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PROGRAMME FOR PROMOTING NUCLEAR NON-PROLIFERATION

Number 15 **NEWSBRIEF** **Autumn 1991**

Editorial note

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

The **Newsbrief** is a part of the activities of the Programme for Promoting Nuclear Non-Proliferation (PPNN) that are intended to help deter the spread of nuclear-weapon capabilities. PPNN's **Newsbrief** seeks to give a fair, factual and balanced picture of current events relating to the spread of nuclear- weapon capabilities to additional states. At the same time it presents information on moves that may inhibit that spread and on developments in international relations that may constrain it. The **Newsbrief** also refers to relevant developments relating to the peaceful uses of nuclear energy.

Subheadings used in the **Newsbrief** are meant to facilitate presentation; they do not imply value judgments. Thus, under 'Developments of Concern for Vertical Proliferation' information is presented on events and situations in nuclear-weapon states generally, including the nuclear-weapon industry, major disarmament moves and also, this time, on political changes in the USSR. 'Developments of Concern for Horizontal Proliferation' covers a range of occurrences that are, or might be, connected with the spread of nuclear-weapon capabilities. Disclosures about Iraq's nuclear-weapon programme are presented under that heading, as are reports on actions carried out under the aegis of the UN Security Council to counter those attempts.

PPNN's **Newsbriefs** are based on publicly available items derived from reputable and reliable sources. As editor of the **Newsbrief**, the Executive Chairman of PPNN is responsible for its contents. The inclusion of an item does not always reflect the agreement of the members of PPNN's Core Group collectively or individually, either with its substance or with its relevance to PPNN's work.

The limited size of the **Newsbrief** makes it necessary to choose among items of information and to present them in condensed form. Unless otherwise stated, the dates referred to are all in 1991. Readers who wish to comment on the manner in which an item is presented in the **Newsbrief**, or to draw attention to information they would wish to see included, are invited to send their remarks to the editor, for possible publication.

I. Topical Developments

a. Background

The period covered by this issue of the **Newsbrief** has seen many events of extraordinary importance, which will have a direct or indirect bearing on nuclear non-proliferation.

The move to overthrow the constitutional government of the Soviet Union briefly evoked the prospect that the country might depart from its strict non-proliferation policy, as shown by reactions from several heads of state not generally supportive of nuclear non-proliferation. This preoccupation has since given way to concern about the impact of the worsening fragmentation of the USSR on the control of nuclear weapons, fissile material stockpiles and production facilities in that country, especially on the territories of independence-minded republics. Several of these have expressed their commitment to non-nuclear-weapon status but some appear to seek territorial or financial concessions as a condition for the removal of nuclear weapons from their territories.

It is reported that during the coup attempt, the Soviet President's case with nuclear-strike codes was seized. It now appears that the danger of misuse was minimal, given the rigid chain of command that would need to be activated. Nevertheless, the incident may serve as a reminder that, however small, the risk of a nuclear conflict can never be entirely discounted.

On 31 July, the Heads of State of the USSR and the USA signed the START Agreement – the first treaty to reduce their long-range nuclear arsenals. The resulting reduction in the number of warheads is modest, leaving the USA with about 10,400 and the USSR with over 8,000. START also permits the modernization of strategic nuclear arsenals. President Bush has since announced a set of far-reaching unilateral measures, such as the removal of ground-launched nuclear weapons from Europe and Asia,

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and of tactical nuclear weapons from ships at sea; the stand-down from day-to-day alert status of the strategic bomber force, and an end to development of short-range attack missiles and mobile ICBMs. He has also called for further bilateral steps, including limiting the modernization of land-based ICBMs to single warhead vehicles. The plan has been well received by America's allies and by the Soviet Union, which has announced that it will take similar steps. France and the United Kingdom have also declared their willingness to reduce their short-range nuclear weaponry.

The People's Republic of China has decided 'in principle' to accede to the Non-Proliferation Treaty. France had already said it would do so and its accession is awaited. Thus, all overt nuclear-weapon states will be parties to the Treaty.

Both the United Kingdom and France will henceforth require 'full-scope safeguards' as a condition of their nuclear exports.

The accession of South Africa to the NPT has raised new hopes for the denuclearization of the African continent. A safeguards agreement has been concluded between South Africa and the IAEA pursuant to the Treaty and implementation will start shortly.

Argentina and Brazil have concluded an agreement on a bilateral system of accounting and control of nuclear material and are negotiating a full-scope safeguards agreement with the IAEA.

The text of the safeguards agreement the Democratic People's Republic of Korea should have concluded with the IAEA, pursuant to the NPT, within eighteen months after acceding to that Treaty, six years ago, has been approved by the Agency's Board of Governors. However, North Korea has said that it will not bring the agreement into force until the USA has acceded to its demand to remove US nuclear weapons from the Korean Peninsula or to submit them to international inspection. It has since reacted favourably to the United States' plans to withdraw its tactical and short-range nuclear weapons from foreign territory.

There is now convincing evidence that Iraq has for years actively pursued an ambitious nuclear-weapons programme and has developed an extensive infrastructure to support it. The IAEA has obtained proof that Iraq not only acted contrary to the NPT but has violated its safeguards agreement with the Agency. The Board of Governors has made a formal finding of non-compliance and the matter has been reported to the UN Secretary-General and the Security Council. The General Conference has condemned Iraq's action. Iraq has repeatedly tried to impede the inspection of its facilities for the production and storage of weapons of mass destruction under UN Security Council Resolution 687. On occasion it has used force to prevent IAEA inspectors gathering evidence of its nuclear-weapons programme, even detaining an entire inspection team for several days. In each case it has had to bow in the end to international political pressure, thus gradually and grudgingly disclosing evidence of a far-ranging nuclear programme, of which the full extent may still not be known.

The fact that Iraq was able to engage in a major clandestine nuclear programme without apparently being deterred by IAEA safeguards prompts discussions on ways to enhance the effectiveness of nuclear verification methods. The IAEA's General Conference has stressed the need to strengthen the Agency's safeguards system and has called on the Board of Governors and the Director General to continue their efforts in that respect.

b. NPT Events

- **China** has announced that it has decided 'in principle' to become a party to the NPT. Predictions about the timing of its accession vary (**The New York Times**, August 11; **Nucleonics Week**, August 15; D. Shyam Babu in **Business Pol. Observer** [Delhi], 17 August; **Jane's Defence Weekly**, 17 August).

- On 8 July 1991, the Minister for Foreign Affairs of **South Africa** signed his country's instrument of accession to the NPT; it was deposited in Washington on 10 July. On 12 September the Board of Governors of the IAEA approved the text of a safeguards agreement pursuant to the Treaty; this entered into force upon signature, on 16 September (**South African Press Agency**, 8 July, in JPRS-TND-91-011, 24 July; **IAEA Document** (GC(XXXV)/966; **IAEA Press Release** PR 91/35, 20 September).

c. Other Non-Proliferation Developments

- On 18 July at Guadelajara (Mexico) Argentina and Brazil concluded an agreement pledging to use any nuclear material and facilities under their jurisdiction or control exclusively for peaceful purposes and prohibiting the 'testing, use, manufacture, production or acquisition by any means' of any nuclear explosive device. The agreement establishes a Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials and provides for a common system of accounting and control to verify that nuclear materials in all nuclear activities of the Parties are not diverted to uses prohibited by the agreement. It is the intention that the joint system will be folded into a system of safeguards to be negotiated with the IAEA, along the lines of the agreement concluded between that organization, the European Community and its member states, pursuant to the NPT (Unofficial translation of text, as obtained from **Argentine Ministry of External Affairs**; Gary Milhollin and Jennifer Weeks , 'Keeping the lid on nuclear arms', in **New Scientist**, 17 August 1991).

- On 31 July, the Presidents of the **USSR** and the **USA** signed the Strategic Arms Reduction Treaty. 'START' is the first treaty to reduce the long-range nuclear arsenals of the two major nuclear powers. It will reduce the strategic nuclear warheads of the USSR to 8,040 and those of the USA to 10,395, which represents an overall reduction by about 20 per cent, and it permits both sides to improve the power and accuracy of their missiles. The treaty is widely seen as a positive but modest first step in the move to reduce the strategic weaponry of the two nations.

  On 27 September President Bush announced a new arms limitation plan under which the United States will unilaterally withdraw its tactical ground-launched nuclear weapons (nuclear artillery shells and short-range nuclear missiles) from Europe and Asia; remove tactical nuclear weapons, including cruise missiles, from ships and land-based naval aircraft; end the standby alert status of the strategic bomber force and of ICBMs scheduled to be eliminated under START, with immediate effect, and terminate the development of mobile ICBMs, and the

mobile portions of the small ICBM programmes, so that there will be only one new type of single-warhead missile. Appealing to the Soviet Union to match these moves, the President further called for negotiations on the elimination of all ground-based multi-warhead ICBMs. Given the increase in ballistic-missile capabilities among nations, the President also proposed joint steps to permit the limited deployment of non-nuclear anti-missile defences and he called on the USSR to cooperate on methods for safe handling and more secure control of nuclear weapons.

The process of elimination of short-range weapons has already begun. The initial response from the USSR has been positive; it, as well as France and the United Kingdom have announced they will similarly reduce short-range nuclear weapons. In the United States the plan is acclaimed, although press comments claim that the President may have sought to forestall Congressional moves for deeper cuts; that the plan is largely prompted by concern about a loss of central control over nuclear weapons in the USSR; that it may have come in partial response to pressure from European allies; that given the political upheavals in Eastern Europe the American public is expecting cuts in nuclear weaponry so that the move is politically opportune even if it does not lead to savings that might help meet the many domestic needs. Among other things, the media note that the address emphasized a continued need for deterrence and modernization (making a test ban more remote — although in his reaction, the Soviet President proposed the mutual discontinuation of nuclear tests); that both sides will still have thousands of warheads on strategic missiles — far from the 'deep cuts' hoped for; that the plan involves a departure from the ABM Treaty and a continuation of the space-based anti-missile programme; that its realization would add considerably to the US' advantage over the USSR (the Soviet Union has already expressed doubt at the US' proposal to eliminate land-based ICBMs with multiple warheads); and that it involves building further B-2 strategic bombers, which are less effective and more expensive than planned (President's address on **National Public Radio**, 27 September; **The New York Times**, July 7 and 30, September 10, 12, 28 and 29; **Communiqué of the Canadian Centre for Arms Control**, July 17).

- On 8 and 9 July, representatives of **China, France, USSR, UK** and **USA** met in Paris to review issues related to conventional arms transfers and to nuclear non-proliferation. With reference to the Middle East, the five states called for, among other things, the 'submission by all nations in the region of all of their nuclear activities to IAEA safeguards' and 'a ban on the importation and production of weapons usable materials'. It was agreed to hold another meeting in September. The preliminary agreement reached may be expanded to include additional exporters (**Defense News** [Washington], July 8; **Communiqué from Paris Meeting of Five**, 10 July; **Jane's Defence Weekly**, 20 July).

- The **United Kingdom** has announced the adoption, with immediate effect, of a policy of full-scope safeguards as a condition of any significant new nuclear supplies to non-nuclear-weapon states. The statement related to this policy is reproduced in Section V (**Official announcement of UK Foreign and Commonwealth Office**, 24 September; **Financial Times**, 25 September).

- The Foreign Minister of **France**, Roland Dumas, has stated in his address to the General Assembly of the United Nations on 24 September that henceforth France will also apply full-scope safeguards as a condition of supply to non-nuclear-weapon states. The portion of Mr. Dumas' speech relating to this policy is reproduced in Section V.

- **India**'s Prime Minister, P.V. Narasimha Rao, has stated that his country would not join the NPT. This remark seems to have been provoked by press accounts that Japan and the International Monetary Fund (from which India wants to borrow $2 billion) were pressuring India to become a party to the NPT, in return for financial assistance. There have been reports that India might reconsider its position on **Pakistan**'s proposal for the establishment of a nuclear-weapon-free zone in the area, but in a newspaper interview the Prime Minister stated that a regional arrangement would not be adequate. Pakistan still appears to have some hope that Indian may accept its plan (**Nucleonics Week**, July 18).

- In a declaration made on 16 July, during their Economic Summit Meeting in London, the leaders of **Canada, France, Germany, Italy, Japan, the United Kingdom** and **the United States of America** and representatives of the **European Community** 'underscored their commitment to combat the dangers to world security created by the proliferation of nuclear, biological and chemical weapons, and by associated missile delivery systems'. With respect to nuclear non-proliferation, the declaration pledged to assist the UN Special Commission and the IAEA in their task with respect to Iraq; reaffirmed the importance of the NPT and urged all states to subscribe to it; and encouraged all non-nuclear-weapon states to submit all their nuclear activities to IAEA safeguards. The portion of the declaration specifically devoted to nuclear matters is reproduced in Section V (**United States Information Service** 'European Wireless File', July 17).

- The **United States** project for the development of low-enriched fuel to replace highly-enriched fuel in research and test reactors, called RERTR (for Reduced Enrichment in Research and Test Reactors), has survived another attempt to cut its funding altogether. The $1.3 million authorized by Congress is said to be enough for assistance to operators already engaged in converting fuels previously developed, but not to develop more advanced fuels that could be used in the majority of the reactors concerned (**NuclearFuel**, August 5).

d. Nuclear Trade and International Cooperation

- Bidders for the still-uncertain construction of a nuclear powerplant at Paks, **Hungary**, are reported to include Ontario Hydro with AECL; a French-German consortium led by Electricité de France; a Finnish-Soviet consortium and a consortium of the American firms Westinghouse, Bechtel and Ansaldo and the Instituto Nacional de Industria of Spain. Hungary has also asked for bids on waste management. There are four Soviet-supplied power reactors at Paks. One of these suffered a minor incident in July, which has since been repaired; one was being refuelled and the other two were operating normally (**Nucleonics Week**, July 25).

- **Iran** has expressed strong displeasure with **Germany**'s decision not to cooperate with it any longer in the

completion of the 2,400-MWe Bushehr nuclear power station. It calls Germany's claim that the plant is outdated and no longer safe a pretext for denying it nuclear technology, and accuses Germany of breach of contract. Iran has announced its intention to do whatever it can under the circumstances to complete the power station. **France** has rejected a proposal by Iran that it be supplied with enriched uranium in partial settlement of a financial dispute and a step towards normalization of relations (**Tehran Radio** on 29 and 30 June and 2 and 10 July, in JPRS-TND-91-011, 24 July; **The New York Times**, July 5; **Nucleonics Week**, July 18).

- An offer by **India** to build research reactors in other countries has met with interest on the part of **Egypt** and **Syria** (**The Globe and Mail** [Toronto], August 27).

- A request by **Rumania** for a loan of (Cdn) $315 million, to complete the half-finished Unit-1 of the five-unit Candu-type nuclear power plant at Cernavoda, has been approved by the government of **Canada**. When completed, the station should provide 1/3 of the country's electricity. **Italy** will help pay for the construction of non-nuclear components of the plant. The project is to be managed by a consortium of Canadian and Italian firms (**Toronto Star**, 27 August; **Nucleonics Week**, August 29 and September 19; **Canadian Government Press Release** No. 199, September 17; **The Globe and Mail** [Ottawa] September 18).

e. IAEA Developments

1.General Conference

- The General Conference of the IAEA held its thirty-fifth regular session in Vienna, from 16 to 20 September 1991. It approved the Agency's Regular Budget for 1992 of U.S. $207-million (at an exchange rate of 10.90 Austrian Schillings to the US Dollar), including $68.5-million, or 34 per cent, for safeguards.

- The General Conference unanimously approved the applications by the Republic of Yemen and the newly-independent republics of Estonia, Latvia and Lithuania to become members of the IAEA (**GC(XXXV)/974, 975, 973** and **959**, respectively).

- The topics of Iraq and the strengthening of safeguards received much attention. Noting several reports by the Director General on Iraq's Non-Compliance with its Safeguards Obligation (**GC(XXXV)/INF/299**, 12 September, **GC(XXXV)/978** and **GC(XXXV)/978/Add.1**, 16 September) the Conference adopted with 71 votes in favour, 1 against (Iraq) and 7 abstentions (Algeria, Cuba, Jordan, Libya, Morocco, Namibia and Sudan), a resolution condemning Iraq's non-compliance and endorsing the actions so far taken by the Agency in that regard (**GC(XXXV)/995**).

- Many delegations referred to the need to strengthen the safeguards system. The Director General's address to the Conference contains particulars on this matter, and a resolution on the subject, referring to that address, and underlining 'the central importance of effective safeguards' was adopted by consensus (**GC(XXXV)/999**, and **Director General's statement to the General Conference**, 16 September – both reproduced in Section V).

- For the item on 'Israeli Nuclear Capabilities And Threat' the Conference had before it a report by the Director General on 'The Application of Agency Safeguards in the Middle East'(**GC(XXXV)/960**). A resolution on this subject was submitted by 14 Arab delegations; this called on Israel to put all its nuclear installations under safeguards, and again placed the question on the agenda of the next regular session. Additionally, Egypt sponsored a resolution that called for the application of Agency safeguards to all nuclear activities in all countries in the Middle East; sponsors subsequently agreed to the addition of the phrase 'in the context of the establishment of a nuclear-weapon-free zone', so as to make the text more generally acceptable. Attempts to have the former resolution withdrawn, since the second one covered very similar ground, failed. A German move to omit reference to the agenda of the next General Conference was also defeated and the resolution on Israel was adopted with 36 votes in favour, 34 against and 14 abstaining (**GC(XXXV)/979**). The Egyptian resolution was adopted by consensus (**GC(XXXV)/980/Rev.2**).

- The African Group submitted a resolution asking the Director General to ensure early implementation of the safeguards agreement with South Africa, to verify the completeness of the inventory of that country's nuclear installations and material and to report to the Board and the General Conference. The original draft also asked the Director General to bring the resolution to the attention of the UN Secretary-General and to put the item on the agenda of the next General Conference. Upon deletion of the latter part, the resolution was adopted without a vote (**GC/(XXXV)/989/Rev.1**). South Africa attended the General Conference. Egypt expressed reservations about its credentials, reportedly because it does not want South Africa to reclaim its seat on the Board as the African nation most advanced in nuclear energy, which Egypt has held in its absence. Members of the League of Arab States, and Cuba, expressed reservations about Israel's credentials (**GC(XXXV)996**; adopted without a vote).

- The General Conference elected Algeria, Bulgaria, Ecuador, Greece, Mexico, Norway, Pakistan, Rumania, Republic of Korea, Viet Nam and Zaire as new members of the Board of Governors. The following states were already on the Board: Argentina, Australia, Austria, Belgium, Brazil, Cameroon, Canada, China, Cuba, Egypt, France, Germany, India, Indonesia, Islamic Republic of Iran, Japan, Morocco, Portugal, Thailand, Ukraine, USSR, UK, U.S. and Uruguay (**IAEA Press Release PR 91/33**, 19 September 1991).

- With regard to international co-operation in nuclear safety and radiological protection, several resolutions mandating the IAEA to undertake a range of important measures in that area were adopted without a vote (**GC(XXXV)/992** and **GC(XXXV)/ 997**). Another resolution adopted in that way notes, inter alia, that the Convention on the Physical Protection of Nuclear Material has been strengthened by the adherence of the members of the European Community and calls attention to the review conference of the Convention that is to be held in 1992 (**GC(XXXV)/984**).

- As on previous occasions, delegates of developing nations expressed concern that the relative growth of the IAEA's regulatory activities, especially safeguards, might come at

the expense of its promotional activities. A draft resolution (**GC(XXXV)/983**) submitted by Chile on behalf of the Group of 77, on the 'Strengthening of the Agency's Promotional Activities', called for 'a strict balance' between the two categories of activity and spoke of the 'equal importance' to be attached to them. In the end, the Conference adopted without a vote a compromise text under the heading 'Strengthening of the Agency's Main Activities', which 'affirms that, in order to fulfil the objectives of the Agency, an adequate balance should be achieved among the Agency's main activities, having particularly in mind safeguards and non-safeguards activities' (**GC(XXXV)/1000**).

2 Safeguards

- The IAEA's Safeguards Implementation Report (SIR) for 1990 records that in that year, as in previous years, the IAEA 'did not detect any event which would indicate the diversion of a significant amount of safeguarded nuclear material — or the misuse of facilities, equipment or non-nuclear materials subject to safeguards — for the manufacture of any nuclear weapon, or for any other military purpose or for the manufacture of any other nuclear explosive device, or for purposes unknown' (**Director General's statement to the General Conference**, 16 September).

- The Board of Governors of the IAEA has approved an agreement with the **Democratic People's Republic of Korea** on the application of safeguards, pursuant to the NPT. The agreement was the subject of a resolution, which is exceptional in IAEA practice. The resolution — adopted with 27 members in favour, one (Cuba) against and six (including China) abstaining — asked the Director General to report to the Board at its session of February 1992 on the implementation of the agreement and urges early signature, ratification and implementation of the agreement, against the objections of that country's representative of this 'intervention in his country's internal affairs'. The negotiation of the agreement with the IAEA is widely seen as a move by North Korea to gain time; Pyongyang has once again declared that it will not bring the agreement into force until the USA has acceded to its demand to remove its nuclear weapons from the Korean Peninsula or to submit them to international inspection. There are thought to be about 100 nuclear-tipped artillery projectiles and gravity bombs on the territory of the **Republic of Korea**. These would presumably be withdrawn under the American plan for the elimination of short-range and tactical nuclear weapons, and the initial reaction from Pyongyang has been positive. North Korea has also called for the establishment of a peninsular nuclear-weapon-free zone, to be guaranteed by China, the USSR and the USA. Japan has made North Korea's acceptance of safeguards on all its nuclear activities a condition for the normalization of diplomatic relations with that country (**IAEA Press Release** PR 91/23, 16 July; **Daily Telegraph** [London], 31 July; **Statement by the Ministry of Foreign Affairs of DPRK**, 30 July ; **TASS**, August 1; **The Bulletin of the Atomic Scientists**, September 1991, Vol.47, No.7; **The Washington Post**, September 17; **Nucleonics Week**, September 19; **The New York Times**, September 29).

- The Board of Governors also approved a safeguards agreement with **South Africa**, which entered into force upon signature, on 16 September. Implementation will begin shortly, and the first inspection is planned for October. It is understood that in the initial verification of South Africa's substantial inventory of enriched uranium the IAEA will be able to make use of operating records for the entire production period and that the Agency will have such access to the enrichment plants as it will need for the application of its safeguards (**Director General's statement to the General Conference**, 16 September; **International Herald Tribune**, September 17; **Nucleonics Week**, September 19; **IAEA Press Release** PR 91/35, 20 September; **NuclearFuel**, September 30).

f. Peaceful Nuclear Developments

- Two Soviet-designed VVER-440 power reactors are being built at Cienfuegos, in **Cuba**. These units are of relatively recent design and are said to be inherently safer than older types, but there are persistent reports of poor quality construction and of defective equipment being used. Cuba is expected to ask the IAEA to make a comprehensive safety review of the station. The first reactor is planned to start operating in 1992. The situation is a source of concern in the United States. (Eric Ehrmann in **The Journal of Commerce**, July 5; **Nucleonics Week**, July 18 and August 1; **The Washington Post**, July 26).

- A number of Eastern European states operate similar reactors of USSR origin, of which most are prone to defects. At Kosloduy in **Bulgaria** two of the four VVER-440 pressurized-water reactors were shut down while two continued to operate; one of these has now also been shut down temporarily, because of a steam leak from a primary coolant pump. The IAEA recently concluded an extensive three-week review of the design and operational aspects of all four and found them 'in very poor condition with a number of safety relevant deficiencies'; it has urged the Government to take immediate measures. There is supposedly a risk that emergency systems would fail if ever called upon. The European Community has committed $13.4 million for a crash programme to help Bulgaria improve the near-term safety of its plant, including quick backfits and repairs as proposed by the IAEA. Germany wants this money to be used to decommission the plants – a view not shared by most other EC members – but there is no assurance that Bulgaria, which needs the power, will halt operations at the station, which produces a large portion of its electricity. Three of the four VVER-440 reactors of the nuclear station at Greifswald in the former **German Democratic Republic** had been shut down before unification and the fourth has since closed. **Austria** has urged **Czechoslovakia** to stop operating the two VVER-440 reactors at Bohunice and has offered to supply free electricity instead. However, it appears that even if Prague should accept this offer – which is not thought likely – existing lines would not be able to carry that much power. There is also concern about the safety of the first-generation VVER-440 plants at Novovoronesh and Kola, in the **USSR**, although a recent IAEA safety review mission has confirmed that conditions at the former site are not as alarming as they are at Kozloduy. **Japan** will assist the USSR and other East European states to improve safety and reliability of their power plants, by transferring operating and maintenance techniques and training up to 1,000 operators and maintenance engineers (**IAEA Press Release** PR 91/16, 28 June; **The New York Times**, July 10; **Nucleonics Week**, July 18 and 25, August 1 and September 12; **The Economist**, July 27; **Atoms in Japan**, July 1991; **ENS NucNet**, News No.226, 17th September; **IAEA Document GC(XXXV)/971**, 16 September).

- In **Germany** the 20-MW pilot fast breeder research reactor, which has been in operation for twenty years, will be decommissioned (**Nucleonics Week**, September 5).

- **Israel**'s Energy Minister is reportedly considering buying reactor components abroad to be used in a nuclear power plant of native design. Potential suppliers would include **France** and the **USSR**, but the latter has already indicated its refusal to do so. Israeli experts are looking at nuclear power reactors in a number of countries in Eastern Europe. It is understood that the plant, which would be built at Shivta in the Negev and will cost $3–4 billion, would be open to 'outside supervision'. The plan is meeting with opposition within the cabinet and among scientists, and it is not certain to be approved by the government (**IDF Radio** [Tel Aviv] 2 June, in JPRS-TND-91-009, 24 June; **Israeli Radio 'Qol Yisra'el'** 18 June,in JPRS-TND-91-010, 10 July; **Nucleonics Week**, July 18, August 29 and September 26).

- On 25 July, **Japan**'s first commercial nuclear power plant, the 166 MWe graphite-moderated, gas-cooled, natural-uranium fuelled station at Tokaimura completed its 25th year of operation. Also on that date agreement was reached between local authorities and the operating company which permits preparations for the operation of the enrichment plant at the Rokkashomura fuel-cycle site to begin (**Atoms in Japan**, Vol.35, Nos.7 and 8).

- In **Spain**, where construction has been halted on five nuclear power reactors, the Government has issued an energy plan providing for a relative decline of the nuclear-power share in over-all power production. New nuclear capacity would be considered only after the turn of the century, if by then passively safe reactor designs will have been developed (**Nucleonics Week**, August 1).

- The **USSR** has invited the IAEA to make a safety review of its RMBK graphite-moderated, water-cooled power reactors, the reactor type that suffered a melt-down at Chernobyl. There are 16 reactors of this type in the Soviet Union, at five sites. Together they account for about half the nuclear power generated in the country (**International Herald Tribune**, September 7-8).

- The **United Kingdom**'s 'Magnox' nuclear power stations are said to be good for a longer life span than foreseen — 45 years or more. It is also reported, however, that the pressure vessels in the two 26–year old Hinkley Point reactors show signs of embrittlement and, pending further evaluation, they are cleared for operation only until the end of 1991 (**The Times** [London], 16 September; **Nucleonics Week**, September 26).

- In the **USA** there is some doubt that the condition of the 31-year old Yankee Rowe power station, in Massachusetts, will permit the extension of its operating licence after the year 2000 as had been hoped. The plant is licenced to operate for another ten years, but there is concern about the apparent embrittlement of the reactor vessel. Tests of the integrity of its vessel will be made in Spring 1992, when it is scheduled for an extensive outage. A decision on a possible closure is now pending.

  A Federal court has rejected the appeal by the Administration against a lower court's ruling granting the owner of the Shoreham nuclear station on Long Island, in the State of New York, permission to start dismantling the plant. This decision is said to kill any further hopes that the station would ever be operated.

  An official of the Nuclear Regulatory Commission has revealed that the licence issued by the NRC for the operation of the Seabrook reactor in New Hampshire was based on the incorrect information that the operating utility had properly reviewed X-rays of welds of the reactor vessel and had concluded that those met NRC standards.

  A power surge at a nuclear station at Nine Mile Point, in New York State, recently knocked out instruments used in the operation and control of the plant, and led to a shut-down. The incident, which is not thought to have harmed any nuclear components, is said to have blown out some of the most important safety controls in the plant by setting off a chain of unexpected events that is still not fully clear.

  The new NRC chairman, Ivan Selin, plans to lay the groundwork for resuming construction of nuclear power plants with safer and more economic stations. The interest he is taking in the state of the Yankee Rowe plant is seen to reflect his emphasis on nuclear safety and is said to raise some apprehension in industry (**Nucleonics Week**, July 18 and August 22; **The New York Times**, July 23 and 26).

- **Uruguay** considers purchasing a nuclear power station with an output of approx. 500-MWe. Present preference is said to be for a natural-uranium fuelled, heavy-water cooled plant of the Atucha-1 type, although it is recognised that Argentina has had problems with its plant; environmentalists also warn for the ecological damage that may be caused by heavy-water loss (**La Hora Popular** [Montevideo], 7 July, in JPRS-TND-91-011, 24 July).

- In **Yugoslavia** the nuclear power station at Krsko, in Slovenia, which had been shut down during the worst of the armed conflict in that state, has resumed operation. **Nucleonics Week**, July 18 and 25).

g. Developments of Concern for Vertical Proliferation

- In what is seen as a 'significant change of military policy brought on by the end of the cold war', **France** has cancelled plans to replace its 18 twenty-year old three-stage S-3 ballistic missiles deployed in silos by 30 two-stage S-45 mobile nuclear missiles. The S-3s are expected to be in place for another ten years, at which time part of their mission will be taken over by 10 new M-5 missiles. The adaption of the M-5, which was developed for submarine use, to fixed-base deployment in lieu of the S-45 is said to result in savings of more than $2.5 billion.

- France's accession to the NPT will not imply the end of its nuclear test programme (**The New York Times**, July 23; **Agence France Presse**, 4 June, in JPRS-TND-91-009, 24 June).

- The upheavals in the **USSR** arouse concern about the consequences the disintegration of the Union may have for the security of that country's nuclear weapons, fissile material stockpiles and production sites. The concern is

least acute with regard to strategic nuclear weapons. These are said to have 'permissive action links', that can be activated only after a sequence of steps by a series of persons at the highest level of authority. This may be one reason why reports that, during the August coup d'état, opponents of the constitutional regime briefly seized the case containing the nuclear-strike codes, apparently did not raise undue alarm in Washington (another reason may have been the news of the withdrawal of SS-25 mobile nuclear missiles from field positions). While the launching procedure assumes effective control by a central command, it is reported that about 25 per cent of the country's strategic ballistic missiles and half the bombs for delivery by heavy bombers are deployed and stored outside the Russian Federation, in Byelorussia, Georgia, Khazakstan, Moldavia and the Ukraine, all of which seek independence.

Khazakstan and the Ukraine are each said to have in their territory 1,000 nuclear warheads mounted on strategic missiles. Ongoing deliberations point to the continuation of a central authority at least for purposes of joint defence and foreign relations and it appears at present that most, if not all, of the break-away republics would assume a non-nuclear-weapon stance. However there is said to be some concern within the American Administration that in the face of eventual territorial disputes, some republics may wish to retain nuclear weapons rather than releasing them to theRussian Federation.

The presidents of Byelorussia and Khazakstan have already expressed the wish that nuclear weapons be removed from their territories and there is also a very strong anti-nuclear sentiment in Ukraine, fuelled by the Chernobyl accident. On the other hand, there are reports that some republics might also wish to use nuclear weapons as bargaining chips to obtain territorial or financial advantages. It is suggested in the Ukraine, that the weapons now on its soil, rather than being relinquished to the Russian Federation, should be destroyed under UN supervision, in return for international financial support.

Against this background, the question is raised whether the Russian Federation – whose vice-president, Gen. Alexander Rutskoi, is understood to have demanded that it should have a veto over the use of Soviet nuclear weapons – would be the only republic with nuclear weapons and how a central authority would exercise the necessary control. One potential problem is that of control of short-range and tactical weapons and material stocks in break-away areas. Although these are all subject to strict security, there are analysts who warn of the possibility that in cases of civil unrest, warring groups might seize weapons or nuclear material, overcome controls and use or threaten their use, against a central authority to assist domestic separatist moves; to supply foreign states or independence movements abroad; or even to sell them on the black market (**The New York Times**, August 21, 29 and 30 and September 5; **The Washington Post National Weekly Edition**, September 2-8; **The Economist**, August 31st; **The Times** [London], 16 September; **Süddeutsche Zeitung**, 17 September).

- Also in the **USSR**, the President of Khazakstan has ordered the nuclear testing site at Semipalatinsk closed (**The New York Times**, August 30).

- In the **United Kingdom**, two of the four Resolution-class submarines that carry Polaris missiles have been refused safety certificates because cracks have been found in welds at the base of the steam generators in the nuclear reactors (**The Guardian**,18 September).

It has been disclosed that in 1981 a British nuclear-powered submarine collided under water with a Soviet nuclear missile boat (**The Independent**, 16 September).

- The United States Administration has so far opposed any suggestion that funding of the two major national weapons laboratories – Lawrence Livermore and Los Alamos – should be reduced or that they might be merged, now that the likelihood that nuclear weapons will be used has presumably receded. Among the arguments used against any reduction are assertions that the national laboratories are as important as ever for the nation's defence, as long as that must rely on nuclear deterrence; that a reduced weapons stockpile demands the development of updated, more effective and efficient weapons; that nuclear proliferation sets new technological challenges and calls for ongoing 'nuclear competence'; that future needs are unpredictable and that (apparently most importantly) it is therefore essential to maintain 'a strong cadre of the world's best weapons designers'. One task listed in argument is the clean-up of nuclear waste and other health hazards at the weapons establishments.

The Department of Energy plans shortly to resume operations in part of the Rocky Flats weapons production plant near Denver, Colorado, which was closed for safety reasons in 1989. One of the principal products of the plant is, reportedly, the W88 warhead for the Trident II (D5) missile. The plant is obsolete. Even when upgraded it will have to be closed as soon as it can be replaced by more up-to-date installations. Criticism of these plans is voiced in the US Senate's Armed Services Committee, where both the safety of the facility and the need for it are questioned. The latter point is countered by the Secretary of Energy with the argument that after disarmament treaties have reduced the nuclear arsenal, the weapons remaining are all the more important and this makes it essential to ensure that they are the best and most modern ones. There appears to be a possibility, however, that the Senate will not grant the Department of Energy the funds it has asked for.

The Department of Energy is said to favour Savannah River as the best site for the new military (tritium) production reactor. The plant will probably be a modular high-temperature gas-cooled reactor (MHTGR) whose four units would have a thermal capacity of 1,400-MW. Construction costs are estimated to be between $3.12 billion and $5.46 billion; for 1992 Congress is expected to grant about $500 million. Meanwhile, the 'K' reactor, one of the three reactors at the site where safety problems have caused operations to be suspended, is scheduled for start-up at the end of the year. The 'L' reactor will begin to operate a year later, if needed. 'P' will not be restarted.

The Inspector-General of the Department of Energy has found that employees who had complained of environmental safety, health and security problems at the Hanford Nuclear Reservation were subjected to electronic surveillance, eavesdropping, wiretapping, harassment and intimidation. Senior plant staff had denied that this was the case. The Department is now collecting the equipment used for these purposes. According to high-level departmental

statements such equipment was used at all American nuclear-weapon plants and laboratories. A federal judge has rejected a lawsuit filed by a Hanford employee, claiming compensation for harassment, spying, surveillance and other abuses, after he had complained about safety violations.

Work is under way to develop nuclear reactors for the propulsion of missiles for use in various long-range missions, including strategic deterrence, SDI and space research. These efforts, apparently conducted in secret, evoke the comment that they may create new dangers to human health and the environment.

Plans to develop ground-based anti-missile missiles using new sensor and interceptor technologies, as part of a limited strategic defence scheme, are criticized in the US Congress as unnecessary and possibly in violation of the ABM Treaty. They seem to be gaining support, however, in the face of the growing missile-capabilities of some small, potentially hostile states (**The New York Times**, July 25 and 30; August 1, 2, 3, 20 and 25; September 5; **Nucleonics Week**, July 25, August 22; **The Washington Post National Weekly Edition**, July 29-August 4).

- The General Accounting Office (GAO) says that work on upgrading the B-plant at Hanford Nuclear Reservation, which fails to meet regulatory requirements, should be abandoned and the funds used instead on the development of an appropriate method for the treatment of the high-level nuclear waste stored at the reservation. Transition clean-up work will start soon at the 'N'-reactor, which was closed in 1987 for safety reasons, after 24 years of operation. The clean-up is estimated to cost $50 million over three years and should make the eventual decontamination and decommissioning of the plant possible. How that will be done has not yet been worked out, however. For fiscal year 1992, the US Congress is expected to make $3.68 billion available for the clean-up of nuclear waste generated in weapons production at various weapon-production sites. The Department of Energy has raised its cost estimate for cleaning up waste and pollution at weapons plants. In setting its needs for the first five years at $40.4 billion, instead of the $26.6 billion it expects to receive, the Department is said to be giving itself a rationale for doing less than it was committed to do, or at least letting the clean-up schedule slip substantially. It is estimated that a clean-up of the entire Hanford site alone will cost $50–100 billion (**NuclearFuel**, August 5 and September 2 and 16; **Nucleonics Week**, August 1 and 22; **The New York Times**, September 6).

- The **United States** Navy has announced that welding flaws have been found in the hull of the first SSN-21 'Seawolf' nuclear attack submarine. The procedure used for welding the high-pressure steel plates, which had been used for a year, has resulted in hairline cracks, so serious that the entire boat will have to be disassembled and rebuilt. It is under construction at Electric Boat, a division of General Dynamics Corporation, which has contracted to build the first two 'Seawolf's. The manner in which that contract was awarded is under scrutiny. A Federal judge has voided the award and ordered the US Navy to hold a new competition on terms more favourable to the complaining competitor, Newport News Shipbuilding and Drydock Company (**The New York Times**, August 1 and 2; The **Washington Post National Weekly Edition**, August 12-18).

h. Developments of Concern for Horizontal Proliferation

- **Argentina** and **Brazil** are both working on nuclear propulsion of submarines. They each have the ability to produce the necessary enriched-uranium fuel (the Brazilian navy has announced that it is now operating 650 ultracentrifuges and soon hopes to have 5000), but Brazil is thought to be ahead in the specialized reactor technology. It had plans to start construction of the first of three SSNs in the late 1990s, but may now have brought the date forward. Argentina is still at the feasibility study stage. Given its proven ability both to produce small reactors and build submarines, analysts feel that it can afford to give the project a somewhat lower priority than does Brazil. There is also speculation that the two states might cooperate in the development of nuclear submarines (**Folha de Sao Paulo**, 12 June, in JPRS-TND-91-010, 10 July; **Jane's Defence Weekly**, 13 July).

- A North Korean defector claims that the **Democratic Republic of Korea** will be able 'within one to three years' to make nuclear weapons, using a gas-cooled reactor and a reprocessing plant at Yongbyong and another weapons-related site in northern Pyongyang Province. It has reportedly tested conventional explosive devices for use in nuclear weapons (**Trust and Verify** [bulletin of Vertic, London], July/August; **The New York Times**, September 14; **Nucleonics Week**, September 19; **The Economist**, September 20).

- **India** has returned the 'Charlie I'-class submarine it leased from the USSR three years ago. It is said to be working on its own nuclear-driven submarine (**The Bulletin of the Atomic Scientists**, September 1991, Vol.47, No.7).

- **Iran** is alleged to be engaged in a clandestine nuclear-weapon programme. It is a party to the NPT and its US-supplied 5MW research reactor at Tehran is under IAEA safeguards. There are reports, however, of secret research into uranium enrichment, including laser enrichment, at Moallem Kalayeh, in the Elbruz mountains, north of Qazvin, where, it is alleged, there are a number of nuclear experts from **China**. The head of Iran's Atomic Energy Organization has called the report 'baseless' (**Sunday Times**, 28 July; **Tehran Radio**, 3 August, in JPRS-TND-91-013, 21 August).

- The investigation of **Iraq's** nuclear programme, which began soon after the UN Security Council, on 3 April 1991, adopted Resolution 687, is continuing. Events during the first three months of the investigation are outlined in **Newsbrief** No. 14.
  Summing up: Iraq initially professed that it did not possess nuclear material fit for weapons use nor conduct any nuclear activities beyond those previously notified to the IAEA. It acknowledged moving some safeguarded material but withheld information on its location.

  The first inspection made under Resolution 687 found the declared nuclear material and also identified several undeclared nuclear sites. Further searches, based on information obtained from national intelligence sources, yielded evidence of an ambitious clandestine uranium-enrichment effort. The inspection team was at first prevented by Iraqi forces from viewing equipment being removed from a suspected enrichment site.

However, under pressure from the Security Council, including intervention by its President and a high-level mission to Baghdad to seek prompt and unimpeded inspection access for verification purposes, and against a background of suggestions that armed force might be used against it, Iraq subsequently released documentation on a range of nuclear activities which it had not previously notified the IAEA, including uranium enrichment. Iraq maintained that these activities served only peaceful purposes and that its production of enriched uranium through them had been very modest.

There are reports that the disclosures made by Iraq, the information obtained through intelligence means (including the use of high-altitude [U-2] observation planes on behalf of the United Nations) and the six intrusive inspections so far carried out by the IAEA (whose first three inspection visits alone took in over 30 sites and involved 950 inspection-days, during which 300 material samples were taken) may still not have revealed the full extent of Iraq's nuclear effort. What is clear, however, from data gathered so far, is that until the destruction of many of its installations in January 1991, Iraq was actively pursuing several uranium-enrichment technologies; had mastered at least one of these; and could produce a large part of the necessary technical components domestically.

Iraq has told the United Nations that it had worked on three ways of enriching uranium: electromagnetic isotope separation ('EMIS' or 'calutron enrichment'), gas centrifuge and chemical separation. It has reportedly also worked on gaseous diffusion but so far no signs have been found of significant activity in that area.

A major effort was devoted to enrichment through calutrons, on which it is said Iraq may have spent up to $8 billion. This was unexpected. A US report of 1982 is said to have pointed to 20 countries as conducting research and development in electromagnetic isotope separation, but Iraq was not included. Also, since US experience with this technology during World War II had shown it to be uneconomical, slow and power-intensive, it had been generally assumed that if Iraq sought a fast way to produce weapons-grade material it would concentrate on gas-centrifuge enrichment.

Altogether, Iraq is thought to have built four calutron enrichment facilities, at three sites. These are: a pilot-scale facility of five calutrons at Tuwaitha; one large (100–calutron) facility at Tarmiyah — 6–18 months from completion — for the first-stage enrichment of natural uranium; a similar facility at Al Sharqat, and a second-stage enrichment plant with 20 calutrons — 12–18 months from completion — at Tarmiyah for uranium enrichment up to weapons-grade. Together, these facilities, once completed, would have had an enrichment capacity of military significance.

The pilot plant at Tuwaitha has reportedly been in operation for several years. Iraq says it has produced 500 grams of 4 per cent enriched uranium and it is reported that it may have produced a milligram quantity of HEU enriched to 45 per cent and small quantities of less-enriched fissile material. Estimates of the amounts of less highly-enriched fissile material that could have been produced at the Tuwaitha facility vary.

There are also reports that the Tuwaitha pilot plant was capable of producing about 1 gram of highly enriched uranium (HEU) a day. Based on different assumptions about the length of time the calutrons may have operated, the IAEA estimates that the facility could have produced up to 3kg of HEU, while US sources say that under a worst-case scenario Iraq may have enriched about 12kg.

Recent reports about problems encountered in running the calutrons are said to corroborate the lower estimates. There is also information that corrosion problems in the uranium conversion facility Iraq set up clandestinely near Mosul have held up the production of the uranium tetrachloride feed material. Assessments of the capacity of the production-scale facilities at Tarmiya and Al Sharqat vary. According to Iraqi data they should have been able to produce 20kg HEU a year, but the design information provided seems to show inconsistencies. Experts put their capacity at somewhat over half the amount claimed and believe that even the IAEA's lower estimate for the capacity of the calutrons at Tuwaitha is too high. While it is reported that there are several facilities in Iraq for the production of calutron components, it is noted in the press that so far much of the equipment needed to make the calutrons, of which an important part is believed to be of foreign manufacture, does not seem to have been found.

With regard to gas-centrifuge enrichment, which Iraq is thought to have pursued either as a second option or for use together with electromagnetic separation to get faster results at the higher enrichment range, IAEA inspectors visiting a workshop near Baghdad are thought to have found evidence of an ambitious programme that appeared to have run into problems. It is not clear whether Iraq was already capable of producing centrifuges on an industrial scale. A factory intended for large-scale production of centrifuges, at Al Pharat, south of Baghdad, was found to be only partly completed and initial analyses of centrifuge components at the site would point to a lack of essential parts and materials. It is thought that some of this may be the effect of export controls in the states that would have had to supply them. It is also reported that the export of equipment for a clean room laboratory, which Iraq had ordered from a subsidiary of Siemens for the testing and production of centrifuge rotors, was stopped by German export control authorities. Experts are quoted as saying that it would have been difficult for Iraq to proceed from the experimental use of a single centrifuge to the operation of a multi-unit cascade, as it was planning to do.

There are reports that the technology used by Iraq is based on the G-1 design developed by the Dutch-German-British enrichment consortium URENCO, but experts seem to disagree. One report would seem to show that an earlier and less-capable version was used. Other accounts, to the contrary, have it that the rotor Iraq was planning to mass-produce had features found in the G-2, which would give it a higher capacity. Inspectors also found bearings for the G-2 type rotor, which some think were obtained from a supplier in Europe. Judging by experience gained elsewhere, it is thought unlikely that Iraq could have produced enough G-2 centrifuges in the near future to give it a significant production capacity. Iraq has so far refused to reveal the source of the rotor tubes that were found at the site. The assertion that these were produced indigenously is doubted.

It is not thought likely that Iraq could have met its avowed goal of producing by 1993 enough centrifuges for an enrichment cascade with 100 units and from then on making 200 centrifuges a year. Some experts believe that this ambitious claim may hide a large-scale procurement effort involving manufactured components from abroad. A more realistic estimate is that in two years Iraq might have been able to make components for 100 centrifuges, giving it a capability in five to ten years of setting up a centrifuge cascade with a modest enrichment capacity. On the other hand, there is a recent report that the IAEA had concluded tentatively that a large manufacturing site installed at Al Pharat could have been used to make 600 units a year. However, neither the large quantities of maraging steel this would have required, nor the – presumably foreign-made – machine tools needed to make the centrifuge bearings appear to have been found. The indigenously manufactured centrifuge rotors shown to inspectors were said not to be of sufficient quality for uranium enrichment. It appears that Iraq had problems obtaining enough high-quality maraging steel to manufacture centrifuge rotors in quantity, and that its plans for the domestic production of such steel were far from realization. The carbon fibre centrifuge rotors Iraq is thought to have had were apparently foreign-made.

There appears to be circumstantial evidence that Iraq has been engaged in the development of the conventional high-explosive component of nuclear weapons. Iraqi technicians apparently worked on shaped-charge detonators and are said to have gained expertise in the production of electronic components for the detonation of high explosives in implosion modes. It has also been reported that Iraq imported a large quantity of high explosives of a kind suitable for use in nuclear weapons and that it had produced small amounts of polonium-210 which, with beryllium, is used as a neutron initiator. Previous intelligence reports are understood to have pointed to a facility near Baghdad as concerned with the development of non-nuclear weapon components, but Iraq seems to have given a plausible explanation for the work done there.

Experts are reportedly struck by the quality of theoretical and technical knowledge of Iraqi scientists and the number of persons engaged in nuclear and related activities. There is talk of a staff of 10,000 or more persons. There is also an impression that much of the expertise, technology and equipment has been obtained abroad. In this context, inspection teams are said to have noted the absence of pertinent documentation at production sites and the apparent removal of the indications of origin from inspected equipment. This seems to have been taken as an indication that Iraq sought to hide the source and nature of its expertise and the size and composition of the personnel engaged in its nuclear efforts. To explore this further, the sixth IAEA inspection team, apparently acting on information from a defector, entered a Baghdad conference centre on 23 September, where documentation said to pertain to Iraq's nuclear-weapon effort was discovered. The inspectors were stopped leaving the building and required to surrender the papers. However, they were allowed to proceed after about twelve hours, having meanwhile managed to copy and hide several important documents. Shortly after, the team is reported to have inspected a building where papers of the Iraqi nuclear energy authority were stored and to have taken possession, among other things, of records on nuclear personnel and sources of supply. They were again summoned to hand over the documentation and, on refusing to do so, were prevented from leaving the adjacent parking lot, where their vehicles were stationed. After four days, during which they held on to the documents, and following heavy pressure from the United Nations, the matter was resolved by the submission of a list of the items taken, and the inspectors were allowed to leave. The IAEA is reportedly seeking to identify the person or persons who would have the technical background and the authority to lead Iraq's sophisticated nuclear programme and the ability to link its material-productionandweapons-designactivities.

Iraq's failure to inform the personnel charged with the implementation of Security Council Resolutions 687 and 707 of the existence of nuclear material and of the facilities in which that material was being produced, constitutes a multiple violation of the armistice conditions it has accepted. Its apparent effort to develop a nuclear-weapon capacity would amount to a violation of the NPT. It is now also clear that Iraq has not complied with its commitments in respect of nuclear material that was already formally submitted to IAEA safeguards.

The first inspection pursuant to Resolution 687, in May 1991, revealed Iraq's ability to separate plutonium (Pu). At the time, it was noted that 2.26 grams of Pu had been recovered from safeguarded fuel irradiated in the IRT–5000 research reactor. This Pu was separated for experimental purposes, and in accordance with its safeguards agreement with the IAEA, Iraq did not need to declare it. During the fourth IAEA inspection, however, it was found that Iraq had clandestinely irradiated its own natural uranium oxide fuel in the reactor, and separated 3 grams of Pu from it. These actions breached the safeguards agreement. The presence of various laboratory-scale facilities for plutonium work ('hot cells') at Tuwaitha had long been recognized. The small amount of Pu separated clandestinely is of no military significance by itself and is thought to show that Iraq has not proceeded to large-scale irradiation of uranium and reprocessing in clandestine facilities unknown to the investigating authorities. But it is now obvious that Iraq has been involved in the undeclared production and separation of Pu in safeguarded facilities, in violation of its safeguards agreement. Pursuant to the Statute of the IAEA, such undeclared production of Pu must be reported to the Agency's governing organs and the United Nations.

A report of 16 July 1991 by the Director General of the IAEA stated that, based upon information from Iraq and from inspections carried out, evidence existed of Iraq's non-compliance with its obligations under the safeguards agreement with the IAEA. On that basis, the Board of Governors on 18 July 1991 adopted a resolution condemning Iraq's non-compliance, calling on its Government to remedy it forthwith and deciding to report it to all members of the Agency, to the Security Council and to the General Assembly. The Board also decided to inscribe in the agenda of the 35th regular session of the General Conference the item 'Iraq's Non-Compliance with its safeguards obligations'. A second report has since confirmed the earlier findings. This is the first time that a state has been formally found to have violated a safeguards agreement with the IAEA.

Security Council Resolution 687 (1991) orders the 'destruction, removal or rendering harmless as appropriate' of the items specified and asks the IAEA to develop a plan for taking custody of the weapons-grade nuclear material and for the destruction of weapons-related facilities and equipment. Britain and France will act as subcontractors in recovering the highly enriched uranium removed from Iraqi research reactors and 'render it harmless' by reducing its enrichment below 20 per cent, for re-use as reactor fuel. The material will be under safeguards. What will be done with it afterwards, how the IAEA will take 'custody' and how long that custody will go on, has not yet been revealed. The actual removal of the material is held up because the legal situation with respect to title and Iraq's right to compensation is said not to be entirely clear yet.

As requested, the IAEA has submitted a plan for 'the future ongoing monitoring and verification of Iraq's compliance with its undertakings under paragraphs 12 of Security Council Resolution 687 (1991)'. This provides for intrusive inspection rights, such as unlimited movement of inspectors within Iraq, full access at any time to all locations, persons and information as deemed necessary by the IAEA for verification purposes, including unannounced inspections; ongoing notification of inventories of nuclear materials and installations and of changes therein; the right to restrict or bar movement of suspected material or equipment; and submission of information on planned installations 6 months before the start of construction. At the IAEA General Conference, France also called for the urgent destruction of Iraq's nuclear facilities.

(General Sources: **The Economist**, July 20th; **Iraq and Nuclear Weapons**, Issue Brief of the Congressional Research Service, by Zachary S. Davis and Warren H. Donnelly, August 11; **The Bulletin of the Atomic Scientists**, September 1991, Vol, 47 No. 7, David Albright and Mark Hibbs: Iraq's Nuclear Hide-and-Seek. General situation and verification efforts: **IAEA Press Releases** PR 91/19, 1 July; 91/21, 8 July; 91/25, 22 July; 91/26, 25 July; 91/36 and 91/37, 23 September, and 91/38 and 91/39, 24 September; **IAEA General Conference Documents** GC(XXXV)/978, GC(XXXV)/978/Add.1 and GC(XXXV)/INF/299; **The New York Times**, July 1, 3, 5, 6, 8, 9, 10, 11, 16, 18, 19, 20, 26, 28 and 29, August 13, September 12, 14, 23, 24, 25, 26, 27, 28, 29 and October 1; **The Independent**, 9 and 16 July; **The Times** [London], 9, 10 and 16 July, 7 August and 19 September; **The Washington Post National Weekly Edition**, July 15-21; **The Washington Post**, September 19, 24 and 25; ; **Middle East International** [London], 26 July; **International Herald Tribune**, July 8 and 12, September 14/15 and 17. Calutron enrichment: **Nucleonics Week**, July 18 and 25, August 1 and 8 and September 26; **NuclearFuel**, July 22 and August 5. Centrifuge enrichment: **Nucleonics Week**, August 1, 8 and 22 and September 12; **NuclearFuel**, August 5 and 19 and September 16. Gaseous diffusion enrichment: **NuclearFuel**, August 5. Plutonium production and non-compliance: **IAEA Press Releases** PR 91/24, 18 July and 91/27, 6 August; **IAEA Document** GC(XXXV) 952/Add. 1); **Nucleonics Week**, August 15 and 22; **The New York Times**, August 6 and 9. Removal of nuclear material: **IAEA Press Release** PR 91/22, 10 July; **The Daily Telegraph**, 11 July; **Trust and Verify** [Bulletin of Vertic], July/August; **The Times** [London], 16 July; **Jane's Defence Weekly**, 20 July; **NuclearFuel**, August 5 and September 16. Plan for ongoing monitoring: **The New York Times**, August 2, 1991; **Nucleonics Week**, August 8 and September 26. Detonation technology: **Nucleonics Week**, July 25 and September 12; **NuclearFuel**, September 2 and 16; **The Guardian**, 25 September; **The New York Times**, September 29).

- It is reported that Washington wants **Israel** to cease producing plutonium at Dimona, as a possible first step towards declaring its nuclear-material inventory, reducing its nuclear arsenal and eventually submitting to international inspection. Israeli officials do not appear to be receptive to such suggestions. It is noted that other Middle Eastern nations might consent to a special safeguards regime in the area. There appears to be some doubt about the safety of the Dimona reactor, which has been operating since 1963 and there has reportedly been a fire at the plant, recently (**Nucleonics Week**, September 26).

- In **Japan** thought appears to be given to the use of nuclear propulsion for naval vessels. With a commercial surface vessel 'Mutsu' in operation and research under way on reactors for a nuclear-driven icebreaker and a deep-sea research submarine, the Japanese underwater navy may be interested in nuclear propulsion but reputedly aware of the political issues this might raise domestically (**Defense News** [Washington], July 8).

- There are unconfirmed reports of clandestine trade in uranium in **Mozambique**. Allegedly, enriched uranium stolen from a Soviet ship was bought by Israeli and South African agents. Four suspects are said to have been arrested. There does not seem to be authoritative information about the contents of a large number of drums supposedly offered for sale at high prices (**Frankfurter Allgemeine Zeitung**, 13 July; **NuclearFuel**, August 5).

- **Pakistan**'s former prime minister, Benazir Bhutto, stated on 31 August that during her term in office the country had the capability to build nuclear weapons but did not do so. She claimed that until 1989, under an agreement with the USA, uranium was enriched to no more than 5%, but that her political opponents subsequently exceeded that limit. Following her statement there have been calls in Pakistan to prosecute Ms. Bhutto for treason. It is believed that much of the clandestine export of the dual-use high-technology equipment that Pakistan acquired for its nuclear-weapon programme was financed through the Bank of Commerce and Credit International (BCCI). The United States is seeking an indictment against Pakistani Brig. Gen. Inam-Ul-Haq, in connection with the attempt by Arshad Pervez, in 1988, to export maraging steel and beryllium metal to Pakistan, supposedly for use in the manufacture of ultracentrifuges. That attempt, said to have been carried out on orders from Ul-Haq, also seems to have been financed through BCCI. Ul-Haq was reportedly carrying papers linking him with that bank when he was arrested in Frankfurt, in July (**The Ottawa Citizen**, September 1; **The Washington Post National Weekly Edition**, August 19-25; **Nucleonics Week**, August 8; September 5 and 19).

II. PPNN Activities

- Dr Walter Rehak (Germany) has resigned as a member of the PPNN Core Group upon taking up a post with the IAEA in Vienna. He was a founder-member of the Group, and

contributed much to PPNN's work. We wish him well in his new post.

- Dr Jiri Beranek (Czechoslovakia) has accepted an invitation from the Executive Chairman to become a member of the PPNN Core Group.

- Ben Sanders attended the 35th regular session of the IAEA General Conference, from 16 to 20 September, as invited observer on behalf of PPNN. On 25 September he participated in the Workshop on the New Era in U.S. Export Controls held in Washington at the US Academy of Sciences. He also gave an extensive live interview broadcast by National Public Radio (Chicago) on 3 September.

- On 4 September, John Simpson made a presentation to the Annual Conference of the Uranium Institute on the current state of the Nuclear Non-proliferation Regime.

- Ambassador Oleg Grinevsky (Soviet Union), a member of the PPNN Core Group, was awarded the Degree of Doctor of Science in the Social Sciences by the University of Southampton at a Congregation on 11 July.

III. Other Non-Governmental Groups Active in Related Areas

- The **Interdisciplinary Research Group Science, Technology and Security Policy** (IANUS) has, since 1989, been engaged on research aimed at strengthening the international control of tritium and tritium technology. For more information on the Tritium Safeguards System Assessment Project, contact: IANUS, c/o Inst. f. Kernphysik, Schlossgartenstr. 9, 6100 Darmstadt, Germany tel: 06151-163016.

- The **Non-Proliferation Project** of the **Carnegie Endowment for International Peace** has received funding to establish a Nuclear Non-Proliferation Network (NNN). Once established, the NNN will provide a computer-based communication network for regularly updated information on items related to nuclear non-proliferation. For further information contact: Leonard S. Spector, Carnegie Endowment for International Peace, 2400 N St, NW, Washington DC 20037, tel. (202) 862 7900.

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

- Books:

J. B. Poole (ed.), **Verification Report 1991**, (London: VERTIC, and New York: The Apex Press, 1991), 276 pp.

H. Müller (ed.), **How Western European Nuclear Policy is Made. Deciding on the Atom**, (Basingstoke: Macmillan Academic and Professional Ltd, 1991), pp. 241.

- Articles and Other Materials:

David Albright and Mark Hibbs, 'Iraq's Nuclear Hide-And-Seek', **Bulletin of the Atomic Scientists**, Vol. 47, No.7, September 1991.

McGeorge Bundy, 'Nuclear Weapons and the Gulf', **Foreign Affairs**, Vol. 70, No. 4, 1991.

'By-Ways That Lead to the Bomb', **The Economist**, July 20, 1991.

Dan Charles, 'How to dismantle a war machine', **New Scientist**, 21 September 1991.

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V. Documentation

a. Statement issued on behalf of British Foreign Secretary, Rt. Hon. Douglas Hurd CBE MP, on Full-Scope Safeguards, 24 September 1991

'As part of our policy of seeking further to strengthen the barriers against nuclear proliferation, the British Government has decided with immediate effect to adopt a policy of full-scope safeguards as a condition of supply. This means that in future Britain will not allow the export of any significant new nuclear supplies or materials to any country, other than the nuclear weapons states, where there are any unsafeguarded nuclear installations.'

b. Statement by French Foreign Minister, Roland Dumas, on Full-Scope Safeguards in an address to the United Nations, 24th September 1991

«Plus généralement, la France est favorable au désarmement global. Elle a rendu public, en juin 1991, son plan qui recouvre tous les aspects de la sécurité. Elle a annoncé sa décision d'adherer au traité de non-prolifération nucléaire. Les instruments d'adhésion seront déposés avant la fin de l'année par mon pays. D'ores et deja, nous nous appliquons a respecter le controle integral de nos exportations liées à l'énergie nucléaire.»

[Translation supplied by the French Embassy, London] 'On a more general note, France is in favour of global disarmament. In June 1991, it made public its plan which encompasses all aspects of security. It announced its decision to sign the nuclear Non-Proliferation Treaty. My country will deposit the instruments of accession before the year's end. Already, we are ensuring that nuclear energy-related exports are fully controlled.' [This is taken to mean full-scope safeguards.]

c. Draft Resolution on 'Strengthening of the Safeguards System' Submitted to the Thirty-Fifth Regular Session of the IAEA General Conference on the 20 September 1991

(text reproduced from GC(XXXV)/999)

Draft resolution recommended by the Committee of the Whole The General Conference.

(a) *Convinced* that Agency safeguards can promote further confidence among States and thereby help to strengthen their collective security,

(b) *Noting* the constructive comments on safeguards in the Director General's address to the Conference, and

(c) *Emphasizing* that the strengthening of the safeguards system should not lead to a diminution of the resources available for technical assistance and co-operation,

1. *Underlines* the central importance of effective safeguards for the prevention of misuse of nuclear energy of non-peaceful purposes and for the promotion of co-operation in the peaceful uses of nuclear energy;
2. *Confirms* its resolve to maintain and strengthen the effectiveness and efficiency of the safeguards system in conformity with the Statute;
3. *Requests* the Board of Governors and the Director General to continue their efforts in this respect and takes note of the decision of the Board to consider, at its February 1992 session at the latest, measures to strengthen the effectiveness of the safeguards system; and
4. *Requests* the Director General to inform the General Conference at its thirty-sixth regular session of the action taken.

d. Extracts from Statement by Director General Hans Blix, to the Thirty-Fifth Regular Session of the IAEA General Conference Vienna, 16 September 1991

Non-Proliferation and Safeguards.

The General Conference last year took a keen interest in the many innovative proposals which had emerged at the Fourth NPT Review Conference. These and other ideas which have been voiced after the revelations in Iraq have been analysed in the Secretariat and discussed in the Board during the past year. It is clear that the time is ripe for adjustment and change.

The general picture of non-proliferation is by no means gloomy. The disappearance of the ideological struggle and arms race between East and West, the beginning of substantial reductions in the nuclear arsenals of the superpowers and the very substantial disarmament measures within the European sphere all combine to make the nuclear weapons option less relevant between the great powers. Armed conflicts between these powers seem very implausible in the world that is emerging, and the response to Iraq's aggression against Kuwait shows that within the United Nations collective action can be forged. The new climate and the need to direct resources to development have already borne some fruit in the area of non-proliferation. In a momentous development, Argentina and Brazil are opening up their nuclear installations to each other and to comprehensive Agency safeguards, the details of which are currently being negotiated. The prospects for the Tlatelolco Treaty coming into force for all of Latin America and the Caribbean are thereby greatly improving.

For a number of years, concern has been expressed about South Africa's nuclear programme. The winds of change have now swept away much of apartheid's legal infrastructure, and on 10 July, through a change in another policy area, the South African Government took the step of adhering to the Non-Proliferation Treaty. Discussions with the Agency before this decision was taken, including talks with me when I visited South Africa last March, have led, since South Africa's adherence to the NPT, to a very rapid accord on the text of a standard NPT-type safeguards agreement. This text was approved by the Board of Governors last week. Some questions were raised as to how the Agency can feel confident that South Africa's report on the initial inventory of nuclear material will be complete. Such questions arise each time a State with a substantial nuclear programme accepts full-scope safeguards; in response the Agency must do what it can to ensure completeness. In the present case, we are discussing with South Africa a number of measures which may help to provide evidence of the completeness of the initial inventory, notably an examination of the original production records of South Africa's enrichment plants.

Three other States in Southern Africa – Mozambique, Tanzania and Zambia – have adhered to the NPT in the past year, and it is expected that they will conclude NPT safeguards agreements with the Agency. With South Africa now a party to NPT and opening up its nuclear installations to Agency inspection, there is room for some optimism that the aspirations in Africa for a nuclear-weapon-free continent may be realized. These aspirations were discussed in Addis Ababa earlier this year under UN and OAU auspices.

I should further report to the Conference that, after long negotiations between the Secretariat and the Democratic People's Republic of Korea, a standard NPT-type safeguards agreement was finalized in July. It was approved by the Board of Governors last week, and I have been authorized by the Board to sign it on behalf of the Agency. It will enter into force when it has been signed and ratified by the Democratic People's Republic of Korea, which I hope will be soon. Even before the agreement enters into force the Agency is ready to receive any relevant information, such as the initial inventory of facilities and materials. Receipt of such information would facilitate early full implementation of the agreement, in which there is widespread interest.

The declarations by the nuclear-weapon States France and China, that they have decided in principle to adhere to the NPT give further weight to ongoing non-proliferation efforts. If the present detente and co-operation between the nuclear-weapon States continue and further nuclear disarmament is attained, it does not seem altogether unrealistic to hope for a universal non-proliferation regime by 1995. In this perspective let me comment on the question of safeguards in the Middle East.

Safeguards in the Middle East

... In statements before the Board of Governors in February and June this year, I advanced some ideas about the verification and non-proliferation pledges in the Middle East. These ideas were reflected in document GOV/2511, which was discussed by the Board in June. This Secretariat paper and comments which were

made in the Board are now before the General Conference in document GC(XXXV)/960. ...

In the Middle East verification measures may need to be more intensive and to be wider in scope than existing Agency safeguards. They may need to include some mutual inspection measures so as to give the parties maximum confidence.

Verification in the Middle East cannot be limited to declared installations and material. Special inspections and other measures must be possible, to provide confidence that no undeclared nuclear installations or nuclear material exist.

I have expressed the view that mutual confidence, which is the aim of verification, may also be the result of co-operation. Nuclear research and development programmes, including fuel cycle centres, if such were planned in the region, might be established and operated by a joint organisation – as has been done in Europe. I have also called attention to the fact that all cases in which nuclear installations have been the subject of armed attacks have occurred in the Middle East and that any arms control arrangement in this region should contain commitments against any such attacks.

The strengthening of safeguards.

The traditional statement made in the Agency's Annual Reports submitted to the General Conference is that, I quote, 'on the basis of the safeguards activities performed and all information available, the Secretariat considers it reasonable to conclude that all nuclear material under safeguards in 1990 remain in peaceful nuclear activities or was otherwise adequately accounted for.'

Making this statement today leads us straight to the first and most important feature of the safeguards system that must be strengthened, namely its capacity to provide confidence that no undeclared nuclear installations or material exist in States which have accepted full-scope safeguards. The NPT Review Conference last year considered it desirable for the Agency to assert its right to undertake special inspections under NPT safeguards agreements. What appeared then to be desirable seems now, after the uncovering of Iraq's clandestine uranium enrichment programme, to be a necessity.

I recommend reliance on the mechanism of special inspections to the meetings of the Board of Governors in February as well as June and September and the subject was covered in document GOV/INF/613. It is, of course, perfectly possible that a State might, itself, request a special inspection in order to dispel fears that particular locations were undeclared nuclear installations. Similarly, the Director General might offer – rather than request – a special inspection for the same purpose. However, it is the idea of the mechanism as a deterrent against – and a possible means of investigation of - clandestine activities, that is the focus of attention at present.

Although the Agency inspections in Iraq have been carried out pursuant to a Security Council resolution under Chapter VII of the UN Charter and are not special inspections under an NPT safeguards agreement, the lesson learned in Iraq, where Agency inspections and subsequent Iraqi declarations revealed an unknown major enrichment programme, is that three conditions need to be fulfilled to make special inspections under full-scope safeguards effective:

First, the inspectorate must have access to information from sources besides the State in which the inspections were performed, notably from satellites and intelligence organizations. Without such information, inspectors will not know where to look. I see no insuperable difficulty in establishing a special unit which may revive and evaluate such information on a continuous basis. It might also use publicly available information. The information would have to be analysed for its veracity before the Director General decided whether he was justified in setting in motion the procedures for a special inspection.

Second, the inspectorate must have a right to timely and unrestricted access to any location which, according to credible information, might be an undeclared nuclear installation or contain undeclared nuclear material. Although the right to perform special inspections is laid down in safeguards agreements, it has never been invoked for the purpose of inspecting undeclared locations. Nor, indeed, has any information been obtained indicating the need for such an inspection.

Third, the Agency may need to exercise its right under the Agency's Statute and relationship agreement with the United Nations to have access to the Security Council, if the State in question rejects a request for a special inspection. The case of Iraq demonstrates that intervention by the Security Council to enforce inspection is a distinct possibility. Awareness of this is likely to deter any State from failing in its duty under a full-scope safeguards agreement to declare all their nuclear facilities and material.

What I have described may sound relatively straightforward, but it requires considerable discussion and elaboration in detail. It is my hope that, with the strong interest which we feel governments now have in this matter, the Agency will be able to make these ideas a reality before long. The case we aim to cater for is likely to be rare. However, catering for it might help to prevent it from occurring at all.

I shall not prolong my discussion of safeguards by examining the other issues in documents GOV/INF/613 and Add.1, such as the early submission of design information and the concept of 'universal reporting'. These and other issues are being analysed by the Secretariat which will make detailed proposals, as requested by the Board of Governors. We welcome suggestions and comments by governments. The time is ripe for changes which will strengthen the confidence-building capacity of safeguards. ...

IAEA activities in Iraq.

I have already referred to the Agency's activities under Security Council resolutions 687 and 707 and the lessons we are learning from our inspections in Iraq. As I mentioned, inspections mandated by the Security Council are not regular safeguards inspections, but they do draw extensively on the Agency's safeguards techniques and expertise. They involve the use of Agency instruments and seals and they engage many Agency inspectors for various periods of time. Also, they require – and get – extensive support from the Agency's Laboratory at Seibersdorf for the analysis of hundreds of samples. The Agency reports through the Secretary-General to the Security Council on the inspections in Iraq. I have, myself, on two occasions reported informally to the Council.

I have consistently sought to keep the Board informed about the Agency's activities in Iraq, and a chronology of these activities has been prepared for the information of the General Conference (GC(XXXV)/INF/299).

I must report to you the Board's conclusion that a number of failures on the part of Iraq to report to the Agency under its NPT safeguards agreement, constitute non-compliance with this agreement. In accordance with the Agency's Statute, this non-compliance has been and is being reported to all members of the Agency as well as to the Security Council and the General Assembly of the United Nations.

In fulfilling the mandate given to it by the Security Council regarding nuclear activities in Iraq, the Agency is in part treading new ground. It is not only verifying peaceful uses of nuclear energy but also looking for any attempts to make a military use of it. I do not see any greater difficulties in this than in Agency inspections of sensitive installations like enrichment or reprocessing plants. In Iraq, the Agency is not currently engaged in any promotion of the use of nuclear energy but in limiting its use to strictly defined purposes and we are engaged in the task of removing, destroying or rendering harmless nuclear equipment and material that might be of use for weapons development. It was fortunate that, as far as our inspections to date have revealed, full industrial production had not been reached in a uranium enrichment programme for which no plausible peaceful purpose can be discerned.

e. Extract from the Declaration on Conventional Arms Transfers and NBC Non-Proliferation, adopted at the London Economic Summit, 16 July 1991

7. We are deeply concerned about the proliferation of nuclear, biological and chemical weapons and missile delivery systems. We are determined to combat this menace by strengthening and expanding the non-proliferation regimes.
8. Iraq must fully abide by Security Council Resolution 687, which sets out requirements for the destruction, removal or rendering harmless under international supervision of its nuclear, biological, and chemical warfare and missile capabilities; as well as for verification and long-term monitoring to ensure that Iraq's capability for such weapon systems is not developed in the future. Consistent with the relevant UN resolution, we will provide every assistance to the United Nations Special Commission and the International Atomic Energy Agency (IAEA) so that they can fully carry out their tasks.
9. In the nuclear field, we:
   — Re-affirm our will to work to establish the widest possible consensus in favour of an equitable and stable non-proliferation regime based on a balance between nuclear non-proliferation and the development of peaceful uses of nuclear energy;
   — Re-affirm the importance of the nuclear Non-Proliferation Treaty (NPT) and call on all other non-signatory states to subscribe to this agreement;
   — Call on all non-nuclear weapon states to submit all their nuclear activities to IAEA safeguards, which are the cornerstone of the international non-proliferation regime;
   — Urge all supplier states to adopt and implement the Nuclear Suppliers Group guidelines;

   We welcome the decision of Brazil and Argentina to conclude a full-scope safeguard agreement with the IAEA and to take steps to bring the Treaty of Tlatelolco into force, as well as the accession of South Africa to the NPT.
10. Each of us will also work to achieve:
   — Our common purpose of maintaining and reinforcing the NPT regime beyond 1995;
   — A strengthened and improved IAEA safeguards system;
   — New measures in the Nuclear Suppliers Group to ensure adequate export controls on dual-use items.

f. Extracts from the Agreement Between the Argentine Republic and the Federative Republic of Brazil for the Exclusively Peaceful Use of Nuclear Energy

[Unofficial Translation]

BASIC UNDERTAKING
ARTICLE 1

1. The Parties undertake to use the nuclear material and facilities under their jurisdiction of control exclusively for peaceful purposes.
2. The Parties undertake, therefore, to prohibit and prevent in their respective territories, and to abstain from carrying out, promoting or authorizing, directly or indirectly, or from participating in any way in:
   a) The testing, use, manufacture, production or acquisition by any means of any nuclear weapon; and
   b) The receipt, storage, installation, deployment or any other form of possession of any nuclear weapon.
3. Bearing in mind that at present no technical distinction can be made between nuclear explosive devices for peaceful purposes and those for military purposes, the Parties also undertake to prohibit and prevent in their respective territories, and to abstain from carrying out, promoting or authorizing, directly or indirectly, or from participating in any way in, the testing, use, manufacture, production or acquisition by any means of any nuclear explosive device while the above-mentioned technical limitation exists.

ARTICLE II

None of the provisions of the present Agreement shall affect the inalienable right of the Parties to carry out research on, produce and use nuclear energy for peaceful purposes, each Party maintaining its industrial, technological and commercial secrets, without discrimination and in conformity with Articles I, III and IV.

ARTICLE III

None of the provisions of the present Agreement shall limit the right of the Parties to use nuclear energy for the propulsion or operation of any type of vehicle, including submarines, since both are peaceful applications of nuclear energy.

ARTICLE IV

The Parties undertake to submit all the nuclear materials in all nuclear activities carried out in their territories or anywhere under the jurisdiction or control to the Common System of Accounting and Control of Nuclear Materials (SCCC) established by Article V of the present Agreement.

COMMON SYSTEM OF ACCOUNTING AND CONTROL OF NUCLEAR MATERIALS
ARTICLE V

The Parties shall establish the Common System of Accounting and Control of Nuclear Materials (hereinafter referred to as "SCCC"), the objective of which shall be to verify, in accordance with the basic guidelines established in the Annex to the present Agreement, that the nuclear materials in all nuclear activities of the Parties are not diverted to nuclear weapons or other nuclear explosive devices, as set forth in Article 1.

BRAZILIAN-ARGENTINE AGENCY FOR ACCOUNTING AND CONTROL OF NUCLEAR MATERIALS
ARTICLE VI

The Parties shall establish the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (hereinafter referred to as the "ABACC"), which shall have legal personality enabling it to carry out the objective assigned to it under the present Agreement.

OBJECTIVE OF THE ABACC
ARTICLE VII

The objective of the ABACC shall be to administer and implement the SCCC in accordance with the provisions of the present Agreement.

POWERS OF THE ABACC
ARTICLE VIII

The powers of the ABACC shall be:

a) To agree with the Parties new General Procedures and Implementation Manuals and any modifications to the existing procedures and manuals that may be necessary;
b) To carry out the inspections and other procedures required for implementation of the SCCC;
c) To designate inspectors to carry out the inspections indicated in subparagraph b);
d) To evaluate the inspections carried out in the implementation of the SCCC;
e To engage the necessary services to ensure fulfilment of its objective;
f) To represent the Parties before third parties in connection with the implementation of the SCCC;
g) To conclude international agreements with express consent of the Parties; and
h) To take legal action.

ORGANS OF THE ABACC
ARTICLE IX

The organs of the ABACC shall be the Commission and the Secretariat.

COMPOSITION OF THE COMMISSION
ARTICLE X

The Commission shall consist of four members, two being designated by each Party. The Commission shall be established within 60 days of the entry into force of the present Agreement.

FUNCTIONS OF THE COMMISSION
ARTICLE XI

The functions of the Commission shall be:

a) To monitor the functioning of the SCCC;
b) To approve the General Procedures and Implementation Manuals referred to in Article VIII subparagraph a) after their negotiation by the Secretariat;
c) To procure the necessary resources for the establishment of the Secretariat;

d) To supervise the functioning of the Secretariat, preparing instructions and directives as appropriate in each case;
e) To appoint the professional staff of the Secretariat and to approve the appointment of auxiliary staff;
f) To prepare a list of duly qualified inspectors from among those proposed by the Parties to carry out the inspection tasks entrusted to them by the Secretariat;
g) To inform the Party concerned of any anomalies which may arise in the implementation of the SCCC; the Party shall then be obliged to take the necessary measures to rectify the situation;
h) To call upon the Parties any ad hoc advisory groups which may be deemed necessary to improve the functioning of the SCCC;
i) To report to the Parties every year on the implementation of the SCCC;
j) To inform the Parties of the non-compliance by one of the Parties of the commitments made under the present Agreement; and
k) To prepare rules of procedure for itself and regulations for the Secretariat.

COMPOSITION OF THE SECRETARIAT
ARTICLE XII

1. The Secretariat shall consist of the professional staff appointed by the Commission and of auxiliary staff. In the performance of their duties, the staff of the Secretariat shall be subject to the regulations approved and the directives formulated by the Commission.
2. The senior staff of the nationality of each party shall take it in turns each year to act as Secretary to the ABACC, beginning with the nationality of the country in which the headquarters is located.
3. The inspectors designated under Article VIII subparagraph c), while carrying out the duties assigned to them by the Secretariat in connection with the SCCC, shall be responsible exclusively to the Secretariat.

FUNCTIONS OF THE SECRETARIAT
ARTICLE XIII

The Secretariat shall have the following functions:

a) To implement the directives and instructions issued by the Commission;
b) In this context, to perform the necessary activities for implementation and administration of the SCCC;
c) To act, under the mandate of the Commission, as the representative of the ABACC in its relations with the Parties and with third parties;
d) To designate from among those included in the list referred to in Article XI subparagraph f), the inspectors who will carry out the inspection tasks necessary for the implementation of the SCCC, taking into account that the inspectors who are nationals of one of the Parties shall carry out inspections at the facilities of the other Party, and to instruct them in the performance of their duties.
e) To receive the reports which the inspectors will prepare on the results of their inspections;
f) To evaluate the inspections in accordance with the appropriate procedures;
g) To inform the Commission immediately of any discrepancy in the records of either of the Parties which emerges from the evaluation of the inspection results;
h) To prepare the ABACC's budget for approval by the Commission, and
i) To report regularly to the Commission on its activities and, in particular, on the implementation of the SCCC.

...

HEADQUARTERS OF THE ABACC
ARTICLE XV

1. The headquarters of the ABACC shall be in the city of Rio de Janeiro.
2. The ABACC shall negotiate with the Federative Republic of Brazil the relevant headquarters agreement.

FINANCIAL AND TECHNICAL SUPPORT
ARTICLE XVI

1. The Parties shall provide in equitable amounts the necessary funds for the functioning of the SCCC and the ABACC.
2. The Parties shall make their technical capabilities available to the ABACC in support of its activities. Persons allocated temporarily to these support tasks shall be bound by the commitment laid down in Article XIV.

...

INTERPRETATION AND APPLICATION
ARTICLE XVIII

Any dispute relating to the interpretation of the present agreement shall be settled by the Parties through diplomatic channels.

BREACH OF THE AGREEMENT
ARTICLE XIX

Any serious breach of the present Agreement by one of the Parties shall entitle the other Party to terminate the Agreement or to suspend its application as a whole or in part, notification thereof being made by that Party to the Secretary-General of the United Nations and the Secretary-General of the Organization of American States.

RATIFICATION AND ENTRY INTO FORCE
ARTICLE XX

The present Agreement shall enter into force on the date of the exchange of the respective instruments of ratification, its text shall be transmitted by the Parties to the Secretary-General of the United Nations and the Secretary-General of the Organization of American States for registration.

AMENDMENTS
ARTICLE XXI

The present Agreement may be amended by the Parties at any time by mutual consent. The entry into force of the amendments shall be in accordance with the procedure laid down in Article XX.

DURATION
ARTICLE XXII

The present Agreement shall be valid for an indefinite period. It may be terminated by either of the parties by diplomatic note addressed to the other Party, notification thereof being made by the Party terminating the Agreement to the Secretary-General of the United Nations and the Secretary-General of the Organization of American States. The termination shall become effective six months after the date of receipt of said diplomatic note.

Done in the City of Guadalajara (United States of Mexico) on the 18 day of the month of July 1991, in duplicate in the Spanish and Portuguese languages, both texts being equally authentic.

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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