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Programme for Promoting Nuclear Non-Proliferation, Newsbrief, Number 12

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Summary:

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

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PROGRAMME FOR PROMOTING NUCLEAR NON-PROLIFERATION

Number 12 NEWSBRIEF Winter 1990/1991

Editorial note

This issue of the **Newsbrief** of the Programme for Promoting Nuclear Non-Proliferation (PPNN) refers to events related to the spread of nuclear-weapon capabilities, that took place, or on which information has come to hand, during the last three months of 1990.

PPNN's quarterly **Newsbriefs** seek to present an objective, factual and balanced picture of current events regarding the spread of nuclear-weapon capabilities to additional states and of developments tending to deter that spread. They also refer to developments in nuclear-weapon states relating to the nuclear armaments of those states. PPNN's **Newsbriefs** are based on publicly available items derived from reputable and reliable sources. As editor of the **Newsbrief**, the Chairman of PPNN's Core Group is responsible for its contents. Unless expressly stated, the inclusion of an item does not imply the agreement of the members of the Core Group collectively or individually, either with its substance or with its relevance to PPNN's activities.

Readers who wish to comment on items included in the **Newsbrief**, or to draw attention to information not included there, are invited to send their remarks to the editor, for publication in a subsequent issue. Two such communications are reproduced in this edition.

I. Topical Developments

a. Background

During the period covered by this issue of the **Newsbrief**, international interest was focused on the crisis in the Persian Gulf area. **The question of Iraq's nuclear potential** remained a subject of special attention. It is widely assumed that Iraq, which is a party to the nuclear Non-Proliferation Treaty, does not have the means to produce nuclear-weapon material but is seeking to obtain them and will need at least five years, and possibly longer, to acquire the capacity to produce a significant quantity of such material. Meanwhile, speculation that it might use the highly enriched uranium it now has to fabricate a single, crude and unwieldy weapon — which it could supposedly do in about one year — is widely discounted. That material is subject to verification by the International Atomic Energy Agency and was recently inspected and found accounted for.

There appear to be differences of opinion about the interpretation of some provisions of the **Treaty on Conventional Forces in Europe** that was signed in Paris on 19 November 1990, by the representatives of the 22 states concerned. There also seem to be a number of issues that still need to be settled before **the Strategic Arms Reduction Treaty** (START) between the Soviet Union and the United States can be finalised. At the time this report was written, it was expected that, if unresolved, these issues, together with several political problems that have arisen in other contexts, might jeopardise the summit meeting planned for early February.

From 7 to 18 January 1991, states parties to the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (the 'Partial Test Ban Treaty', that was signed in Moscow in 1963) are holding an **amendment conference** at United Nations Headquarters in New York, for the purpose of converting that Treaty into one covering all nuclear-weapon tests, including those made underground.

The United States Administration has **suspended assistance to Pakistan**, pursuant to the 'Pressler Amendment' to the U.S. Foreign Assistance Bill, as it found itself no longer able to certify that Pakistan did not possess a nuclear explosive device.

The **joint declaration issued by Argentina and Brazil** on 28 November, which, among other things, adopted a common system of accounting and control and reciprocal inspections of all their nuclear facilities, is expected to lead eventually to the introduction of full-scope IAEA safeguards in both states. News of progress towards non-proliferation also comes from **South Africa**. Although that state does not seem to be any closer to joining the NPT — which it had said was its goal — it has announced that in February 1991 it will start talks with the IAEA on a full-scope safeguards agreement.

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b. Non-Proliferation Developments

- During a meeting in the Brazilian border town of Foz do Iguacu, on 28 November 1990, the Presidents of **Argentina** and **Brazil** signed a declaration reconfirming their determination to use nuclear energy exclusively for peaceful purposes. The declaration approves a common accounting and control system to apply to all nuclear activities of the two states and commits them to undertake negotiations with the IAEA on a safeguards agreement and to take initiatives that will lead to the full entry into force of the Treaty of Tlatelolco with regard to both of them. The declaration, reproduced in Section VI., is understood to express the intention of the two states to conclude a 'full-scope' safeguards agreement with the IAEA, covering all present and future nuclear activities (**NuclearFuel**, November 26 and December 10, 1990; **Nucleonics Week**, December 6, 1990; **The New York Times**, November 29 and December 5, 1990; **The Washington Post**, November 29 and December 3, 1990).

- **South Africa**, which on 17 September declared that it was prepared to accede to the NPT in the context of an equal commitment by the other states in the Southern African region and said that it hoped that talks on a 'comprehensive' safeguards agreement could commence in the near future, has advised the IAEA that it wishes to begin negotiations in February 1991. South Africa has also come out in favour of a nuclear-weapon-free zone in its region, a goal it reportedly pursues in parallel with its possible accession to the NPT (**NuclearFuel**, December 10, 1990).

- On 28 November 1990, the Government of **The Federal Republic of Germany** approved a set of 'Principles for Checking the Reliability of Exporters of Military Weapons and Defence-Relevant Goods', which contain a procedure for the processing by the Federal Office for Trade and Industry of export permits for certain goods, including weapons and defence-related material, nuclear energy, chemical plant, and facilities for the production of biological substances. The procedures, which are intended as a means of preventing illegal exports, oblige companies submitting applications for export to nominate the person responsible for the transaction (**Release from the German Federal Ministry for Economic Cooperation**, December 4, 1990, received through the **Canadian Centre for Arms Control and Disarmament**).

- The Director General of the IAEA has received letters from **Australia, Canada, Czech and Slovak Federal Republic, Denmark, Finland, Germany, Greece, Hungary, Ireland, Japan, Luxembourg, the Netherlands, Norway, Poland, Sweden, USSR, UK**, and **USA**, consolidating and clarifying the information in documents INFCIRC/209/Mod. 1,2,3 and 4 into a single document and providing information on the functioning of the '**Zangger Committee**'. (The documents in question list the items which, if exported to a state not party to the NPT, should 'trigger' the application of IAEA safeguards, pursuant to Article III, Paragraph 2, of the Treaty. The 'Trigger List' was prepared by an intergovernmental committee, named after its chairman Dr. Claude Zangger of Switzerland — Editor) (**IAEA Document** INFCIRC/209/Rev. 1, November 1990).

- The **Nuclear Suppliers Group** (the '**London Club**') is said to be planning an informal meeting to be held in The Hague, in March 1991. (**NuclearFuel**, December 10, 1990) (Editor's note — The purpose of the Nuclear Suppliers Group is to draw up guidelines for nuclear commerce, including restrictions pertaining to the export of specific items of nuclear material, technology and equipment, in a manner designed to minimize proliferation risks while avoiding unfair competition among participating exporters. The Group originally comprised seven countries: Canada, France, the Federal Republic of Germany, Japan, UK, US and the USSR. At the time of its last meeting, in 1977, eight others were also present: Belgium, the Czech and Slovak Federal Republic, the German Democratic Republic, Italy, the Netherlands, Poland, Sweden and Switzerland. Other states that have since announced their intention to subscribe to the Guidelines are: Australia, Bulgaria, Denmark, Finland, Greece, Hungary, Ireland, Luxembourg, Norway, Portugal, Rumania and Spain).

- **Pakistan**'s Prime Minister Nawaz Sharif — who had previously announced that Pakistan's nuclear energy programme would be accelerated, exclusively for peaceful purposes — has expressed readiness to discuss with the US Administration the question of his country's nuclear programme. He said, however, that there were certain conditions he would be unable to accept and called for economic self-reliance. Pakistan's finance minister also told the press that there was 'no question' of submitting the Kahuta enrichment installation to international inspection. **Pakistan** and **India** have agreed to put the treaty banning first strikes against each other's nuclear installations into effect. **India**'s Prime Minister, Chandra Shekhar, has publicly played down the importance of Pakistan's nuclear capability, pointing to the fact that 'there are other nations with nuclear weapons also (sic)' — which is interpreted as referring to **China** (**Nucleonics Week**, November 29, 1990; **The New York Times**, November 8 and 30 and December 30, 1990).

- The **United States** Administration has announced tightened export controls regarding chemical weapons, under which licenses will be required for the export of potentially chemical-weapon related industrial facilities and related designs and technology. The measure includes an 'Enhanced Proliferation Control Initiative', to bring about controls on 50 chemicals used to produce chemical warfare agents. At the same time, licenses were granted for the export of high-performance computers to Brazil, China and India, that had been held up. The new package of measures provides for a speedier review of export-licence applications and contains a 'presumption of approval' (**The Washington Post**, November 1, 1990; **Wall Street Journal**, November 12, 1990; **The New York Times**, December 15, 1990).

c. Nuclear Trade and International Cooperation

- **Argentina** and the **USSR** have concluded an agreement for cooperation in the development of breeder reactors. Argentina is said to be particularly interested in the use of breeders because that would help solve its problem how to use the plutonium it produces. Its joint development programme with **Brazil** has been slowed down by budget cuts in both states (**Nucleonics Week**, November 8, 1990).

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- **Argentina** and **Turkey** have concluded an agreement for cooperation in developing a small (25-MW) power reactor. The CAREM-15 light water reactor — which is designed to be expanded by the addition of modular units — has been developed in Argentina and its construction will be financed largely by Turkey. It is said to cost less than US$100 million and uses 4 per cent enriched uranium. Construction of one prototype unit will start in Argentina early in 1991 and in Turkey six months later. The fact that the agreement leaves both countries free to export this technology is said to cause concern in the USA where there is fear that Turkey may wish to supply it to Pakistan, among others. Argentina reportedly hopes to sell the reactor to Algeria, Peru and other nations, in Africa and the Middle East (**Nucleonics Week**, October 25, 1990; **TELAM** (Buenos Aires), 22 October 1990 and **Milliyet** (Istanbul), 26 October 1990; — both in **JPRS-ND-90-020**, 15 November 1990).

- In the start-up of its first indigenously constructed 300-MW PWR power facility at Qinshan, which is to go critical in February 1991, **China** will be assisted by three **Japanese** experts in the safety of power reactors. Japan is supposedly concerned about the safety of the plant, in which components from widely varying origins have been assembled without much advice from the vendors (**Nucleonics Week**, October 18, 1990).

- Agreements between the **United States** and the **Czech and Slovak Federal Republic** and **Hungary**, respectively, for cooperation in the peaceful uses of nuclear energy, have been undergoing interagency review and are expected to be submitted to the US Congress early in 1991 (**NuclearFuel**, October 15, 1990).

- Given the thaw in international relations, the **USSR** has said that it no longer needs uranium from the **Czech and Slovak Federal Republic** for military use, which it had reportedly been receiving at prices far below the market rates. It will continue to perform fuel-cycle services for Czech and Slovak Federal Republic. The Czech UN representative has announced that his country no longer wishes to rely only on the USSR in the construction of nuclear power plants and will henceforth also invite tenders from other countries (**Lidova Demokracie** (Prague), 23 October 1990; **Czechoslovak News Service**, 24 October 1990, both in **JPRS-TND-90-020**, 15 November 1990).

- **France** and the **USSR** have signed a new agreement for nuclear cooperation, including the improvement of the safety of Soviet facilities, waste management and decommissioning (**Nucleonics Week**, October 11, 1990).

- The terms of the sale to **India** of two VVER-1000 power reactors from the **USSR** have been modified, notably with respect to installation costs. India has also suggested to **France** that the installation costs of the two 900-MW reactors it is supplying could be reduced by buying Indian-made equipment that could account for up to 30 per cent of total costs (**Nucleonics Week**, November 8, 1988).

- **Iran** and the **USSR** are reportedly negotiating the supply by the latter of 'several' 440-MW PWR units. The site does not seem to have been selected yet; an Iranian news report that the reactors are meant to replace the two incomplete 1,300-MW Siemens/KWU PWRs at Bushehr has not been confirmed. The **Federal Republic of Germany** is apparently reluctant to get involved again in the project at this stage. Iranian sources are quoted as criticising Germany for its attitude, expressing resentment at international restrictions that prevent Iran importing the material and equipment needed to finish the job although it is a party to the NPT, and reproaching the IAEA for stressing its safeguards functions at the expense of its promotional role (**Nucleonics Week**, October 25, 1990; **Kayhan International** (Tehran), 18 October 1990, in **JPRS-TND-90-020**, 15 November 1990).

- **France**'s supply to **Pakistan** of two 900-MW nuclear power reactors appears to be in doubt as a result of Pakistan's financial problems (**Nucleonics Week**, November 29, 1990).

- The Yankee utility group (which operates nuclear power plants in four North Eastern states in the **United States**) has made a contract with Techsnabexport in the **USSR** for the long-term provision of enrichment services, at very competitive conditions. The United States is considering buying plutonium-238 in the USSR, if the Soviet product meets US purity standards. Pu-238, which is highly toxic, produces intense heat and cannot be converted into fissionable plutonium, is used as a power source, among others in radioactive thermoelectric generators for space use (**NuclearFuel**, October 15, 1990; **Inside Energy/with Federal Lands**, December 3, 1990).

d. IAEA Developments

1. General

- Field work on the project to determine the radiological consequences of the accident at Chernobyl, assess the health and environmental effects and evaluate the protective measures taken, has been completed. The Agency hopes to have the main part of its report ready early in 1991, and publish the final version after external reviews (**Nucleonics Week**, December 6, 1990).

- As part of a major project on the safety of older nuclear power reactors, IAEA fact-finding missions have visited, and will pay further visits to, a total of 14 VVRR-440/230 reactors in the Czech and Slovak Federal Republic, Bulgaria, the former German Democratic Republic, and the USSR. The project should eventually be extended also to other reactors (**IAEA Newsbrief**, Vol. 5, No.7, October/November 1990).

2. Safeguards

- In response to an inquiry from the Nuclear Control Institute (NCI) in Washington, which persistently expresses the fear that the IAEA is lowering its safeguards requirements with respect to reactor-grade plutonium, the Agency's Director General has said that the IAEA's Standing Advisory Group on Safeguards Implementation ('SAGSI') is reviewing present safeguards practices

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which take into account the safeguards significance of direct-use nuclear materials. This review is part of SAGSI's re-assessment of the Agency's safeguards procedures so as to make them as cost-effective as possible, given that organisation's inability to borrow funds, its zero-growth budget but increasing responsibilities, and the delay in payment of contributions by several member states, particularly the USA (**NuclearFuel**, November 12, 1990; **direct information**).

- The **Czech and Slovak Federal Republic** has announced that IAEA inspectors will no longer require visas to enter the country on official business (**CTK** (Prague), 24 October 1990, in **JPRS-TND-90-020**, 15 November 1990).

- It is understood that the **Democratic People's Republic of Korea ('North Korea')**, which has been a party to the NPT since 1985 but has refused to conclude the obligatory safeguards agreement with the IAEA unless the United States formally guaranteed not to use nuclear weapons against it, has said once again that it could sign such an agreement only on condition that the United States gives legal assurances that it would not resort to a nuclear threat against the DPRK. This was apparently in reaction to an article that had appeared shortly before in Japan, in which the Director General of the IAEA was quoted as expressing the hope that the agreement could be adopted soon. It has been reported that the **USSR** has suspended its assistance in the construction of a nuclear power station in North Korea until that country accepted IAEA safeguards on all its nuclear facilities (**The Korea Herald**, 20 October 1990, in JPRS-TND-90-021, 6 December 1990; **Nucleonics Week**, November 8, 1990; **Direct information**).

e. Peaceful Nuclear Developments

- In **Bulgaria**, the nuclear power station at Kozlodui, which has been troubled by safety problems, including a recent serious accident, supplies 42 per cent of that country's electric power. This is not enough to meet demand. Plans to take the sixth unit into service ahead of schedule are raising concern; the IAEA is reported to be critical of the safety standards maintained at the station (**The Economist**, November 3, 1990).

- **Canada**'s tritium extraction plant, which had been shut by various operating problems shortly after start-up, is now running satisfactorily. Canada is still looking for a market for the tritium, but it is noted that tritium should in any case be extracted from the heavy-water moderator and coolant used in its power reactors as a safety measure, to reduce a potential source of occupational exposure (**Nucleonics Week**, October 18, 1990).

- The future of **France**'s 1,240-MW breeder reactor, 'Superphenix' which has been off-line for most of 1990 and is not expected to restart until Spring 1991, seems to be in some doubt. Ever since its completion, in 1985, it has been plagued by technical problems. While the French industry minister is said to be unconvinced about its economic performance, the more general question whether there is a need for breeders has come up again (**Nucleonics Week**, October 18, 1990; **direct information**).

- The possibility that global warming could produce a substantial rise in sea level prompts the **Netherlands** government to re-assess the inherent safety of the two Dutch nuclear power stations which it had previously considered scrapping. The minister for economic affairs claims that without the two plants the country would generate 9 per cent more carbon dioxide (**The Economist**, November 10, 1990).

- In the **Federal Republic of Germany**, the last of the four Soviet-supplied VVRR-440/230 power reactors at Greifswald (in the former **German Democratic Republic**), which had suffered various safety problems, has been shut down, as has a power reactor of the same type, at Rheinsberg. A fifth unit at Greifswald — which had been modified for safety reasons after the Chernobyl incident — failed during start-up and has not come on line. The IAEA has said that relatively easy improvements could be made in management and maintenance, but any overhaul of installations would be costly (**The New York Times**, October 21 and December 16, 1990).

- **India**'s new 500-MW fast breeder should be on line by the year 2000. Meanwhile, progress is reported in the completion of its eight PHWR power units of 235-MW each. Three of these are now said to be in operation: two at Madras and one at Narora, east of Delhi. Narora-2 should go on line in Spring 1991; Kakrapar-1 (150 miles North of Bombay) in Autumn 1992, and Kakrapar-2 within a year. Sites for two 235-MW PHWRs each have been cleared at Rajasthan and at Kaiga, on the Arabian Sea. They will be followed by six more 500-MW PHWRs: two at Tarapur, near Bombay, and four at Rajasthan (**Nucleonics Week**, October 18, 1990).

- Authorities in **Taiwan** seem to have plans for the construction of the seventh and eighth nuclear plants, long delayed in part by environmentalist opposition. Nuclear experts think, however, that even if the process starts right away, the environmental impact assessment, safety report and feasibility evaluation will require at least 2.5 years. Also, the magistrate of the district where the station would be located is said to oppose it and to have the power to refuse the construction permit (**Nucleonics Week**, December 6, 1990).

- A report comparing the costs of reprocessing spent fuel in the **United Kingdom** with the costs of storage of such material concludes that storage is the cheaper option. The report estimates that reprocessing at the Sellafield THORP plant would cost £3.0-3.8 billion, whereas storage would cost £0.9-1.3 billion. THORP is expected to begin operations in the early 1990s (**THORP and the Economics of Reprocessing**, Science Policy Research Unit, University of Sussex, United Kingdom).

- Leaders of the nuclear power industry in the **United States** have published a 110-page 'Strategic Plan for Building New Nuclear Power Plants', which sets the mid-1990s as

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the target for the next nuclear generating plant to be ordered, and the end of the decade as the time to put it into operation. The Plan deals with legislative, regulatory, environmental and financial aspects of the development, siting and construction of a new-type power reactor, inherently safer than existing types. The first one would probably be built in Florida. The US Administration says it shares the Plan's objectives (**The Washington Post**, November 15, 1990).

- The question of the disposal of radioactive waste generated in the civilian and military sectors in the **United States** is becoming both more urgent and more difficult and is a subject of intensifying public debate. The Environmental Protection Agency has given the Department of Energy permission to move a limited quantity of radioactive and chemical waste to a cavern mined in salt beds near Carlsbad, New Mexico, to test its effectiveness as a permanent repository. Environmentalist groups oppose the move, claiming that the Department has not proved that the buried materials will not leak; alternatively, they should be treated to prevent leakage. Furthermore, the 16 square miles of land above the cavern belong to the Department of the Interior and unless the Energy Department owns or controls that land, it may not use the repository. In its opposition to the Department's nuclear-weapon production programme, Congress has refused to enact legislation to this end. Another way is inter-agency action, which is time consuming and uncertain.

  At Aiken, South Carolina, the Department of Energy has built a $1.3 billion plant, the Defense Waste Processing Facility, for the vitrification (processing into molten glass) of highly radioactive waste from its military production plants. Much of that waste is now held in 51 tanks at the Savannah River site, which are not meant for long-term storage and of which several are leaking. The plant will be tested for two years with non-radioactive wastes before full operation starts. Similar facilities are being built at West Valley, New York, near Buffalo, for waste produced there in a commercial operation (now defunct), and Hanford in Washington State, which holds large, but more diluted, quantities of radioactive waste.

  Efforts are made to determine if Yucca Mountain, northwest of Las Vegas, Nevada, is suitable for the storage of vitrified radioactive waste, encapsulated in steel cylinders. Some experts suggest processing the waste temporarily, e.g. by turning it into powder, until a final repository site has been selected and compatibility with the stored material can be assured. The suitability of Yucca Mountain is under debate, especially about the possibility of groundwater pollution. While many geologists deny that there is any reasonable risk, some scientists consider that the possibility of an eventual rise in the groundwater table cannot be ruled out.

  The discussion is complicated by the recent realisation that little or no serious attention is paid to the hazards posed by the release into open waterways and the soil of fluids and solids generated in operations like oil drilling and mining, that are contaminated by naturally occurring sources of radioactivity such as radon, radium and thorium. Disposing of such low-level radioactive substances is difficult and the fact that much of the pertinent legislation is relatively lenient prompts complaints from the nuclear industry, whose operations are subject to severe restrictions (**The New York Times**, November 4 and 28 and December 14 and 26, 1990; **New York Times Magazine**, November 18, 1990).

f. Developments of Concern for Vertical Proliferation

1. Union of Soviet Socialist Republics

- With the shut-down of the fifth military production reactor at the Chelyabinsk-40 nuclear production project, all reactors there have stopped production. According to Finnish sources the reactors at the site were among 15 reactors in the USSR dedicated to the production of plutonium for military purposes. The reprocessing plant at Chelyabinsk reportedly treats production reactor fuel and fuel from PWRs in the Soviet Union and abroad. In recent years, irradiated fuel from the Chelyabinsk-40 production reactors has been reprocessed at the Tomsk-7 complex in Siberia, where five heavy water tritium production reactors are assumed to be in operation (**Nucleonics Week**, October 25, 1990).

- There are contradictory reports about potential threats to the security of the Soviet military nuclear stockpiles and its nuclear industry. Nuclear warheads have long been stored in military establishments all over the Soviet Union and there is concern that, with independence movements in various republics and with regional conflicts growing in intensity, nuclear-arms depots may become targets of nationalist attacks. One such attack is said to have taken place near Baku, the capital of Azerbaijan. Reports that small tactical nuclear weapons have been removed from areas of ethnic strife are seen as confirming official concern about the possibility of nuclear weapons falling into the wrong hands. On the other hand, experts in the USSR and the USA stress that nuclear weapons are well-secured against unauthorized use, by a variety of electronic devices (Permissive Action Links, or PALs). Military personnel at weapons sites regularly undergo rigorous tests to determine their continuing reliability. The installations are also heavily guarded.

  The security of nuclear reactors and fuel-cycle installations may be a subject of even greater anxiety. Especially after the Chernobyl accident, there is strong anti-nuclear sentiment and protests are said to occur frequently. There are reports of official concern about potential terrorism against nuclear installations. The possibility of the theft of nuclear materials triggers concern of internal nuclear proliferation, especially in the case that the Soviet Union should break (**The Washington Post National Weekly Edition**, October 28-November 4, 1990; **U.S. News & World Report**, November 19, 1990).

- The first Soviet nuclear test in a year took place at Novaya Zemlya on 24 October 1990. The test range had been the subject of an anti-nuclear protest by Greenpeace a short time earlier; both the authorities of the Russian Republic (of which Novaya Zemlya is a part) and the Nordic countries have expressed concern about the resumption of tests at the site. There have been demonstrations at Semipalatinsk in Kazakhstan, the other Soviet test range. Kazakhstan has declared its sovereignty and banned nuclear testing on its territory; it has called on the Kremlin

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to stop testing there. There are conflicting reports as to whether the site will indeed be closed.

Official sources in the USSR have revealed that since its first nuclear test, in August 1949, it has conducted 714 tests. (**The Washington Post**, October 25, 1990; **The Bulletin of the Atomic Scientists**, Vol. 46, No. 9, November 1990 and Vol. 47 No. 1, January/February 1991).

- Scientific information newly released in the USSR reveals that, contrary to official United States contentions, the Soviet Union was not the first to explode a deliverable hydrogen bomb. A device exploded in Soviet Central Asia in August 1953 now turns out to have been an 'enhanced atomic bomb', rather than a hydrogen weapon (**The New York Times**, October 7, 1990).

- Finnish radiation safety officials are concerned about the presence in Lake Ladoga, 30 miles from the Finnish-Soviet border, of the hulk of a ship used by the Soviet Union for secret military experiments in the 1950's. According to a Soviet film documentary, the hulk holds 2,000 tons of radioactive water containing strontium-90 (**The New York Times**, October 17, 1990).

2. United Kingdom

- A British nuclear bomb was tested in Nevada on 14 November. Anti-nuclear protesters held up the test for two hours. This is the fourteenth UK test carried out jointly with the US since August 1979 (**The Washington Post**, November 15, 1990; **Hansard**, 28 November 1990, c.442W).

- The UK Ministry of Defence has revealed that its only free-fall nuclear bomb, the WE177, first entered service with the Royal Air Force in 1966 and with the Royal Navy in 1971 (**Hansard**, 28 November 1990, c.444W).

3. United States of America

- The last diesel-powered submarine has been retired from the United States Navy. All US submarines are now propelled by nuclear power. As a result of congressional pressure and a shrinking budget the number of boats in the 'Ohio' class of Trident II ballistic-missile submarines will be held down to 18.

  There are questions about the safety of the navy's nuclear reactor programme maintained by the Departments of Defense and Energy for development and training purposes. Secrecy prevents verification of allegations that conditions at the site in New York state are unsafe. Employees who have made their criticism public have been disciplined.

  Apparently, there are only enough new-type (W88) warheads for the missiles on the first two Trident-II submarines; for now, the missiles on the further Trident-II submarines will have to carry W76 warheads taken from Trident-I missiles. This is due to the shut-down of plutonium processing and production at Rocky Flats. That installation may remain closed for at least another year (**The Bulletin of the Atomic Scientists**, Vol. 46, No. 10, December 1990; **The New York Times**, January 1, 1991).

- A joint Congressional Committee has eliminated funds requested by the Department of Energy for a plutonium processing laboratory at Los Alamos. This followed the Administration's decision to cancel construction of a $1.2 billion plutonium processing plant in Idaho as unnecessary, and the removal by Congress from the 1991 budget of $600 million for a new plutonium processing building at Rocky Flats. The Department is revising its proposal for a plutonium laboratory at Los Alamos, but this is expected to meet fresh opposition. The 45-year old Purex reprocessing plant at Hanford, Washington, shut down for the last two years for safety and mechanical repairs, will not be reopened. The Department of Energy is still counting on the Savannah River production reactors to make Plutonium-238 for space use. Irradiation of the Neptunium pins producing Pu-238, plus cooling and processing is said to require at least three years. None of the reactors is in operation, however (which is why the US is looking at Soviet Pu-238 — see section c., above) There were plans to re-start the K-reactor in December 1990, the P-reactor in April 1991 and the L-reactor in September of that year. That schedule is not being met and all dates are in doubt again pending further safety checks. It is also not certain whether all three reactors will be restarted; only one is said to be needed to meet the country's tritium requirements (**The Washington Post**, October 17 and 21, 1990; **The New York Times**, October 18 and 19 and November 11, 1990; **The Energy Daily**, November 30, 1990; **Inside Energy/with Federal Lands**, December 3, 1990).

- Congress has removed the X-ray laser, which was to have been the centre piece of the anti-missile shield, from the Federal budget as a separate item. This move is seen as the virtual end of attempts to develop this device, although some low-level research may still be done as part of other work carried out at Lawrence Livermore National Laboratory (**The New York Times**, October 21, 1990).

- Short-range, nuclear-armed (SRAM-A) missiles will be removed from American aircraft on alert, following safety assessments which indicate that their AGM-69 warheads pose a high risk of dispersal of plutonium dust in case of fire. The SRAM-As were used on all operational US bombers; a replacement missile, SRAM-2, is being developed and should be ready in 1994 (**The Washington Post**, December 8, 1990; **The New York Times**, December 9, 1990).

- Nuclear warheads from Pershing II missiles eliminated under the Intermediate-range Nuclear Forces Treaty (INF) are being converted into B61 Mod 10 nuclear gravity bombs of a design closely related to the W85 warhead of Pershing II. The new bombs are scheduled for deployment in Europe (Robert S. Norris and William N. Arkin, 'Beating Swords Into Swords', **The Bulletin of the Atomic Scientists**, Vol. 46, No. 9, November 1990).

- American civilians injured or killed by radiation resulting from the production or testing of nuclear weapons will be

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compensated under a new law that creates a $100 million trust fund from which payments of up to $50,000 may be made to persons, or to surviving relatives of persons, who lived in Utah, Nevada and Northern Arizona, east and south (i.e. downwind) of the Nevada site near Las Vegas where atmospheric tests were performed, and have developed one of 12 types of cancer (**The New York Times**, October 16, 1990; **Arms Control Today**, November 1990).

- There are indications that **Chinese** intelligence agents have obtained nuclear-weapon related information from Lawrence Livermore National Laboratory and other weapons installations. Reportedly, largely due to slack security, agents were able to acquire a range of sensitive data, including information on the construction of neutron weapons, some of which it may have passed on to **Pakistan**.

With decreasing emphasis on weapons production, the Department of Energy is granting access to nuclear-weapon production sites and declassifying information on dual-use technologies that might benefit American industry in competing in high-technology areas. Some non-proliferation experts fear the availability of this information and eventually of the machinery that can be made with it may assist states in building up a nuclear capability. The major weapons laboratories themselves are also making efforts to exploit spin-off technologies so as to reduce their exclusive dependence on weapons-production.

Besides shortcomings in security, which are said to have improved recently, current investigations of the $1.1 billion security programme applied by the Department of Energy at its nuclear-weapon production sites are pointing to serious management inefficiencies and a waste of scarce resources on unnecessary procedures (**The Christian Science Monitor**, October 29, 1990; **The New York Times**, November 22 and December 21, 1990; **Wall Street Journal**, December 4, 1990).

4. Agreements

- The **United States** Senate has approved, with 98 votes against none, the Threshold Test Ban Treaty of 1974 and the Peaceful Nuclear Explosions Treaty of 1976, with the **USSR**. In the debate, the Chairman of the Senate Foreign Relations Committee called for the early conclusion of a comprehensive test ban treaty, especially in the interest of the extension of the NPT in 1995. Speakers for the Administration and Republican senators took the line that testing must continue as long as there is to be a nuclear deterrent. The Senate resolution approving TTBT contains two declarations: one repeating the treaty clause that the parties 'shall continue their negotiations with a view toward achieving a solution to the problem of the cessation of all underground nuclear tests', and one calling for 'an effective continuing test program consistent within the limits of the treaty', and preparedness to resume testing beyond those limits should national security require it. The word 'effective' was chosen by the Foreign Relations Committee in lieu of 'aggressive', preferred by the Department of Defense. The two-page treaty is followed by a 107-page protocol on verification, dealing in particular with the CORRTEX monitoring method, which is said to reflect the lack of confidence the US Administration has long displayed in seismic measurement of nuclear explosions. The two treaties entered into force on 11 December 1990 (**The Washington Post**, September 26, 1990; **Congressional Quarterly Monthly Report**, September 29, 1990).

- **USSR** naval sources announced on 4 October that the last Soviet ballistic missile submarine had been withdrawn from the Baltic Sea and that all nuclear weapons had been removed from Soviet ships in the area. Foreign Minister Shevardnadze informed the Soviet parliament on 15 October that the government had banned all nuclear weapons from the Baltic, as promised by President Gorbachev, and on 18 October Deputy Foreign Minister Kvitsinsky called on the ambassadors of the other Baltic states to join the ban (**The Bulletin of the Atomic Scientists**, Vol. 46, No. 10, December 1990).

- At a summit meeting in Moscow planned for 11-13 February 1991, the Chiefs of State of the **USSR** and the **USA** hope to sign a 'START' treaty, limiting the numbers of each side's strategic launchers and nuclear warheads and reducing the numbers of warheads on certain missiles. Each side will be held to a limit of 1,600 strategic delivery vehicles with a total of 6,000 'accountable' warheads, only 4,900 of them on ICBMs (intercontinental ballistic missiles) and SLBMs (sea-launched ballistic missiles), of which only 1,540 may be on heavy ICBMs (i.e. the USSR's SS-18, which can be modified to take up to 30 warheads) and 1,100 on mobile ICBMs. Compliance will be verified by satellite surveillance, data exchanges and on-site inspections and other means. START will not limit nuclear sea-launched cruise missiles (SLCMs) but each year parties will make unilateral declarations of the SLCMs they plan to deploy. Counting rules for air-launched cruise missiles (ALCMs), short-range attack missiles and free-fall nuclear bombs will set numbers for each side, notwithstanding the fact that their respective aircraft may carry more than the presumed number. A number of subsidiary issues remain to be solved before signature and this may make it necessary to postpone the summit meeting (**ACCESS Resource Brief**, Volume IV, Number 7, December 1990; **The New York Times**, January 7, 1991).

g. Developments of Concern for Horizontal Proliferation

- In **Brazil** moves are continuing to end the influence of the military in the country's nuclear programme. After the revelations that the military had been working secretly on the development of nuclear weapons, and the public closing by the President of several bore holes intended for nuclear tests, as a demonstration of his country's resolve to use nuclear energy for peaceful purposes only, the reduced nuclear programme has been put under civilian control. Information presented in a committee of the Brazilian national congress has revealed that in the early 1980s **China** supplied Brazil with 200kg of uranium in batches of various enrichments up to 20 per cent. This material was not put under IAEA safeguards. Clandestine nuclear cooperation with Iraq has been terminated, and legislation limiting the export of sensitive technologies is being enacted. Work on uranium enrichment, to produce fuel for submarine propulsion, is continuing at Ipero. The capacity of the plant is thought to be about 20-35 lbs of

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highly enriched uranium every two years. The sale by the **United States** of a high-capacity computer to Brazil will proceed (**NuclearFuel**, October 1, 1990; **Nucleonics Week**, October 4, 1990; **The New York Times**, October 9, 17, 18 and 19, 1990; **Veja** (Sao Paulo), 31 October 1990, in JPRS-TND-90-021, 6 December 1990).

- The President of the **Democratic People's Republic of Korea** has told a delegation of the two major Japanese parties that his country has neither the economic means nor any plans to develop nuclear weapons (**Washington Times**, September 27, 1990; see also under Section d. IAEA Developments, part d., Safeguards).

- The design throughput of the new reprocessing plant at Kalpakkam, near Madras, in **India**, which is scheduled for completion in 1991 or 1992, has been doubled to 200 metric tonnes a year. Together with the reprocessing plant at Tarapur, which has a capacity of 150 metric tonnes a year, this amounts to a nominal capacity of 350 metric tonnes annually. It is reported that at full capacity, the two facilities should be able to separate a total of one metric tonne a year from spent fuel. India also has an older reprocessing plant at Trombay, near Bombay, which is said to have handled all the spent fuel from the 40-MW(th) Cirus reactor there and the 100-MW(th) Dhruva reactor. Cirus is reportedly capable of producing 10 kg/yr of weapons-grade plutonium and Dhruva 30 kg/yr (**Nuclear Fuel**, October 15, 1990; **Congressional Research Service Issue Brief** 'India and Nuclear Weapons', **October 17, 1990, Order Code IB86125**).

- **Iraq**'s nuclear potential is subject to intense media attention. Iraq is a party to the Non-Proliferation Treaty and all its nuclear activities are presumed to be under IAEA safeguards. Reported moves by Iraqi individuals and firms to purchase various materials and items of equipment are widely taken as evidence that Iraq is trying to acquire the capability to enrich uranium by means of a centrifuge process. There are indications that this effort has been assisted by overseas companies, some of them owned or operated by Iraq. Reportedly, Iraq has been buying uranium abroad for years and is also developing its indigenous uranium resources. Assessments of the progress it may have made in the development of a nuclear explosive capability vary, but the majority of sources agree that it would need several years to produce enough weapon-grade uranium for the production of an explosive device, once the means of uranium enrichment are in place and operational. The extent to which Iraq would be able to fashion that material into an actual nuclear weapon is said to depend in part on the outside assistance it might receive. **China** has denied allegations that it had shipped lithium hydride to Iraq in violation of the UN embargo.

  The one course thought to be open to Iraq to make a nuclear explosive device within a relatively short period — in this context, estimates range from several months to a year or more — would be to use the highly enriched uranium which it holds for its declared nuclear research activities. Most observers agree that, altogether, this material would suffice for a single critical mass (some suggest that with highly sophisticated technology it might serve for two) the composition and form of the material would seem to allow only for the production of a crude and unwieldy device, which it would be very difficult to deliver to a target by air. It could not have been tested. The material is also periodically inspected by the IAEA and has recently been found to be fully accounted for. On the other hand, some commentators wonder if the inspection frequency is high enough to prevent the clandestine use of the material between one visit and the next. Some experts have expressed the fear that Iraq may secretly have acquired sophisticated installations and technologies that would give it a hitherto unsuspected nuclear capability (general analyses: **Congressional Research Service Issue Brief** 'Iraq and Nuclear Weapons', November 28, 1990, Order Code IB90113; **Proliferation Watch:** [publication of the U.S. Senate Committee on Governmental Affairs] Vol. 1, No. 4, October 1990; **Bulletin of the Emerging Nuclear Suppliers Project (ESPN)**, News Release November 30, 1990: 'The Iraqi Nuclear Threat: Fact and Fiction.'; **Press Release from the Arms Control Centre**, Ottawa: Gulf Crisis Update No. 3, 14 December 1990. Assessments of capabilities from several years up to 10: **The Economist**, September 15, 1990; **American Forces Information Service, Special Edition: Arms Control/Chemical Weapons**, No. 1876, November 1990; **The Washington Post**, November 8, 25 and 29, 1990; **The New York Times**, November 26 and 30, 1990; Transcript of **The MacNeil/Lehrer Newshour — interview with Janne Nolan, Leonard Spector and Gary Milhollin**, November 26, 1990; **Nucleonics Week**, November 29, 1990; **Testimony of Leonard S. Spector** - Hearings on The Persian Gulf Crisis, Senate Committee on Armed Services, November 30, 1990; **Financial Times**, December 6, 1990; **Newsweek**, December 10, 1990. Assessments of short-range capability: **The Washington Post** and **The New York Times**, November 23, 1990; **CBS News, Face the Nation with Lesley Stahl — Dick Cheney, Secretary of Defense and Brent Scowcroft, National Security Advisor**, November 25, 1990; **Financial Times**, November 27, 1990; **Washington Times**, November 28, 1990; **Newsweek**, December 3, 1990; **Sunday Times** [London], 16 December 1990; **Issue briefs** from the **Nuclear Control Institute**, November 30 and December 20, 1990. Uranium mining: **ITV** [London] **The World This Week**, 13 October 1990, in **JPRS-TND-90-020**; **London Press Association**, 13 October 1990, in FBIS 117 Oct13; **Jane's Defence Weekly**, 3 November 1990. Clandestine purchases: **Agence France Presse** from Hongkong, October 17, 1990, in **JPRS-TND-90-020**; **Der Spiegel** [Hamburg], 22 October 1990, in **JPRS-TND-90-020**; **The New York Times**, October 30, November 17 and 18 and December 23, 1990; **Nucleonics Week**, October 18, 1990; **Nuclear Fuel**, October 29 and November 12, 1990. IAEA inspections: **The Washington Post**, November 13 and 17, 1990; **The New York Times**, November 16 and 28 and December 28, 1990; **Nucleonics Week**, November 22, 1990; **NuclearFuel**, November 26, 1990).

- The question of further American economic and military assistance to **Pakistan** has again become acute, given recent reports that it has produced a number of nuclear weapons. Such assistance is subject to the United States Foreign Assistance Act, which imposes three statutory constraints relating to nuclear non-proliferation:

  a) Under the Glenn-Symington amendment, countries which acquire means to produce nuclear-weapon material

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and do not submit them to IAEA safeguards shall not receive assistance. Congress may authorise the President to waive this if doing so is in the US national interest; a waiver is in force for Pakistan until April 1991.

b) The Pressler amendment makes aid to Pakistan subject to the written determination by the President for each fiscal year concerned, that it does not possess a nuclear explosive device and that the assistance will reduce significantly the risk that it will possess such a device.

c) The Solarz amendment obliges the US to stop aid to a country that illegally exports items that would contribute significantly to the ability of a country to make a nuclear explosive, if the President determines that the items are to be so used. The cut-off may be waived if the President determines it would seriously prejudice non-proliferation objectives, among others.

As of end 1990, the President had not made the certification required by the Pressler amendment and military assistance for fiscal year 1990 and economic and military assistance for 1991 were suspended. The Administration was reported to favour continued assistance to Pakistan but the proceedings in both Houses, including statements made at committee hearings, indicate congressional opposition to further waivers. The United States is believed to have suggested to the new Pakistani government that it should quietly redirect its nuclear activities to the point where the Administration would be able to advise the Congress that conditions for the resumption of assistance were met. It is believed unlikely that Prime Minister Nawaz Sharif will make such concessions. The Pakistani newspaper **The Nation** has published a letter from the US Ambassador which says, **inter alia**, that the definition of possession (in US legislation) applies to components of a nuclear device, not only to an assembled device. This is seen as reflecting a hardening of the US approach to the situation.

Meanwhile, it is reported that Pakistan has attempted to buy through intermediaries in various countries advanced high-temperature furnaces for melting and casting non-ferrous metals and alloys, believed to have been intended for use in the production of nuclear weapons. It has also been announced in the United States that Pakistan was again operating its uranium enrichment facility at Kahuta above a level it had supposedly promised the American government not to exceed. A court in the **Federal Republic of Germany** has convicted three persons of illegally exporting to Pakistan in the mid-1980's fuel fabrication components and nuclear technology, including an installation for tritium extraction. The judge revealed that export control officials encouraged the exports (**The New York Times**, October 1, 2, 3, 16 and 26; November 8 and 30; **The Washington Post**, October 2, 5, 8, 10, 22 and 28; November 20 and December 1, 1990; **NuclearFuel**, October 15 and November 12 and 26 1990; **Nucleonics Week**, October 11 and November 1, 1990; **Financial Times**, October 12, 1990; **Chicago Tribune**, October 29, 1990; **Business Week**, October 22, 1990; **The Christian Science Monitor**, October 19 and November 21, 1990; **U.S. News & World Report**, October 15, 1990; **International Herald Tribune**, October 27, 1990, quoted in **Trust and Verify**, VERTIC Bulletin No. 15, November 1990; **Congressional Research Service Issue Brief** 'Pakistan and Nuclear Weapons', November 5, 1990, Order Code IB86110).

II. PPNN Activities

- Good progress can be reported with the attempts to obtain the resources necessary to continue PPNN through to the NPT extension conference in 1995. During the period covered by this report, grants were pledged by the Prospect Hill Foundation, the Rockefeller Brothers Fund, the Rockefeller Foundation and the W. Alton Jones Foundation. Together with funds already committed by the B. and G. S. Cadbury Trust, the Ford Foundation and the Ploughshares Fund, these grants will permit the continuation of key elements of the Programme.

- The Core Group of the Programme for Promoting Nuclear Non-Proliferation held its eighth semi-annual meeting at the University of Virginia, in Charlottesville, USA, from 9 to 11 November 1990. Except for Oleg Grinevsky all members were present at the meeting. Mmes. Melissa Bruemmer, Constance Eiseman, Hilary Palmer and Jane Wales, from, respectively, the Rockefeller Foundation, the Prospect Hill Foundation, the Rockefeller Brothers Fund and the Carnegie Corporation, attended as observers. Dr. Darryl Howlett of the University of Southampton, PPNN's part-time Information Officer, also participated in the meeting and assisted in its management. Invited presenters of papers were Dr. Wolfgang Koetter, University of Law and Administration, Potsdam-Babelsberg and Dr. Yumi Akimoto, Senior Managing Director, Mitsubushi Metal Corporation, attending on behalf of the Japan Atomic Industrial Forum (JAIF). At the substantive sessions Messrs. Derek Boothby and Michael Wilmshurst were present as observers for, respectively, the United Nations Department for Disarmament Affairs and the International Atomic Energy Agency. Other observers were Mr. Nobuo Ishizuka, Deputy General Manager, Department of Development Policy Promotion of the Japan Atomic Industrial Forum; Prof. John Redick of the University of Virginia; Prof. Lawrence Scheinman of Cornell University; and Dr. Tatsujiro Suzuki of Massachusetts Institute of Technology.

  The substantive discussions were divided into the three traditional categories: functional questions; NPT issues; and issues connected with a specific country or region. Under functional questions, papers were presented on 'The present status and future plan of the nuclear fuel cycle in Japan', by Mr Junnosuke Kishida [Chairman, JAIF Committee on Nuclear Non-Proliferation][CGP/39] and Dr Yumi Akimoto [Member of JAIF Committee on Nuclear Non-Proliferation and Disarmament][CGP/40]. Mr Kishida was unfortunately unable to be present due to illness, and his paper was presented for him by Dr Akimoto.

  Under NPT issues, the Core Group discussed in detail the events at the 1990 NPT review conference, with a view to assessing its outcome and its implications for the future of the nuclear non-proliferation regime. It divided its deliberations into four sessions. In the first session, introduced by John Simpson and Harald Mueller, the Core Group addressed the conference's discussions on compliance with Articles I,II and III.4. and on Security Assurances. The second session, led by Jayantha Dhanapala and Joseph Goldblat, dealt with the discussions on Articles VI and VII, while the third, introduced by

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David Fischer and Walter Rehak, covered the conference's discussions on Articles III.1-3 and Article IV. The final session dealt with Procedural Issues and the 1995 Extension Conference and was introduced by Ben Sanders and David Fischer.

The Core Group continued its systematic evaluation of regional issues by reviewing the nuclear non-proliferation situation in Europe following the democratisation of central European regimes and the unification of Germany. The discussions were held on the basis of a paper by Harald Mueller on 'Europe and Non-Proliferation' [CGP-41] and one by Wolfgang Koetter on 'German Non-Proliferation Policy' [CGP-42].

The Chairman's summing-up at the end of the session noted that PPNN could probably be most productive by devoting its attention to the mechanism and procedures of the review/extension conference of 1995 and promoting dialogue between industrialized and developing nations, and between parties and non-parties to the NPT. PPNN should embark on an imaginative investigation of ways to strengthen the non-proliferation regime, and it might devote more attention to such areas as security assurances; the means of establishing nuclear-weapon-free zones in particular areas such as Africa; the promotion of a comprehensive test-ban; and measures to uphold non-proliferation after 1995.

- The Directors and the majority of members of the PPNN Core Group went on from Charlottesville to attend the second annual meeting of Non-Governmental groups active in the non-proliferation area. This conference was organised by Leonard S.Spector, on behalf of the Carnegie Endowment for International Peace, on 13 and 14 November 1990 in Washington. Jayantha Dhanapala, Lewis Dunn, David Fischer, Jozef Goldblat, Harald Mueller, Ben Sanders, Mohamed Shaker and Roland Timerbaev made presentations as members of various panels.

- Under the auspices of the NGO Committee on Disarmament at United Nations Headquarters, on 15 October 1990 Ben Sanders participated in a briefing on the fourth NPT review conference, and on 25 October in a panel presentation on the UN's Role in Verification.

III. Other Non-Governmental Groups Active in Related Areas

- The **Verification Technology Information Centre** (VERTIC), based in London, is preparing a book, *Verification Report 1991*, which will be available early in 1991. The book will contain contributions from many noted experts on arms control issues.

IV. Some recent books, articles and other materials on Nuclear Non-Proliferation

- **Books:**

George Alexandrowicz, Walter Dorn, Michael Greenspoon, Jenny Hatfield-Lyon, Gerald Morris and Douglas Scott, **Disarmament's Missing Dimension: A UN Agency to Administer Multilateral Treaties**, No. 1 in the series of Canadian Papers in Peace Studies 1990. Science for Peace, University of Toronto Press.

Robert Jervis, **The Meaning of the Nuclear Revolution**, (Cornell University Press, Ithaca, New York, 1990).

Carl Sagan and Richard Turco, **A Path Where No Man Thought: Nuclear Winter and the End of the Arms Race**, (Random House, New York, 1990).

- **Articles and Other Materials**

Cameron Binkley and Gary Gardner, 'A Collar on Brazil's Bomb', **Eye on Supply**, No. 2, Fall 1990, pp. 27-32.

David Cox, 'To New York, a Message from Geneva', **Peace and Security**, Vol. 5, No. 4, Winter 1990/91, pp. 8-9.

Robert Einhorn, 'Revising the START Process', **Survival**, Vol. XXXII, No. 6, November/December 1990, pp. 497-505.

William Epstein, 'Conference a Qualified Success', **The Bulletin of the Atomic Scientists**, Vol. 46, No. 10, December 1990, pp. 45-7.

'Fact Sheet: Iraqi Nuclear Weapons Development History', **Eye on Supply**, No. 3, Winter 1990/91, pp. 32-39.

Mohamed Nabil Fahmy, 'Egypt's Disarmament Initiative', **The Bulletin of the Atomic Scientists**, Vol. 46, No. 9, November 1990, pp. 9-10.

Michelle A. Flourney, **Briefing Book on the Strategic Arms Reduction Treaty**, Council for a Livable World Education Fund, October 1990, 28 pp.

Susan Katz Keating, 'The Spooky Question of Soviet Nukes', **Air Force Magazine**, October 1990, pp. 78-81.

'Nuclear Testing: Time to Call a Halt', **Arms Control Today**, Vol. 20, No. 9, November 1990. [Special feature containing several articles on the prospects for a Comprehensive Test Ban Treaty.]

John Simpson, 'NPT Review Ends Without Final Document', **Nuclear Engineering International**, Vol. 35, No. 437, December 1990, pp. 16-7.

Leonard S. Spector and Jacqueline R. Smith, 'Deadlock Damages Nonproliferation', **The Bulletin of the Atomic Scientists**, Vol. 46, No. 10, December 1990, pp. 39-44.

Charles N. Van Doren and George Bunn, 'Progress and Peril at the Fourth NPT Review Conference', **Arms Control Today**, Vol. 20, No. 9, October 1990, pp. 8-12.

- **Research Papers:**

Frans Berkhout and William Walker, **Thorp and the Economics of Reprocessing**, a report of the Science Policy Research Unit, University of Sussex, United Kingdom, November 1990, 57 pp.

Avner Cohen and Marvin Miller, **Nuclear Shadows in the Middle East: Prospects for Arms Control in the Wake of the Gulf Crisis**; a Working Paper of the Defense and Arms Control Studies Program (DACS), Center for International Studies, Massachusetts Institute of Technology, December 1990; 39 pp.

Study on Effective and Verifiable Measures Which Would Facilitate the Establishment of a Nuclear-Weapon-Free Zone in the Middle East; Report of the Secretary-General of the United Nations, General Assembly Document A/45/435, 10 October 1990; 50 pp.

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V. Comments from Readers

a. Letter regarding attacks on Bushehr, Iran

The editor has received a letter from Dr. M. S. Ayatollahi, International Relations Advisor of the Atomic Energy Organization of the Islamic Republic of Iran, drawing his attention to some inaccuracies in PPNN's Occasional Paper No. 8, **The Need for a Strong Nuclear Non-Proliferation Treaty: Issues at the Fourth NPT Review Conference.** The text of the letter is reproduced below.

I refer to the Occasional Paper Eight titled: 'The Need for a Strong Nuclear Non-Proliferation Treaty: Issues at the Fourth NPT Review Conference', published by the Centre for Political Studies under the Programme for Promoting Nuclear Non-Proliferation.

Whilst we would like to commend the works and activities of the PPNN in general and in particular the lucid and concise analysis presented by the authors of the above paper we feel compelled to bring the following to your attention and the attention of the authors.

On page 24 of the above paper under the heading: 'Assurance of Physical Security of Nuclear Plants against Military Attacks' the authors repeatedly refer to the alleged attacks of Iraq on Iran's Bushwehr Nuclear facilities.

Considering the above, and based on the contents of para.(iv) of section titled: 'Subsidiary Issues of Substance at the 1990 NPT Review Conference', we would like to make the following observations:

1. *It appears that the esteemed authors have not paid sufficient attention to the documentation available at the IAEA and circulated among all its Member States proving irrefutably that Bushehr Nuclear Power Plant was indeed subjected to military attacks by Iraq on nine separate occasions during the eight-year long Iran-Iraq war.*

   Each instance of attack was reported to the IAEA individually and also a complete document covering all attacks was also prepared and circulated among all Member States of the IAEA. Furthermore, Dr. Hans Blix, the Director General of the IAEA who visited Iran in 1989 also visited the site of Bushehr NPP, and while expressing astonishment at the extent of damage inflicted upon the installations through the deployment of modern offensive weaponry, reported his findings to the Agency. A brief summary of the results of his visit was also included in our statement at the 33rd Regular Session of the IAEA General Conference.

   It is against the above background and considering a well-established and documented case that we note with regret such a gross oversight by the authors of an otherwise well-researched paper.

   Therefore, Iraqi military attacks on Bushehr NPP were not allegations but well-documented and irrefutable facts and we do hope that this misrepresentation has been purely due to neglect on the part of the authors and not stressed intentionally.

2. *The target of Iraq's military attacks has been Bushehr Nuclear Power Plant but reference is made in the above paper to nuclear facilities which may, to an initiated reader, imply nuclear facilities of non-peaceful nature.*

   Furthermore, the authors neglect to mention that Iran, as a fully committed signatory of NPT, is under Full-Scope Safeguards of the Agency.

3. *The correct name of the Nuclear Power Plant attacked by Iraq is 'Bushehr' and not 'Bushwehr' as repeatedly referred to in the above mentioned paper.*

4. *The historic and accurate name for the body of water between Iran and the Arabian Peninsula is 'Persian Gulf' and not 'the Gulf'. This point is reflected in UN documents published some time ago clarifying this issue.*

Therefore, such errors, although understandable when based on biased political motives is, however, totally inexcusable when presented in seemingly neutral academic works.

We have brought the above points to your attention so that corrective measures could be adopted in whatever form which may be appropriate and also in the hope of avoiding similar errors in your future publications and re-prints of the above paper.

The strength of the academic papers lies upon the unbiased and objective presentation of facts and their analyses. Errors such as those mentioned above can often discredit an otherwise well-intended academic effort and thus erode the confidence of the readers. It can also undermine the credibility and the motives of the financial supporters of such programmes. We do hope that there are no grounds, in this case, to make such issues questionable.

b. Letter regarding Israeli policy on chemical weapons

The editor has received a letter from Ambassador E. Zippori, Advisor to the Minister for Foreign Affairs on Disarmament of Israel, in reaction to the following sentence which appeared in **Newsbrief No. 11:**

- Israeli Science Minister, Yuval Ne'eman, has announced that his country has chemical weapons and would use them in response to a chemical attack.

Ambassador Zippori writes that he feels '...that the paragraph regarding chemical weapons, which was misinterpreted, should have been balanced by the Israeli official statement which was issued as a U.N. document ...'.

The substantive part of that document, which was issued on 6 August 1990, under numbers A/45/385 and S/21447, is reproduced below.

1. *Israel is a signatory to the 1925 Geneva protocol which forbids the use of chemical weapons. Israel adheres strictly to the Protocol.*

2. *Israel supports the concept of a chemical-weapons-free zone in the Middle East. Our proposal on this matter was first put forward by Prime Minister Shamir at the special session of the General Assembly devoted to disarmament in June 1988. Foreign Minister Arens raised the proposal at the Paris Conference in January 1989. Israel is prepared to enter negotiations on this issue at any time.*

3. *Recently Israel joined the Conference on Disarmament as a non-member State. In this manner, Israel joins the international effort to draft a chemical weapons convention which will be universally accepted by all States and will provide a solution to the special security problems faced by Israel.*

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VI. Documentation

Declaration on the Common Nuclear Policy of Brazil and Argentina

The President of the Federative Republic of Brazil, Dr. Fernando Collor, and the President of the Argentine Republic, Dr. Carlos Saul Menem, gathered in Foz do Iguacu, Brazil.

Considering: Their decision to strengthen the ongoing process of integration;

The importance of the utilization of nuclear energy exclusively for peaceful purposes, for the scientific, economic and social development of both countries;

The commitments arising from the Joint Declarations on Nuclear Policy of Foz do Igaucu (1985), Brasilia (1986), Viedma (1987), Ipero (1988) and Ezeiza (1988);

The reaffirmation of these commitments by both Presidents, included in the Buenos Aires Joint Communique of July 6 1990;

The progress achieved in their bilateral nuclear cooperation, as a result of the joint endeavours under the framework of the Agreement on Cooperation in the Peaceful Uses of Nuclear Energy;

Stressing:

The work done by the Brazil-Argentina Permanent Committee on Nuclear Policy to further the cooperation between both countries in the areas of research, exchange of information, industrial integration, exchange of nuclear materials, development of joint projects and policy coordination;

The Presidential and technical visits to nuclear facilities of both countries, especially to the uranium enrichment plants of Pilcaniyeu and Ipero, and to the laboratories of radiochemical processes of Ezeiza, which constitute clear evidence of the level of mutual confidence reached between Brazil and Argentina; and taking into account:

That the Permanent Committee developed control mechanisms for the nuclear activities of both countries, which establish, among others, common criteria for the classification of nuclear materials and facilities as well as for the determination of their relevance, and which foresee reciprocal inspections of all their nuclear facilities, decide:

1. To approve the Common Accounting and Control System (SCCC), agreed upon by the Permanent Committee, which shall apply to all nuclear activities of both countries:
2. To establish that the following activities shall be carried out within the next 45 days, as a first stage:
   a) The exchange of the respective descriptive lists of all nuclear facilities;
   b) The exchange of the declarations on the initial inventories of nuclear materials;
   c) The first reciprocal inspections of the centralized register systems;
   d) The presentation to the International Atomic Energy Agency of the register and reporting system which is part of the Common Accounting and Control System, with a view to harmonizing it with the registers and reports submitted by both countries to the Agency in accordance with safeguards agreements in force;
3. To undertake negotiations with the International Atomic Energy Agency for the celebration of a Joint Safeguards Agreement based on the Common Accounting and Control System;
4. To take, pending the conclusion of the Safeguards Agreement with the International Atomic Energy Agency, initiatives conducive to the full entry into force of the Treaty on the Proscription of Nuclear Weapons in Latin America (Treaty of Tlatelolco), with regard to both countries, including action relating to the updating and improvement of its text.

The Programme for Promoting Nuclear Non-Proliferation and the Newsbrief

The Programme for Promoting Nuclear Non-Proliferation was established in the Spring of 1987 to help strengthen the effectiveness of the international nuclear non-proliferation system in general and ensure the continuing viability of the Non-Proliferation Treaty in particular. The Programme has created an international, non-governmental and informal system of collecting, exchanging and analysing relevant information which is brought to the attention of government officials, diplomats, the research community, parliamentarians, non-governmental organisations and the media, so as to help foster interest in, and knowledge of, the issues involved.

The central element of the Programme for Promoting Nuclear Non-Proliferation is an international networking exercise based on a Core Group of high-level experts from, industrialized as well as developing nations. These experts give general guidance to the Programme, pool and exchange information on the many different aspects of the question of nuclear (non-)proliferation and make the respective communities of which they form part aware of the need to support the non-proliferation regime and the Treaty. The Core Group customarily meets twice a year.

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

The **Newsbrief** is published on behalf of the Programme for Promoting Nuclear Non-Proliferation by the Mountbatten Centre for International Studies, Department of Politics, University of Southampton. Communications relating to its content and other editorial matters should be addressed to Ben Sanders at 240 East 27th Street, New York, New York 10016, USA (Tel. 1 (212) 532-3153; Fax. 1 (212) 532 9847). Those relating to production and distribution should be addressed to John Simpson, Mountbatten Centre for International Studies, University of Southampton, Southampton, SO9 5NH, United Kingdom (Tel. 0703 592522; Fax. 0703 593939; international code +44/703).

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