern about the situation at Chernobyl. Ukraine's Vice Prime Minister Shmarov is reported to have described the station as 'reasonably safe', however. Reportedly, Valeri Shmarov and the Chairman of Ukraine's Committee on the Utilization of Nuclear Power, Michael Umanetz, pointed out that reducing the high *per capita* energy consumption in Ukraine would require a complete overhaul of the infrastructure and would take decades, that Ukraine is heavily dependent on external and potentially unreliable sources of gas and oil and had to continue relying on nuclear energy as a major power source. They spoke of the new VVER reactors now under construction, which might eventually help replace Chernobyl: Three VVER 1000-MW units could be completed by 1996, and two more could be completed by 1999, at a total cost of \$1.2 billion.

At the meeting, and afterwards, calls were heard for the earliest possible closure of the entire Chernobyl power station, although it appears that not all members of the European Union shared that view. Among advocates of closure were the French institute for nuclear protection and safety and its German counterpart which, in a joint statement, called the operation of the two currently functional units 'more and more precarious'. From figures cited at a press conference in Vienna by Minister Shmarov, and from subsequent comments, it appears that the most urgent upgrades of the currently operational Chernobyl reactor units, preparations for their decommissioning, the construction of a second sarcophagus around unit No. 4, and the completion of the new VVER reactors whose output would have to replace that of Chernobyl would together cost no less than \$4 billion (a somewhat more recent report speaks of \$6 billion to \$8 billion and Ukraine's President has since quoted a cost twice that high, i.e., \$14 billion) It was generally understood that Ukraine was not in a position to raise even the lower sum mentioned by Shmarov. The European Commission has proposed that its member states should help finance the construction of two nuclear power reactors in Ukraine, on condition that Chernobyl is closed. Representatives of the seven top industrial nations, the G-7, have also promised to assist on the same condition, but initial reactions from Kiev have called the offer (of which no further details were given in pertinent press reports — Ed.) — insufficient. The matter is expected to be discussed at the meeting of the G-7 which starts on 8 July 1994 in Naples. France's President Mitterand and Germany's Chancellor Kohl are said to have written to the other five economic superpowers asking them to agree in Naples on a plan to have Chernobyl closed in return for an undertaking to fund the completion of VVER-1000 plants in Ukraine. According to a Japanese press report, Ukraine will ask for a \$20 billion aid package to cover the decommissioning of Chernobyl, the construction of a new shell around the demolished unit 4, the replacement of the station by new power reactors, as well as weapon dismantling.

In early April there were reports that Ukraine and the United States had concluded an agreement 'in principle' under which the latter would supply technology in energy efficiency and alternative power sources to help advance the shut-down of the operating Chernobyl units 'at the earliest possible date'. Some US sources reportedly thought that phase-out of one 1000-MW unit at Chernobyl might start as early as 1995 and they now feel that the Ukrainian authorities have second thoughts about the commitment they supposedly made to shut the plant down 'soon'. The latter, however, claim to have held all along that the shut-down of Chernobyl was contingent on Western countries providing alternative power sources and that it would indeed be possible to close Chernobyl down as soon as the country's energy system is 'in balance'. The meaning of that term does not appear clear, but it is generally taken to mean that closure is not imminent. This seems to have been confirmed in a statement by Ukraine's deputy trade minister, Gureyev, who is quoted in the German press as having said at a trade fair in Hannover that Chernobyl will be closed down in the year 2000, when its present fuel is no longer useable. It would also accord with a statement made by the head of the Ukrainian Atomic Energy Committee, Umanets, who, at a symposium in Moscow, in March, had reportedly said that he was optimistic about the continued operation of the three (sic) remaining reactors at Chernobyl but that their operating life would be limited by the swelling of the graphite sleeves around the tops of the fuel channels, which Ukraine did not intend to replace, as apparently is the custom in Russia. This is taken to mean that the reactors would be shut down between 1998 and 2003. It is seen as relevant in this connection that Ukraine's President Kravchuk has ordered unit 2, which was damaged by fire in 1991 and has since been partially repaired, to be restarted as soon as possible; it is expected that this reactor would be able to start operations in 1995 at 50 per cent of its design power. During a visit to Chernobyl in late May, President Kravchuk assured workers that Chernobyl would continue to operate; on that occasion, too, he is said to have mentioned the amount of \$14 billion as the cost of decommissioning (and presumably replacement — Ed.)

Meanwhile, it has been pointed out in Kiev that any decision to shut down the Chernobyl station must be approved by the parliament. According to the senior Ukrainian safety official who resigned last year when the parliament in Kiev decided not to shut the station down, that decision was made on purely economic grounds, without taking account of safety considerations.

In May, a team of Ukrainian officials and scientists visited the Hanford Nuclear Reservation in that state of Washington, looking for clean-up technologies that might be used in areas affected by the 1986 Chernobyl accident.

(**Financial Times**, 17/3; **IAEA Press Release PR 94/10**, 31/3; **ENS NucNet**, 31/3, 21/4, 22/4; **Nuclear Engineering International**, 31/3; **Associated Press**, 31/3, 9/4, 20/4; **Daily Telegraph**, 1/4, 22/4, 28/5;

Süddeutsche Zeitung, 2/4, 11/4, 21/4, 23/4, 25/4, 26/4; **Kurier**, 2/4, 22/4, 23/4; **Nucleonics Week**, 7/4, 14/4, 21/4, 28/4, 16/6; **Reuter's** 9/4, 20/4, 21/4, 22/4, 3/5; **Frankfurter Allgemeine Zeitung**, 21/4, 26/4; **Guardian**, 21/4, 22/4, 23/4; **Independent**, 21/4; **New York Times**, 10/4; **International Herald Tribune**, 11/4, 17/5; **IAEA Press Release PR 94/16**, 22/4; **Le Monde**, 23/4; **Enerpresse**, No. 6077, 18/5; **Nuclear News**, May; **Wall Street Journal**, 25/4; **Nuclear News**, April; **Neue Zürcher Zeitung**, 27/4, 29/4, 19/5; **Nihonkeizai Shimbun**, 28/4; **NuclearFuel**, 23/5; **NucNet News**, 31/5, 3/6)

- In the **United Kingdom** a decision by the Pollution Inspectorate, to hold a further four-week public consultation on the radioactive discharge levels proposed for the new Sizewell-B reactor, will delay the assumption at that station of full power at least until the Autumn, but the operator denies reports that start-up might have to be delayed until 1995. The documentation that is to form the basis of the consultation is currently being compiled. At the *Thorp* reprocessing plant, a spill of four metric tons of (non-radioactive) nitric acid is said to have caused damage to plant and equipment. As a result, the plant's management decided to suspend shearing of fuel until remedial action is completed. Plant commissioning is continuing, however. (**ENS NucNet**, 14/4; **Times [London]**, 14/4; **Enerpresse**, 15/4; **Nucleonics Week**, 21/4; **NuclearFuel**, 23/5)

h. Weapons-related Developments in Nuclear-Weapon States

- The withdrawal of former Soviet strategic nuclear weapons from **Belarus** has begun. On 18 May, the first shipment of missile systems reportedly left for Russia. So far, 27 SS-25s are thought to have left the country. There are plans to remove 36 missiles during the present year. The remaining SS-25s are expected to be shipped by the end of 1995, if not before. (**Neue Zürcher Zeitung**, 20/5; **Arms Control Today**, Vol. 24, No. 5, June)
- A study has been published in **France** on that country's management of the nuclear waste from its military programme. While French sources used to claim that their country's nuclear-waste problems could not be compared with those of the former USSR or the USA, the study [*Les Déchets nucléaires militaires français*, CDRPC, Lyon, March] shows that it has considerable problems of its own. (**NuclearFuel**, 11/4)
- **Kazakhstan-Russia**: The lack of an agreement between Moscow and Almaty on the status and maintenance of the nuclear weapons still on Kazakh territory is said to have caused conditions where a serious accident may occur at any time. Some of the 104 SS-18 missiles and 240 cruise missiles are reportedly stored closely together, in ramshackle buildings, with defective fire precautions and inadequate physical protection. Although Kazakhstan claims to be a non-nuclear-weapon state and does not consider itself the owner of the weapons, its officials are said to keep Russian military personnel from

- servicing the weapons outside the storage areas and to prevent the delivery of spare parts. On 28 March, an agreement was reached on the presidential level, according to which all nuclear warheads will be withdrawn to Russia within fourteen months, and all SS-18 silos and missiles will be dismantled within three years. Removal of some of the SS-18s has reportedly begun and dismantling has started but President Nazarbayev is said to insist on retaining some of the warheads on Kazakhstani territory until the country receives \$1 billion for the highly enriched uranium recovered from them. Apparently, while a compensation arrangement has been worked out with Ukraine, this is not the case with regard to Kazakhstan. (*Izvestiya* [Moscow], 12/3, in *JPRS-TND-94-006*, 16/3; *St. Petersburg Fifth Channel TV*, 20/3, in *JPRS-TND-94-011*, 16/5; *Arms Control Today*, Vol. 24, No. 3, April and No. 5, June)
- **Russia's** Ministry of Atomic Energy and the Department of Energy of the **United States** have signed a protocol to the agreement of 1993 that provided for sale to the United States, in diluted form, of previously highly-enriched uranium (HEU) from former Soviet weapons. The new document, known as the Protocol on HEU Transparency Arrangements in Furtherance of the Memorandum of Understanding of September 1, 1993, provides for 'transparency and access arrangements' at a number of Russian and American nuclear facilities, establishes a Transparency Review Committee to discuss means of implementation of the Memorandum of Understanding, and stipulates a range of transparency measures or monitoring activities which each side shall have at the other's facilities. The protocol is said to have removed a major obstacle to implementation of last year's agreement. Reportedly, if technical specifications for the blended-down HEU can be agreed upon, the first shipments of low-enriched uranium might take place in October. Implementation of the protocol appears to be off to a slow start, however. US industry is protesting the deal, which it claims favours a single American company. The US Justice Department has refused to declare in advance that the arrangement is legal under the anti-trust laws. Uranium exporters in Canada, Australia and Kazakhstan claim that the deal gives Russia an unfair advantage and violates GATT rules. (*IAEA Bulletin*, 1/1994; *NuclearFuel*, 28/3, 23/5; *New York Times*, 8/6)
 - During the current year, the government of the **Russian Federation** is expected to spend about 1 trillion rubles to compensate victims of nuclear catastrophes, including civilian events. Although this is almost twice as much as was budgeted for last year, much of the increase appears to be due to inflation. The compensation programmes reportedly apply to a range of regions around nuclear facilities and areas affected by nuclear tests. (*Nucleonics Week*, 31/3)
 - In **Russia**, a group of journalists on a railroad siding in a forest near Perm, Siberia, whose curiosity had been alerted by the appearance on local markets of electronic equipment thought to be intended for defence purposes, is reported to have found an unguarded, and apparently abandoned, train. The train is said to have consisted of an SS-24 missile system, and to have included four carriages with missiles, a command post and an electric power plant. (*Kommersant-Daily* [Moscow], 15/2, in *JPRS-TND-94-006*, 16/3)
 - **United Kingdom:** **Australian** press reports divulge how Aborigines at Maralinga were removed from the area where the British government carried out its nuclear tests in the 1950s and largely left to fend for themselves. Some apparently were left behind and have disappeared or have been maimed for life. A group of British servicemen claim that they were deliberately exposed to radiation from atomic tests carried out on Christmas Island in 1958-59, and are seeking compensation from the UK government. (*West Australian*, 9/4; *Daily Telegraph*, 4/5)
 - A scientific study made in the **United States** under the auspices of the US Centers for Disease Control and Prevention, of the effects of a series of radioactive releases has found that radioactive iodine-131 routinely released from the Hanford Nuclear Reservation in the period 1945-51 traveled farther than initially estimated, and that the doses received in the immediate area were lower than expected. It is now estimated that the greatest doses would have been received by people living about 15 miles from the plant. Many of the dose estimates made in an earlier study seem to have come down, but they are still far above recognised safe limits. Some of the releases are now thought to have been deliberate.
- It has been disclosed recently that in the 1950s, the US Atomic Energy Commission had a number of newly stillborn or deceased babies cremated in order to measure the amount of strontium 90 in the ashes and so determine the long-term effects of nuclear fallout.
- The Advisory Committee on Human Radiation Experiments which has been set up to evaluate whether experiments carried out on human beings in the period 1944-74 were medically and scientifically justified, properly followed up and based on informed consent, met for the first time in April. An initial term of one year has been set for the Committee's work. There are reports of a disagreement between the US Department of Energy, which is energetically pursuing investigations into previous radiation experiments, and the Department of Health and Human Services, which is said to fear that the investigation will waste the time of its officials while unnecessarily raising public concern about the use of radiation in research and medicine. (*Associated Press*, 21/4, 22/4; *New York Times*, 22/4; *Nature*, 28/4; *Washington Post*, 3/5; *Guardian*, 4/5; *Le Monde*, 5/5)
- The *Pantex* weapons plant in the **United States**, which covers an area of 16,000 acres (6,400 hectares), where it is said solvents, gasoline components, chromium and explosive contaminants have been found in an aquifer, has been included in the Superfund clean-up list (weapon-production facilities where urgent decontamination work is needed, for which the Federal

Government has set up a special fund — Ed.) (*New York Times*, 1/6)

i. Developments of Concern for Horizontal Proliferation

- An Arabic-language daily issued in London alleges that **Iran** has approached **Spain** for cooperation in the completion of the Bushehr reactor with the aim of using it for military purposes. The report was denied in Teheran. **Germany's** federal intelligence service has repeated the claim it made in the two preceding years, that Iran's Sharif University is engaged in secret nuclear work and the procurement of 'nuclear-related materials'. The statement came shortly after IAEA safeguards officials visited laboratories at Sharif University and said they had found no indication of activities that should have been declared to the Agency. It is reported however, that the IAEA feels it may not have seen everything at the site, which is apparently very large, and that it may return for another visit. On 18–19 April, the IAEA's Director General again visited Teheran, principally to discuss the concept of a nuclear-weapon-free zone in the Middle East. (*Al-Sharq Al-Awsat* [London], 12/2, and *IRNA* [Teheran], 16/2, in *JPRS-TND-94-006*, 16/3; *NuclearFuel*, 28/3; *Reuter*, 18/4; *IAEA Press Release PR 94/14*, 20/4)
- The former chairman of **India's** Atomic Energy Commission, Homi Sethna, is quoted in an Indian newspaper as saying that **Pakistan** had not been able to achieve uranium enrichment above 60 per cent and did not have a nuclear-weapon capability. Another Indian report says that Pakistan may have accumulated several hundred kgs of weapon-grade uranium but lacks the triggering devices and the means to deliver nuclear weapons. Pakistan's former Chief of the Army Staff, Gen. Mirza Aslam Beg, has stated that his country has 'attained complete nuclear ability', including the capability of delivering weapons to hostile targets. He is quoted as claiming that a decision to cap the programme was taken in 1989. The latter view seems to coincide with that of American intelligence services. In what is called 'a one-time exemption to the Pressler amendment' (strongly opposed by Sen. Pressler) the US Administration is said to consider letting Pakistan have 38 F-16 fighters which it has already paid for, in return for a verifiable undertaking that its military programme would be capped. Allegedly, Washington hopes that the move would encourage Pakistan to refuse a supposed offer from **Iran** to buy its nuclear technology. Pakistan's first reaction seems to have been to reject the American suggestion, on the ground that it would only accept verification if India did so too; Prime Minister Benazir Bhutto is quoted in the press as having said that it would be discriminatory to ask her country to cap its nuclear programme unilaterally. At a press conference she gave in May, however, Ms. Bhutto confirmed that Pakistan and the United States were talking about the possibility of applying some sort of 'non-intrusive verification method', whereby Washington might satisfy itself that no further weapon-grade material is being made, without actually entering the Kahuta facility. Pakistan's foreign

minister, Sardar Assef Ahmed Ali, reportedly also announced that his country was prepared to consider 'nonphysical verification' of its nuclear programme. Similar indications are given by other sources as well; there is no public information about the nature of the verification process envisaged. The speaker of the parliament of **Iran**, who visited Islamabad shortly after US negotiators left, denied western reports that he had discussed nuclear operation with Pakistan; in a speech to Pakistan's National Assembly he alleged that opposition of western states to his country's nuclear programme was part of a conspiracy to keep Islamic countries at their mercy.

American talks with India on ways to defuse the nuclear rivalry in South Asia, initially seemed to have helped improve relations between Washington and New Delhi, although they were not thought to have brought any concessions by India. Washington had proposed a nine-nation forum to discuss a freeze on the nuclear arsenals of India and Pakistan. The states involved would be India, Pakistan, the five permanent members of the Security Council, Germany and Japan. As reported, India now seems to have ended prospects for agreement on this scheme with a demand that the discussions should also involve other states capable of building nuclear weapons, such as the DPRK, Iran, Iraq, Israel the Republic of Korea, and the statement that regional limitations would be acceptable only if they were imposed equally on China. This has reputedly led the United States to accuse India of having 'regressed' from earlier commitments. A subsequent visit by Indian Prime Minister Narasimha Rao to Washington does not seem to have led to specific progress towards a regional solution, but is said to have brought the two states somewhat closer. In a joint statement at the end of the visit, 'strong support' was expressed 'for efforts towards nonproliferation of weapons of mass destruction and their means of delivery and towards their progressive reduction, with the goal of elimination of such weapons, which are among the most pressing challenges to the security of states in the post-Cold War era'. The statement adds that these challenges were discussed 'in both the global and regional contexts'. It also contains the pledge that the 'two governments would intensify their cooperative efforts to achieve a Comprehensive Test Ban Treaty and a verifiable ban on the production of fissile materials for nuclear weapons'. Indian sources note that the US Administration did not try to move India on the question of capping its output of plutonium but hoped the new relationship would facilitate ongoing discussions.

Early in June India test-fired its short-range (250 km) ballistic missile *Prithvi* over the Bay of Bengal. Trials of the missile had been planned for mid-May but were postponed in connection with the Prime Minister's visit to Washington. US officials had called on India not to proceed with the tests. Last February, a third and successful test flight was staged of the medium-range (2,000 km) *Agni* missile. (*Hindustan Times*, 2/1 in *FBIS-NES-94-008*, 12/1; *Indian Express* [Bombay], 11/2, *The Muslim* [Islamabad], 24/2, in *JPRS-TND-94-006*, 16/3; *International Herald Tribune*, 18/3,

11/4; **New York Times**, 23/3, 26/3, 9/4, 11/4, 15/5, 5/6; **Le Monde**, 30/3; **Arms Trade News**, April; **Daily Telegraph**, 2/4; **Nucleonics Week**, 7/4, 21/4; **Washington Post**, 8/4, 9/4, 8/5; **Financial Times**, 11/4; **Economist**, 16/4; **Neue Zürcher Zeitung**, 16/5; **Press Release from Embassy of India**, Tokyo, 21/5; **Hindu**, 21/5; **Daily Yomiuri**, 28/5; **Japan Times**, 29/5; **Power in Asia**, 30/5)

- At a meeting on 17 May, the UN Security Council discussed whether to issue a statement recognising **Iraq's** progress toward full compliance with the disarmament terms which it imposed on that country after the 1991 war in the Persian Gulf. It appears that most members of the Council, including France and Russia, were in favour of making an encouraging gesture in this regard, but some others, the United Kingdom and the United States among them, were opposed, reportedly because of Iraq's repression of dissidents and minority groups. There is no question of lifting the oil embargo until the long-term monitoring scheme of Iraq's industries, by which the international community can ascertain that Iraq is not making any weapons of mass destruction, has been tested for some time. The full monitoring scheme should go into effect in July. (**New York Times**, 18/5)
- In the **Republic of Korea**, a senior official of the ruling Democratic Liberal Party has disclosed that until a few years ago his country had planned to develop nuclear weapons but that it had closed its research installations under US pressure. The Korean Nuclear Energy Agency has denied that it is attempting to separate plutonium, as alleged by *Greenpeace*. The country's Minister for Unification has stated that if it is confirmed that the DPRK is reprocessing fuel (which would be seen as a technical violation of the Joint Declaration on the Denuclearisation of the Korean Peninsula) and has a nuclear-weapon programme, the Republic of Korea should develop its own plutonium separation programme and rethink its commitment to the NPT. (**Associated Press**, [Seoul], 28/3, 22/4; **NuclearFuel**, 6/6)
- The world press carries allegations that **South Africa** has not disclosed the full extent of its nuclear weapon programme. Among other things, former President de Klerk is accused of hiding cooperation with Israel in nuclear matters and in the development of ballistic missiles. Reputedly, the South African government had planned to use a replica of the Israeli *Jericho II* solid-fuel missile to deliver nuclear weapons — an assertion that does not figure in any of the accounts given by that government of its nuclear weapon programme. It is also alleged that equipment used in the production of nuclear weapons was attained in France, Germany and the UK. The sources of these reports appear to be sixteen disgruntled scientists laid off from the nuclear-weapon programme, who also claim that the country's nuclear capability may not have been fully destroyed. A spokesman for the group, who identified himself as a supporter of the right wing and who said that he felt some of the weapons should have been kept in white hands, claimed that any of them would be prepared to construct weapons for any

country willing to pay. It is reported that the group have tried to extort money from the government under the threat of selling secret technology abroad. The Supreme Court of the Transvaal has issued a 'gagging order' to stop this attempt, pursuant to South Africa's legislation against the proliferation of weapons of mass destruction. It is noted that the persons concerned had signed an oath of secrecy. American observers draw attention to the problems facing South Africa's new government, which needs to decide what to do with the country's stock of weapon-grade uranium as well as a large quantity of less highly enriched material, guard against the export of sensitive technologies, in the face of a need to improve earnings by boosting exports, and keep a check on suggestions made by some ANC members that the country should retain a nuclear-weapons capability.

Newsbrief 25 cited on p. 12 a report that in **South Africa** an official of the US Congressional Office of Technical Assessment (OTA) had publicly expressed the view that a democratic South Africa should retain the nuclear option and should not subscribe to non-proliferation treaties. It has since been made clear that the person concerned was a physicist, a son-in-law to Nelson Mandela, who, in the summer of 1992, had worked for OTA for 3–4 months but has since had no relations with that body. He is understood to be in South Africa now.

(**Nucleonics Week**, 10/3; **Sunday Times** [Johannesburg] and **SAPA**, both 27/3, in **JPRS-TND-94-008**, 1/4; **Herald** [Harare], 28/3; **Guardian**, 30/3; **Business Day** [Johannesburg], 30/3, in **JPRS-TND-94-008**, 1/4)

- Reports in the international press about the **clandestine trade in nuclear materials** are on the increase. In the past, the majority of instances reported turned out to be attempts at passing off worthless substances as nuclear materials or to involve faked data about composition and quantity of the materials on offer. Currently, however, law enforcement authorities around the world appear to be increasingly concerned about the scale of these operations and the criminal organisations involved. American intelligence bodies are said to fear that international crime syndicates, which so far are not thought to have been deeply involved in attempts to smuggle nuclear items, will sooner or later play an important part in the trade.

There have been numerous reports of the theft or disappearance of nuclear material in the countries of the former Soviet Union, the great majority of which are thought to have been false. However, Russian sources have now confirmed earlier reports of the theft of fuel rods being manufactured in Russia for use in submarine propulsion and of (low-enriched) fuel of the *Ignalina* power plant in Lithuania. Reportedly, the CIA and the FBI are particularly apprehensive about the role Russian crime syndicates may play in the theft and trade of nuclear material. A high-placed Russian law-enforcement official has confirmed that organised crime in his country was trying to infiltrate military installations to obtain nuclear material and that 47

related investigations have been opened. An investigative report in the American periodical *The Atlantic Monthly*, says that organised crime in Russia has been seeking control of tactical warheads, of which that country possesses 15,000. The article also speaks of the supposed seizure by Russian security authorities of 132 lbs of highly enriched uranium near Izhevsk in that country, east of Moscow, as well as of unconfirmed reports that weapon-grade plutonium was smuggled to the DPRK, from a storage depot in Russia. In June, police in St. Petersburg impounded several kg of highly enriched uranium. Currently, Russia and the United States are cooperating on the development of a security system to protect stockpiles of nuclear material in Russia and in former Soviet Republics. Testing that system will reportedly require \$5.6 million and Russia is seeking to have this amount released from the funds made available by the US Congress for Russian weapon dismantlement.

The German police reports a steep increase in cases of nuclear-material smuggling, involving particularly material stolen from Russian storage depots. The number of cases arising in the province of Hesse is said to have grown from five in 1990, to 200 in 1992.

Altogether, 545 arrests were made in Germany last year, in connection with actual or suspected smuggling of nuclear items. The majority of individuals involved are said to have come from the Czech republic and Russia. In mid-May, during the search of a house, the police of Baden-Württemberg found 60 grammes of plutonium Pu-239 with a purity of 99 per cent. This was reportedly the first time that this much weapon-grade plutonium was found to be offered for sale. *Interpol*, which has set up a task group to deal with the problem, involving police forces in 24 European states, is reported to be treating 30 nuclear smuggling cases of the hundreds that have come to its notice, as extremely serious, but it is said to be aware that those cases may just be 'the tip of the iceberg'.

In Italy, a public prosecutor specialised in the investigation of clandestine nuclear trade has been arrested for setting up some of the crimes he claims to have solved, conspiring with organised crime groups smuggling nuclear materials from former Soviet bloc countries and circulating counterfeit money and false documents. The person in question, Romano Dolce, is said to have been one of those publicising the existence of 'red mercury'.

(DDP/ADN [Hamburg], 26/2, and *The European*, 18-14/3, in *JPRS-TND-94-007*, 23/3; *Daily Telegraph*, 21/4; *Standard*, 22/4, 28/5, 3/6; *Die Welt*, 20/5 in *JPRS-TND-94-011*, 16/5, 30/5, 3/6; *Die Presse*, 22/4; *Associated Press*, 28/4, *New York Times*, 16/5, 26/5; *Sunday Times*, 22/5; *Reuters*, 24/5; *Süddeutsche Zeitung*, 28-29/5, 3/6; *Neue Zürcher Zeitung*, 3/6)

j. Environmental Issues

- Scientists from the Netherlands, Norway and the United States have discussed with their Russian

counterparts the risks posed by the wreck of the former Soviet submarine *Komsomolets*, which in 1989 sank 300 miles off Norway. Reportedly, the western experts tend to think that the wreck poses no direct danger, and feel that it and three other sunken nuclear submarines — the American *Thresher*, which sank off Newfoundland in 1963, and *Scorpion*, which was wrecked in mid-Atlantic in 1968, and the Soviet *Yankee*-class boat that suffered a fire in 1986 and was scuttled off Bermuda — should be studied to see whether the migration of radionuclides from these wrecks shows if the ocean is a safe place to dump decommissioned submarines. Russian oceanographers, however, express fear that at least the deteriorating wreckage of *Komsomolets* poses grave risks to fisheries in the area, and there are reports from Moscow, that plans to surround the torpedoes with an absorbent compound and to seal the bow of the boat will go ahead, starting on 15 June with an attempt to pressurise the bow of the submarine in order to seal it from the surrounding ocean. Some doubt is thrown on the efficacy of the preparations for the project, supposedly by officials formerly associated with it.

Preliminary sampling by a research team composed of scientists from **Japan**, the **Republic of Korea**, **Russia** and the **IAEA**, who, in March and April surveyed the effects of dumping of low-level radioactive waste into the Sea of Japan, has revealed a concentration of cesium no different from global fallout background levels in the northwest Pacific Ocean. Three metric tons of water samples from the area have been shipped to the IAEA's marine laboratory at Monaco for further analysis. Further collaborative studies are planned for other sea areas where dumping has taken place.

Reportedly, the liquid low-level waste depository in Eastern Siberia is full to capacity and Russian authorities are considering resuming the sea-dumping of waste from decommissioned submarines. At a meeting of a Japanese-Russian committee set up to discuss these issues, Russia is said to have asked for Japanese financial support in the establishment of a land disposal facility and a marine disposal facility. In early June, it was reported that Japan would fund the construction of a floating disposal facility to be built near Vladivostok. According to Norwegian sources, the problem of waste disposal will also soon arise in connection with the decommissioning of nuclear submarines from Russia's Northern Fleet. Altogether, it is claimed that within the next few years Russia will have to dispose of 150 nuclear submarines, carrying 278 reactors. Much of this work will be done in Severodvinsk, in Northern Russia. The storage facilities in the Kola Peninsula are apparently full and it is therefore expected that absent the major new storage facility, which it had been suggested should be constructed in north-west Russia, the fuel elements that cannot be dealt with at existing storage facilities in Siberia, as well as the reactors, will have to be submerged in the Kara Sea. (*New Scientist*, 12/3; *Izvestiya*, 23/4 in *JPRS-TND-94-008*, 1/4; *Süddeutsche Zeitung*, 9/4; *Reuter*, 13/4; *IAEA Press Release*, PR 94/12, 13/4; *ENS NucNet*, 14/4; *Nucleonics Week*, 14/4; *Sankei Shimbun*, 20/4;

Süddeutsche Zeitung, 20/4; *Associated Press*, 10/4; *Asahi Shimbun*, 25/4; *Japan Times*, 1/6; *Yomiuri Shimbun*, 3/6)

- It is reported that in **Kyrgyzstan** heavy rain is threatening to wash radioactive waste from a former uranium production centre into the Mayly-Su river and from there into **Uzbekistan** and the Syr-Darya river. (*BBC Summary of World Broadcasts*, 13 May, in *Uranium Institute News Briefing* 94/21)

II. PPNN Activities

- The PPNN Core group held its fifteenth semi-annual meeting at the Eurobuilding Hotel, Caracas, Venezuela from 3 to 9 May 1994. All members of the Core group were present, with the exception of Djali Ahimsa and Jayantha Dhanapala, who had professional commitments elsewhere.
- From Tuesday 3 May to Friday 6 May, the Core Group convened an international regional seminar and briefing meeting on *Issues at the 1995 NPT Conference* for states in the Americas, chaired by Ben Sanders. This was attended by 40 speakers, participants and observers from states in the Americas parties to the NPT; states signatory to the protocols to the Tlatelolco Treaty; Argentina, Brazil, Chile, Cuba; and representatives of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL), the Brazilian-Argentine Agency for Accounting and Control of Nuclear Waste (ABACC), the IAEA, and the UN. The seminar was organised by the Mountbatten Centre for International Studies, UK, with the co-operation of the Instituto Internacional de Estudios Avanzados (IDEA), Caracas.

The seminar was opened by statements from Ben Sanders and Nancy Angulo de Rodriguez, President of IDEA. Three plenary presentations then followed: *The Tlatelolco Treaty: its Current Status and its Future Role* [CGII/81] by Enrique Román-Morey; *Argentina, Brazil, ABACC and the IAEA* [CGII/82] by Julio Carasales; and *The 1995 NPT Conference: Issues and Context* [CGII/83] by David Fischer. The participants then split into 3 working groups of 12-13 participants. During these working group sessions, short presentations were made on papers dealing with aspects of four sets of issues, each followed by intense discussions among members of the group. The issues were clustered as follows:

Issue Cluster A: *The Process of Extending the Treaty* was chaired by Adolfo Taylhardat, with presentations from Ben Sanders (*Pre-Conference Activities — The Preparations for the 1995 NPT Conference* [CGII/84]) and George Bunn (*Procedural Issues — The Nature of the Review/Extension Conference: Implications for the Extension Decision* [CGII/85]). The rapporteur was Darryl Howlett.

Issue Cluster B: *The Review of the Treaty — Security Questions* was chaired consecutively by Jan Murray, Adolfo Taylhardat and Fan Guoxiang. Presentations were made by Jozef Goldblat on a paper by Lewis

Dunn (*The Obligations of Parties (Articles I and II)* [CGII/86]); Wolfgang Kötter (*Nuclear Disarmament — (Article VI)* [CGII/87]); and Olu Adeniji (*Security Assurances and NWFZ* [CGII/88]). The rapporteur was Adam Scheinman.

Issue Cluster C: *The Review of the Treaty — Peaceful Uses and Verification* was chaired by Jiri Beranek. Presentations were made by David Fischer on a paper by Djali Ahimsa (*Peaceful Uses (Articles IV and V)* [CGII/89]) and one by himself (*Article IV of the Non-Proliferation Treaty* [CGII/90]); Lawrence Scheinman (*Verification (National and International Monitoring, including IAEA Safeguards, and Action in the Event of Non-Compliance — Article III)* [CGII/91]) and José Felicio (*Export Controls* [CGII/92]). The rapporteur was Jan Murray.

Issue Cluster D: *The Review of the Treaty — Regional Issues* was chaired by Thérèse Delpech. Presentations were made by Davidson Hepburn (*The Americas* [CGII/93]); Roland Timerbaev (*The States of the Former Soviet Union* [CGII/94]); Yoshio Okawa (*North East Asia* [CGII/95]); and Mohamed Shaker (*The Middle East, Israel and Iraq* [CGII/96]). The rapporteur was Victor Manzanares Veloz.

The seminar dinner on the evening of Wednesday, 4 May was addressed by His Excellency Mr. Miguel Angel Burelli-Rivas, Minister for Foreign Affairs of Venezuela.

The seminar concluded with two plenary sessions: one centred on the presentation of a paper by John Simpson (*Issues for Latin America and the Caribbean at the 1995 NPT Conference: Some Reflections of the Rapporteur* [CGII/97]), based on the rapporteur's reports on the working group discussions; and a panel discussion moderated by Adolpho Taylhardat involving Olu Adeniji, Julio Carasales, Sven Jurschewsky and Victor Slipchenko.

- The Core Group meeting itself took place on Saturday 7 and Sunday 8 May. On Saturday, the Group discussed presentations by George Bunn and Roland Timerbaev on PPNN Study 5: *Nuclear Verification Under the NPT: What Should it Cover — How far Should it Go?* and by David Fischer on *A Cut-Off of Fissile Material Production for Military Purposes: Proposals, Consequences and Problems of Implementation* [CGII/98]. It also was addressed by Victor Slipchenko on progress at the CD in Geneva on negotiating a CTBT and by Vilmos Cserevny on plans to further develop the IAEA safeguards system.

On Sunday, members of the Core Group participated in a Colloquium on *Nuclear Weapons and Proliferation in the Post-Cold War World: A Review of Trends and Non-Proliferation Issues*. This was initiated by two short presentations by John Simpson on *Politico/Military Perceptions of the Post-Cold War World* and *Perceptions of the Utility of Nuclear and other Weapons in the Post-Cold War World, and their Consequences*.

- Some members of the Core Group also took part in a half-day briefing seminar on *Issues and Challenges for the Evolving Nuclear Non-Proliferation Regime* at the Institute of Higher Diplomatic Studies, Ministry of Foreign Affairs, Caracas on the morning of 9 May. The meeting was chaired by Ben Sanders and Adolfo Taylhardat, with presentations by John Simpson (*The Nature of the Nuclear Non-Proliferation Regime: Challenges since 1990*); David Fisher (*The IAEA: Its Role in the Regime and the Challenges it Faces*); and Ben Sanders and Roland Timerbaev (*The 1995 NPT Conference: Issues and Opportunities*).
- Copies of papers presented at the Caracas meeting can be obtained from the Southampton Office of PPNN.
- The next meeting of the PPNN Core Group will take place at the Pocantico Conference Centre of the Rockefeller Brothers Fund from 27 to 31 October 1994. The Core Group will meet on the 27th, and will then convene a Briefing Seminar on the 1995 NPT Conference for Heads of Delegation to the First Committee of the UN General Assembly on 28-30 October. The meeting will then finish with a one day symposium on current proliferation issues, drawing in members of the US non-proliferation community.

III. Recent Publications

Books:

Shahram Chubin, *Iran's National Security Policy: Capabilities, Intentions and Impact*, (Washington D.C.: Carnegie Endowment for International Peace, 1994), 106 pp.

Yair Evron, *Israel's Nuclear Dilemma*, (London: Routledge, May 1994), 304 pp.

Gary T. Gardner, *Nuclear Non-Proliferation: A Primer*, (Boulder, Colo. and London: Lynne Rienner, 1994), 140 pp.

Geoffrey Kemp, *Forever Enemies? American Policy and the Islamic Republic of Iran*, (Washington D.C.: Carnegie Endowment for International Peace, 1994), 144 pp.

J.B. Poole and R. Guthrie, *Verification 1994: Arms Control, Peacekeeping and the Environment*, (London: Brassey's/VERTIC, 1994), 340 pp.

Articles and Other Materials:

'A Comprehensive Test Ban within reach', *ACRONYM booklet No. 1*, May 1994, 28 pp.

David Albright, 'South Africa's Secret Nuclear Weapons', *ISIS Report*, Vol. 1, No. 4, May 1994, 19 pp.

Frank Barnaby, 'Red Mercury: Is there a Pure-Fusion Bomb for Sale?', *International Defence Review*, Vol. 27, June 1994, pp. 79-81.

Christoph Bluth, 'Nuclear Weapons in Ukraine', *Bulletin of Arms Control*, No. 14, May 1994, pp. 17-21.

Christoph Bluth, 'Strategic Nuclear Weapons and US-Russian Relations: From Confrontation to Cooperative De-nuclearization', *Contemporary Security Policy*, Vol. 15, No. 1, April 1994, pp. 80-108.

Gennady Chufirin, 'Nuclear-Free Zone on the Korean Peninsula: A Russian View', *Network Paper*, Nautilus Institute, May 1994.

Patrick Clawson, (ed.), 'Iran's Strategic Intentions and Capabilities', Institute for National Strategic Studies, National Defense University, *McNair Paper No. 29*, 219 pp.

Conference on Disarmament, Letter Dated 6 December 1993 from the Head of the Delegation of Sweden Addressed to the Secretary General of the Conference on Disarmament Transmitting the Text of a Draft Comprehensive Test Ban Treaty and Its Annexed Draft Protocol, CD/1232, CD/NTB/WP.33, 6/12/93.

Lt Gen John Cushman (ret'd), 'Military Options in Korea's Endgame', *Network Paper*, Nautilus Institute, May 1994.

Zachary Davis, 'Nuclear Nonproliferation Strategies for South Asia', *CRS Report for Congress*, May 3, 1994, 13 pp.

Matthias Dembinski, Alexander Kelle, Harald Müller, Annette Schaper 'From Black Sheep to White Angel? The New German Export Control Policy', *PRIF Report No. 32*, January 1994, 76 pp.

Matthias Dembinski, Alexander Kelle, Harald Müller, 'NATO and Non-Proliferation: A Critical Appraisal', *PRIF Report No. 33*, April 1994, 51 pp.

Thanos Dokos, 'Non-Proliferation and Greek Foreign Policy', *Defence and Foreign Policy Studies No. 14*, Hellenic Foundation For European and Foreign Policy, Athens 1994, 10 pp.

'The Disarmament Agenda of the International Community in 1994 and Beyond', Boutros Boutros-Ghali, *Statements of the Secretary General*, United Nations, April 1994, 14 pp.

William Epstein and Paul C. Szasz, 'Extension of the Nuclear Non-Proliferation Treaty: A Means of Strengthening the Treaty', *Virginia Journal of International Law*, Vol. 23, No. 4, pp. 735-763.

Steven Flank, 'Exploding the Black Box: The Historical Sociology of Nuclear Proliferation', *Security Studies*, Vol. 3, No. 2, Winter 1993/94, pp. 259-294.

Owen Greene, 'Successor to COCOM: Options and Dilemmas', *Saferworld Briefing*, March 1994, 13 pp.

Tohru Haginoya, 'Safeguards Issues in Japan', *Atoms in Japan*, Vol. 38, No. 5, May 1994, pp. 13-17.

Efraim Inbar and Shmuel Sandler, 'Israel's Deterrent Strategy Revisited', *Security Studies*, Vol. 3, No. 2, Winter 1993/94, pp. 330-358.

Rebecca Johnson, 'Test Ban Talks in Geneva', *Bulletin of Arms Control*, No. 14, May 1994, pp. 7-12.

Alexandre Mansurov, 'North Korean Decision-Making Processes Regarding the Nuclear Issue', *Network Paper*, Nautilus Institute, May 1994.

The Monterey Institute of International Studies, 'Nuclear Successor States of the Soviet Union', Nuclear Weapon and Sensitive Export Status, Carnegie Endowment for

International Peace, Project Report, No 1, May 1994, 40 pp.

Harald Müller, 'El Guardian de la no Proliferacion Nuclear', *Papeles*, No. 50, 1994, pp. 79-88.

Non-Proliferation, Arms Control and Disarmament Division of the Department of Foreign Affairs and International Trade, Ottawa, Conference on Disarmament, 'Nuclear Test Ban, Comprehensive Test Ban Treaty, Verification Subject Index To Working Papers 1976-1993', May 1994, 23 pp.

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IV. Documentation

Resolution by the Board of Governors of the International Atomic Energy Agency of 24 March, 1994: Implementation of the Agreement between the Agency and the DPRK for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (INFCIRC/403)

The Board of Governors,

(a) *Recalling* the Board of Governors' resolutions GOV/2636 of 25 February 1993, GOV/2639 of 19 March, 1993, GOV/2692 of September 1993, the General Conference's resolution GC(XXXVII)/RES/

624 of 1 October 1993, and in particular, GOV/2645 of 1 April 1993, which found the Democratic People's Republic of Korea (DPRK) to be in con-compliance with its safeguards agreement (INFCIRC/403) and referred the matter to the Security Council of the United Nations,

- (b) *Recalling also* resolution 825 (1993) adopted by the Security Council of the United Nations on 11 May 1993, which, *inter alia*, requested the Director General to report on this matter to the Security Council,
- (c) *Noting* the Director General's written and oral reports of 21 March 1994 and GOV/2687/Add.4 in which he stated that the Agency inspection team was not allowed to conduct indispensable and agreed inspection activities at the DPRK radiochemical laboratory, and that the Agency is unable to draw conclusions as to whether there has been either diversion of nuclear material or reprocessing at the radiochemical laboratory since February 1993,
- (d) *Noting further* the Director General's reaffirmation that the Secretariat remains available to perform inspection activities in the DPRK in accordance with its procedures and agreements, and
- (e) *Taking account* of the fact that the DPRK is a party to the NPT and is bound by its safeguards commitments;
1. *Expresses* grave concern that the Democratic People's Republic of Korea has failed to implement essential elements of resolutions of the Board and the General Conference concerning its non-compliance with its safeguards agreement (INFCIRC/403);
 2. *Finds* that the DPRK is in further non-compliance with its safeguards agreement, has aggravated this situation by not allowing IAEA inspectors to conduct indispensable inspection activities and that the Agency consequently remains unable to verify that there has been no diversion of nuclear material required to be safeguarded under the terms of the safeguards agreement to nuclear weapons or other nuclear explosive devices;
 3. *Strongly* endorses and commends the patient and impartial efforts of the Director General and the Secretariat to implement the safeguards agreement;
 4. *Regrets* the stalemate in the Agency's efforts to resolve the DPRK safeguards issue, as requested by the Security Council of the United Nations, due to the lack of cooperation of the DPRK;
 5. *Calls upon* the DPRK immediately to allow the IAEA to complete all requested inspection activities and to comply fully with its safeguards agreement;
 6. *Requests* the Director General to transmit this resolution and his report to all members of the Agency and to the Security Council and the General Assembly of the United Nations in accordance with Article XII.C. of the Statute; and
 7. *Remains seized* of the matter and *requests* the Director General to report back to the Board any significant developments at its next meeting when it will consider, if necessary, further measures in accordance with Article XII.C. of the Statute. (IAEA Press Release, PR 94/9, 21/3)

Statement by the President of the Security Council, made at its 3383rd meeting on 30 March 1994, S/PRST/1994/28.

The Security Council recalls the statements made by the President of the Council on 8 April 1993 (S/25562) and 31 March 1994 (S/PRST/1994/13) and its relevant resolution.

The Council has noted the fact that the Democratic People's Republic of Korea (DPRK) has allowed the International Atomic Energy Agency (IAEA) inspectors to complete the inspection activities agreed between the IAEA and the DPRK on 15 February 1994, thus taking one step in fulfilling its obligations under the IAEA-DPRK safeguards agreement and in honouring its non-proliferation obligations under the Treaty on the Non-Proliferation of Nuclear Weapons.

The Council reaffirms the critical importance of IAEA safeguards in the implementation of the Treaty on the Non-Proliferation of Nuclear Weapons and the contribution which progress in non-proliferation makes to the maintenance of international peace and security.

The Council has considered the letter from the Director General of the IAEA to the Security-General dated 27 May

1994, and is gravely concerned by the IAEA's assessment that if the discharge operation at the five megawatt reactor continues at the same rate, the IAEA's opportunity to select, segregate and secure fuel rods for later measurements in accordance with IAEA standards will be lost within days.

The Council strongly urges the DPRK only to proceed with the discharge operations at the five megawatt reactor in a manner which preserves the technical possibility of fuel measurements, in accordance with the IAEA's requirements in this regard.

The Council calls for immediate consultations between the IAEA and the DPRK on the necessary technical measures.

The Council requests the Director General of the IAEA to maintain IAEA inspectors in the DPRK to monitor activities at the five megawatt reactor.

The Council decides to remain actively seized of the matter and that further Security Council consideration will take place if necessary in order to achieve full implementation of the IAEA-DPRK safeguards agreement.

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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addressed to Ben Sanders at 240 East 27th Street, New York, New York 10016, USA (Tel. 1 (212) 532-3153; Fax. 1 (212) 532 9847). Those relating to production and distribution should be addressed to John Simpson, Mountbatten Centre for International Studies, University of Southampton, Southampton, SO9 5NH, United Kingdom (Tel. 0703 592522; Fax. 0703 593533; international code +44/703).

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