

## **July 1989**

# **Programme for Promoting Nuclear Non-Proliferation, Newsbrief, Number 6**

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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 6

NEWSBRIEF

July 1989

## Editorial note

This *Newsbrief* is the sixth in a series of informal publications on current events in the area of nuclear non-proliferation that are issued approximately every three months. It refers to events that occurred in the course of April/June 1989 and to some earlier developments that have become known during that period.

The PPNN *Newsbrief* presents topical items of information relating to nuclear non-proliferation. It reports on the actual or potential spread of nuclear weapons capabilities to additional States as well as on measures taken or contemplated to deter nuclear proliferation. In so doing, it devotes attention to related questions of arms control and to connected diplomatic, economic and technical issues. The *Newsbrief* seeks to be fair and objective in its reporting, citing news items derived from reputable sources, without commenting on their validity. In selecting items for inclusion the editor endeavours to present positive as well as negative developments. Readers who take issue with any item included in the *Newsbrief* or any statement contained in it, or who otherwise wish to comment, are invited to send their remarks to the editor, so they may be published in a subsequent issue.

The *Newsbrief* is distributed free of charge to institutions and persons with a known interest in nuclear non-proliferation. Copies of previous issues (March, July and October of 1988 and January and April of 1989) are still available upon request.

For the benefit of readers who are not acquainted with the Programme for Promoting Nuclear Non-Proliferation (PPNN), which produces the *Newsbrief*, a short description of its aims and activities is given at the end of this issue.

The chairman of the PPNN Core Group, as editor of the *Newsbrief*, 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 with its substance or with its relevance to the Programme.

## I. Topical developments

### Introductory Remarks

The *Newsbrief* seeks to help bring its readers up to date on developments in the field of nuclear non-proliferation. The majority of events reported here are of recent vintage but many have roots that reach back through several years or decades. Like most issues of international security, nuclear non-proliferation has a long history and many of the events referred to can be fully understood only when seen within the pertinent political framework and against their

historical background. Designed merely to make brief references to topical events, the *Newsbrief* is not equipped to provide such framework or background. Interested readers may wish to consult the extensive literature available in the field.

### a. Present Situation

The negotiations between the Superpowers on the reduction of strategic nuclear weapons, which had been suspended since the end of the Reagan Administration, were resumed on 19 June. The new US Administration seems ready to adhere to a number of the understandings previously reached with the Soviet Union, but disagreements remain on several important issues, including the interpretation of the Anti-Ballistic Missile (ABM) Treaty and the question of restricting air and sea-launched cruise missiles. The Bush Administration is reported to have adopted several new policies, *inter alia* on banning mobile land-based ballistic missiles and on verification. The impact on the pace of these negotiations is still unknown. The question of reductions in short-range nuclear weapons has been receiving fresh attention. That question is obviously also connected with the negotiations underway in Vienna between NATO and the Warsaw Pact States, on the reduction of conventional armaments in Europe. American press reports indicate that the Bush Administration tends to attach more immediate importance to conventional than nuclear disarmament. Substantial progress is being made with respect to the reduction of conventional armaments. But here, too, important disagreements remain.

Like its predecessor, the Bush Administration appears to consider a comprehensive ban on nuclear testing as no more than a long-term goal. Bilateral contacts on methods of verifying compliance with the Threshold Test Ban Treaty and the Treaty on Peaceful Nuclear Explosions are going on and the parties have agreed to negotiate further limits on nuclear testing, once those agreements — which date from 1974 and 1976, respectively — have been ratified. It is assumed, meanwhile, that there will be a conference in 1990 to amend the 1963 Partial Test Ban Treaty, following a request to the Depositary Governments by forty States Party to that Treaty. Before that conference can be held a number of questions will have to be settled about financing, servicing, timing and venue, among others. The forthcoming session of the General Assembly of the United Nations will no doubt clarify some of these issues.

The previous issue of the *Newsbrief* signalled the possibility that the Canadian Government might reverse its decision to acquire nuclear-propelled submarines, and

expressed the hope that this should indeed be the case. That reversal has since taken place, prompted by financial reasons rather than by the consideration that the acquisition of nuclear submarines by Canada might detract from the credibility of the international non-proliferation system.

The Preparatory Committee for the Fourth Review Conference of the Nuclear Non-Proliferation Treaty held its first session in New York, during the first week of May. It dealt with a number of procedural issues and endorsed the candidature of Ambassador de Rivero of Peru for President of the Conference. Representatives of 95 States Parties participated; that is more than took part in any Preparatory Committee session for previous NPT Review Conferences. Whilst this wide participation is obviously due to the importance governments attach to the Treaty, it was stimulated by the fact that, for the first time, a session of this kind was held in New York.

The visit of Pakistan's Prime Minister to Washington in early June gave rise to new speculation about that country's nuclear ambitions. Once again, Pakistan solemnly asserted that its intentions were exclusively peaceful. And, similarly, once again, Pakistan also said it would only be willing to submit to international verification if India would do so as well.

There is little sign of progress in South Africa's stated plan to accede to the NPT. South Africa's position in the IAEA in the light of its progress towards the NPT will be discussed once again in the Agency's General Conference, in September. But also in September there will be a general election in South Africa and one may doubt if by the time of the General Conference it will have a government ready and able to decide in the matter.

There is speculation that the incoming Argentine Government may be less favorably disposed to international safeguards than its predecessor. This might mean that the plans for reciprocal inspection between Argentina and Brazil are not pursued. It is also possible that Argentina plans to depart from its previous policy of requiring international safeguards on its nuclear exports. That would be the first instance of a nuclear supplier choosing not to involve the international safeguards system of the IAEA in respect of its exports. From the point of view of nuclear non-proliferation, this would be most regrettable.

Recent disclosures of long-standing United States assistance to France's military nuclear programme, in apparent disregard of American legislation, prompt the question whether any States other than France and the United Kingdom may have received US support in their military nuclear efforts. Revelations of this kind obviously detract from the United States' credibility as a champion of nuclear non-proliferation.

Reports from Western Europe indicate that several nuclear supplier States are now tightening their export legislation and becoming more serious in enforcing

measures to prevent illegal nuclear exports and prosecute violators.

The disclosures of problems at American military nuclear establishments continue. There are indications of gross mismanagement and allegations of deliberate disregard of safety rules. The huge costs of cleaning up contaminated sites and repairing or even replacing defective plant is beginning to affect the discussion about the size and nature of the nuclear arsenal. That discussion is influenced also by reports about accidents suffered by the navies of both Superpowers, including collisions between nuclear-armed ships, fires on board, accidents, including recent ones, on-board submarines and the loss of several weapons. The USSR has lately contributed to the concern about safety in military nuclear programmes by confirming the truth of the long-standing rumours about a large explosion at a nuclear-weapons factory there in 1957.

Public resistance to the peaceful uses of nuclear energy goes on. In the United States, that resistance peaked both after the Three Mile Island and Chernobyl incidents. It had lately seemed to recede, partly, it was thought, in the light of the argument that nuclear energy does not pollute the atmosphere and contribute to the "Greenhouse Effect" in the way fossil-fuelled power plants do. But this does not seem to have convinced voters in a recent advisory referendum in Sacramento, California, of whom a large majority favoured the closure of nuclear power plant which had been operating since the mid-Seventies.

It is worth noting that official Chinese press sources reported the results of the first session of the Preparatory Committee for the Fourth NPT Review Conference and took the occasion to reiterate China's adherence to the principle of nuclear non-proliferation. The rigorous reactions of the Chinese government to recent pro-democracy demonstrations in a number of major cities has led to reactions by several States. Some of these include restrictions on the transfer of nuclear material, technology and equipment. It is too early to predict what effect this will have on China's nuclear programme.

#### **b. Further Relevant Events**

- In response to the request made by the required number of parties of the Partial Test Ban Treaty of 1963 the three Depository Governments, the USSR, the UK and the USA, have announced that they will convene a conference of all the parties to that Treaty to consider amendments to convert it into a comprehensive test-ban treaty (*Bulletin of the Atomic Scientists*, June 1989, pp. 36, 37).
- In a Declaration dated 22 May 1989, commemorating the fifth anniversary of the Six Nations Initiative, the Heads of the Governments of **Argentina, Greece, India, Mexico, Sweden, and Tanzania** called for:
  - A comprehensive test ban treaty;
  - A prohibition on the use of nuclear warheads from dismantled arms systems in other arms systems;
  - The establishment of a multilateral verification system in the framework of the United Nations;

- An international agreement banning all use of nuclear weapons, under any circumstances;
- The speedy conclusion of the convention on chemical weapons;
- The prevention of outer space being turned into an arena for the arms race and military confrontation;
- Reduction and elimination of nuclear weapons within a time-bound framework.

● In May, identical texts were introduced in the two Houses of Congress of the **United States**, containing draft legislation that would prevent the Government from operating a production reactor, chemical separation plant, or isotope separation plant to produce more highly enriched uranium and plutonium for weapons, provided the Soviet Union also ceases production of those materials. The sponsors of the Bill (called the "International Plutonium Control Act" – introduced into the Senate by Sen. Edward M. Kennedy and Sen. Timothy E. Wirth as S. 1047 and into the House of Representatives by Reps. Dante Fascell, Tom Tauke and Ron Wyden, as H.R. 2403) propose that "the *de facto* unilateral moratorium" on the production of fissionable material caused by the deterioration of the pertinent installations should be converted into "a bilateral verifiable arms control regime". The proposed shutdown is intended as "a step towards equalizing the rights and obligations of nuclear-weapon versus non-weapon states which are party to the Non-proliferation Treaty". The US Administration comments that nuclear materials control is "irrelevant" and diverts attention from disarmament negotiations (Warren H. Donnelly: *CRS Issue Brief; Letter from Senators Edward M. Kennedy and Timothy E. Wirth, US Senate, April 3, 1989; Nucleonics Week, June 1, 1989; Christian Science Monitor, June 2, 1989*).

● **United States:** Three men said to be members of a radical environmental group in Arizona have been arrested on charges that they conspired to sabotage two nuclear power plants and a military nuclear installation (*The New York Times, June 1, 1989*). While there is no indication that they did any damage, the case has drawn renewed attention to the question of physical protection of nuclear installations.

● **United States:** The Chief of Staff of the Nuclear Regulatory Commission, Victor Stello Jr., has been nominated as Assistant Secretary of Energy Defense Programs. It will be his task to get defective military production plans going again and bring them into compliance with pollution laws (*The New York Times, June 23 and 28, 1989*).

#### c. NPT Events

● The first session of the Preparatory Committee for the Fourth Review Conference of the NPT was held at United Nations Headquarters in New York from 1-5 May 1989, under the chairmanship of Ambassador Chusei Yamada of Japan. It was attended by representatives of 95 States Party to the NPT and dealt primarily with procedural questions. The Committee decided to hold its second and third sessions in Geneva, from 11 to

18 September 1989 and from 23 April to 4 May, respectively and fixed the dates for the Fourth Review Conference at 20 August-14 September 1990. It further decided, *inter alia*, that the rules of procedure of the Third Review Conference should be the draft rules for the Fourth Conference. These include the cost-sharing formula used previously, suitably adapted to the fact, among others, that there are now more parties to the NPT. The candidature of Ambassador Oswaldo de Rivero, Peruvian Permanent Representative to the Conference on Disarmament in Geneva, for President of the Conference, was unanimously endorsed. The Committee elected as its Vice-Chairmen Ambassador Yamada, who presided over the first session, and Ambassadors Tadeusz Strulak of Poland and Bariyu Adeyemi of Nigeria, who will each preside over a further session of the Preparatory Committee (*United Nations Press Release DC/2244, 5 May 1988; Document NPT/CONF.IV/PC.I/4: Progress Report of the Preparatory Committee on its first session*).

#### d. Other Non-Proliferation Developments

● **Canada** has cancelled its plan to acquire 10-12 nuclear-powered submarines. The decision was taken in order to help reduce the budget deficit. It deviates from the 1987 Government White Paper which called the acquisition of a nuclear submarine fleet essential for ocean defences and the maintenance of Arctic sovereignty. According to Finance Minister Michael Wilson, "the basic parameters of the White Paper remain the defence policy of the Government" (*The Citizen, April 27 1989; The New York Times, April 28 1989; Arms Control Today, May 1989*).

● **Israel and Norway** have agreed to renegotiate the agreement reached last year that would give Norway inspection rights in respect of the 30 tonnes of heavy water it supplied to Israel in 1959. That agreement was rejected by the Norwegian Parliament because it would not have permitted inspection of the heavy water at Dimona (*Financial Times, 4 April 1989; Wall Street Journal, April 5, 1989*). Scientists from Israel wishing to visit **United States** nuclear laboratories are now subject to the most rigorous clearance procedures. This move has prompted speculation that the United States may in the past have helped Israel's nuclear weapons programme (*The Independent, 5 April 1989*).

● Reporting on the results of the first session of the Preparatory Committee for the fourth Review Conference of the NPT, **China's** official press agency gave a brief description of the Treaty and its purposes and added that "China, though not a signatory, has repeatedly stated that it abides by the principles of nuclear non-proliferation" (*XINHUA [Beijing] in English, 9 May 1989 - JPRS-TND-89-010, 23 May 1989*).

#### e. Nuclear Trade and International Cooperation

● The incumbent Government of **Argentina** has been pursuing an active nuclear export programme to the Middle East, and has discussed trade agreements with **Egypt, Iran, Saudi Arabia, Syria** and other states on the region. The efforts have been focused on the sale of research reactors, uranium exploration, mining and

milling, fuel fabrication, nuclear regulation and nuclear waste treatment and disposal. While customarily such exports would have been under IAEA safeguards, observers are not certain whether this will be the case under the new Argentine Administration (**Nucleonics Week**, April 27, 1989).

- **Argentina and Brazil** were represented at an IAEA meeting on fast breeder reactors held in Vienna in April by a single scientist acting as observer on behalf of both countries (**Nucleonics Week**, April 6, 1989).
- **Australia** has decided to export uranium to **Spain**, which recently concluded a safeguards agreement with the IAEA pursuant to the NPT (**Nuclear Fuel**, June 12, 1989).
- **Brazil** has concluded a contract with the **British/Dutch/German** consortium URENCO for the supply of enriched uranium for its ANGRA-1 and -2 power reactors (**Nuclear News**, June 1989).
- **Chile and China** have concluded an agreement for cooperation on the peaceful use of nuclear energy specifically with regard to uranium mining, processing and metallurgy (**Nuclear Engineering International**, May 1989).
- Market analysts in **Europe** and the United States expect that the public condemnation of the harsh manner in which the Government of **China** has reacted to recent popular demonstrations in that country will make imports of uranium of Chinese origin unacceptable for the foreseeable future (**Nuclear Fuel**, June 12, 1989). On 29 June 1989, the United States House of Representatives voted unanimously for sanctions on trade with China, including a ban on the export of nuclear technology, equipment and material (**The New York Times**, July 1, 1989). See also 'Peaceful Nuclear Developments', below.
- **China** will receive assistance from the **USSR** in the construction of a 2,000-MWe pressurized water reactor of Soviet design, at Jinzhou, in the province of Liaoning, in the north-western part of China (**Christian Science Monitor**, May 17, 1989).
- On 6 June 1989 **France** and the **Federal Republic of Germany** signed a joint declaration on cooperation in peaceful nuclear energy, which is intended as a framework for cooperation in various aspects of the nuclear fuel cycle. In the first instance, the two countries' major producer of power reactors, Kraftwerkunion AG/Siemens and Framatome SA have agreed on the joint development and marketing of pressurized water reactors, and Veba AG and Cogema will work together at the latter's reprocessing plant at La Hague. As a consequence of the latter decision, work on the reprocessing plant at Wackersdorf in Bavaria was halted on 31 May. A joint working group will examine possible areas for further nuclear cooperation between the two countries, such as energy policy and energy technology. Negotiations are already under way between Cogema and Veba on cooperation in mixed-oxide fuel fabrication. Meanwhile, German electrical power companies are understood to be negotiating direct (i.e. not through Veba) with the **United Kingdom's** BNFL which seems to have offered reprocessing services at a price slightly below that charged by Cogema (**International Herald Tribune**, 6 April 1989; **Wall Street Journal**, 7 April 1989; **Financial Times** and **Wall Street Journal**, 14 April 1989; **Nuclear Fuel**, April 17 and June 12 1989; **Nucleonics Week**, June 8 1989).
- **India** is reported to be talking with **France** about the supply by Framatome of two 900-MWe pressurized water reactors. The **Finnish** state utility firm IVO will participate in the construction of two 1000-MWe Russian-designed VVER reactor units in Koodankulam, Tamil Nadu (**Nuclear Engineering International**, April 1989).
- **Japan** has decided to build a 6000-ton escort vessel, with relatively heavy armament, to protect the shipments of plutonium which it will receive from Europe starting in the early 1990s. Under a 1988 amendment to its agreement with the **United States**, Japan is permitted to have its irradiated plutonium reprocessed overseas if it protects it adequately against interference during transit (**The Japan Times**, April 17, 1989).
- **France** and the **USSR** have agreed to renew their 1967 agreement on cooperation in the peaceful uses of nuclear energy (**Nuclear Engineering International**, April 1989).
- **Sweden's** Asea Brown Boveri and the **United States** firm Westinghouse have agreed to market joint nuclear services in Europe. The two firms are said to be in the forefront of developing small modular reactors (**Nucleonics Week**, June 8, 1989).
- The construction of a new joint uranium enrichment plant involving URENCO, together with three United States' electric utilities and Fluor-Daniel, was announced on June 9, 1989. The enrichment plant will be located near Homer, Louisiana in the United States and is due for completion in 1996. It will be the first privately owned domestic enrichment plant ever constructed in the United States and when it comes onstream is expected to provide about 15 per cent of the enrichment requirement of U.S. nuclear plants (U.S. Council for Energy Awareness [USCEA] INFO 244, June 1989).
- The Chairman of the **USSR** State Committee for Supervision of Nuclear Power Safety, on a visit to the **United States**, has expressed interest in exchanges on training of plant personnel and the enhancement of reactor safety procedures (**The New York Times**, May 23, 1989).

- The USSR has completed at Volgodonsk a plant ("Atomash") capable of producing the components for eight 1000-MW pressurized water reactors a year. By 1992 Atomash will need orders from abroad, which may come in the first instance from China, Finland, India and Syria (*Nucleonics Week*, June 1, 1989).

## f. IAEA Developments

### 1. General

- At its session in June, 1989, the Agency's Board of Governors appointed Dr. Hans Blix as the Agency's Director General for a further term of four years, subject to approval by the General Conference in September.

The Board is recommending to the General Conference a budget for 1990 of \$162,832,000, representing 0.2% growth in real terms over the 1989 budget (*IAEA Press Release PR 89/15*, 16 June 1989).

Also at its June session, the Board decided to invite PPNN to be represented by an observer at the forthcoming regular session of the General Conference.

### 2. Safeguards

- The Agency's Board of Governors, taking note of the Agency's Safeguards Implementation Report for 1988 (SIR), has expressed confidence in the Agency's safeguards against the diversion of nuclear material in civil nuclear programmes. The SIR records that during that year the Agency's Secretariat did not detect any anomaly which would indicate the diversion of a significant amount of safeguarded nuclear material — or the misuse of facilities, equipment or non-nuclear material subject to safeguards under certain agreements — for the manufacture of any nuclear weapon or any other nuclear explosive device, or for purposes unknown." By the end of last year safeguards were being applied in 57 States and involved 920 nuclear installations (*IAEA Press Release PR 89/15*, 16 June 1989).

## g. Peaceful Nuclear Developments

- **General:** In 1988 nuclear power plants in 11 countries (Belgium, Bulgaria, Finland, France, Federal Republic of Germany, Hungary, Republic of Korea, Taiwan (China), Spain, Sweden and Switzerland) produced one-third or more of total electricity. Worldwide, there were 429 nuclear power reactors connected to electric grids, which together accounted for nearly 17% of total electricity production (*IAEA Newsbriefs*, Vol. 4, No. 4 (35), May 1989).
- **Argentina:** President Carlos Saul Menem is reportedly in favour of establishing a nuclear fuel cycle that would ensure the country's independence from foreign suppliers. It is expected that the new Government will make a strong effort to strengthen the Argentine nuclear programme and expand exports, and that the Comision Nacional de Energia Atomica will again be granted a large degree of autonomy (*Nucleonics Week*, May 18, 1989). It is not known when the 357-MW Atucha-1 plant

will be on line again. In August 1988 the reactor suffered a mechanical failure necessitating a highly complex repair job by remote control that is still under way. Its output is said to be badly needed as Argentina is apparently in the midst of a serious power shortage (*Nucleonics Week*, June 15, 1989).

- **Austria/Czechoslovakia:** Austrian environmentalists are protesting the at construction of a nuclear power plant in South Bohemia. The campaign threatens to disturb Austria's trade relations with its neighbour. Czechoslovakia has dismissed it as unjustified and is willing to receive visits on the site by Austrian authorities who wish to assure themselves of its safety (CTK [Prague], 26 April 1989; *Rude Pravo*, 5 May 1989 - JPRS-TND-89-010, 23 May 1989).
- **China:** The recent turmoil in a number of major cities does not seem to have had much effect on China's nuclear effort. Work on the two 900-MW reactors under construction at Daya Bay, Guangdong Province, near Hong Kong, with British and French assistance, continues apace. A joint bid by Framatome and Siemens/KWU for the two 600-MW PWR powerplant at Qinshan near Shanghai is expected to go forward as planned. Discussions between the Federal Republic of Germany and Chinese authorities on the construction of a 10-MWth high-temperature gas-cooled reactor for Beijing University seem to have been interrupted, however, as a result of the violence there (*Nucleonics Week*, June 15, 1989).
- **Japan:** Construction of a pilot centrifuge enrichment plant will begin this year in Okayama Prefecture in southwestern Honshu main island. The plant, which will have an annual capacity of 40,000-50,000 SWU and will cost about 10-billion yen (\$76.9-million), should start operation in 1991 (*Nuclear Fuel*, May 29, 1989).
- **Republic of Korea:** Construction delays and cost overruns, caused to a large extent by the apparent inability to provide the required level of local content, as well as a growing anti-nuclear movement, are causing trouble for South Korea's ambitious nuclear power programme. There are nine nuclear power stations in operation, providing almost half the country's electricity; two are under construction and five more are planned to be completed by 1999. The opposition is fanned by the issue of waste disposal (*Far Eastern Economic Review*, 18 May 1989).
- **Pakistan:** Prime Minister Benazir Bhutto has approved a 20-year programme for nuclear power generation using reactors produced indigenously, in collaboration with foreign firms. The scheme should give Pakistan a nuclear generating capacity of 6,000 MW by the turn of the century (*Nucleonics Week*, May 25, 1989). A leak of heavy water at the Karachi nuclear power plant (KANUPP), which was about to be restarted after a nine-month shutdown, is being investigated (*Ibid.*). A ministerial statement predicts that operation can be resumed in September but press reports doubt that it

will be feasible to upgrade and purify the lost heavy water in less than a year (*Nucleonics Week*, June 15, 1989). Moscow has denied reports published in Japan that the USSR would supply Pakistan with a nuclear power reactor (*Moscow Radio*, 22 April 1989/JPRS).

● **Poland:** Pending a comprehensive review of the Polish nuclear power programme, the government has suspended preparations for the construction of the Warta Nuclear Power Station in Klempicz (*Zielona Gora Domestic Radio Service*, 28 April 1989 JPRS-TND-89-010 23 May 1989)

● **United Kingdom:** A governmental seminar on global warming, leading to the conclusion that a global increase in nuclear power was needed to mitigate the greenhouse effect, seems to have briefly raised expectations that Britain would expand its nuclear generating capacity. This has since been denied. In fact, there are reports that BNFL's spent fuel storage and reprocessing capacity may soon be unable to cope with current needs (*The Economist*, May 6, 1989; *The Observer*, 28 May 1989). The British electricity supply industry is interested in the development of an advanced 300-MW pressurized water reactor, the safe integral reactor (SIR), by an Anglo-US consortium (*Nucleonics Week*, May 18, 1989).

● **United States:** 53.4% of voters in a referendum in Sacramento, California have opted for the shutdown of the local nuclear power plant. The Rancho Seco reactor, owned by the Sacramento Municipal Utility District (SMUD), had come online 15 years ago but was operating uneconomically. There was also concern about its safety. SMUD has since tried to sell the station to another operator but the plant has been shut since the day after the referendum and opponents have stated it will remain shut unless voters approve a sale (*The New York Times*, June 8 and 22, 1989). Low-level testing has started at the Seabrook, New Hampshire, power plant. Seabrook station was to have started operating ten years ago, at a cost of \$973 million. It has so far cost \$6 billion and has been the focus of anti-nuclear protest for many years (*The New York Times*, June 15, 1989). At several American power reactors important parts, such as steam generators, are showing signs of wear before the expected time. At a number of plants, replacement of worn parts has forced long shutdowns, which have raised operating costs, leading in several instances to utility prices higher than those of coal-fired stations. However, in most cases repairs are expected to be feasible and to permit the extension of the life of the plants beyond the period for which they were originally licensed (*The New York Times*, June 22, 1989). Plans are being made to decommission the Shoreham Nuclear Power Station on Long Island, which is being closed before ever coming online. The core has been tested at low power only, accumulating the equivalent of less than three weeks of full-power use (*The New York Times*, July 2, 1989).

## h. Developments of Concern for Vertical Proliferation

● **France/USA:** An American journal has disclosed that since 1972 the United States has secretly assisted France in its military nuclear programme, by providing it with information on weapon design, testing and targeting, — helping it, among other things, to develop independently targetable multiple warheads — supposedly in contravention of US legislation. While confirming that according to an agreement of 1961, which was suspended in 1966, resumed in 1972 and expanded in 1985, the United States has shared nuclear weapons data with France, the Bush Administration has denied that this in any way violated laws of the United States. France has declared that its nuclear weapons were developed independently of US technology (see Prof. Richard H. Ullman, "The Covert French Connection", *Foreign Policy*, Summer 1989, pp. 3-33; *The New York Times*, May 28, June 1, June 11 1989; *The Observer*, 28 May 1989; *The Washington Post and International Herald Tribune*, May 29 1989; *Newsweek*, June 12 1989).

● Last April (the timing is thought to be connected with the anniversary of the Chernobyl disaster, on 26 April 1986), the USSR Government issued restrictions on press reporting of accidents at nuclear power plants by designating such accidents, breakdowns and contamination events as classified information. The prohibition covers reports about power failures and fires at nuclear plants or construction sites and on accidents that cause damage, death and non-catastrophic environmental contamination. Since it was issued, the Soviet Government has confirmed that, as described by Zhores A. Medvedev in an article of 1976 and a book published in 1980, an explosion had taken place in 1957 at a nuclear-weapon plant handling plutonium at Kyshtym, in the southern Ural. Apparently, this was caused by a chemical reaction or excess heat in a nuclear waste deposit. While Medvedev says that dust and debris fatally contaminated hundreds of people, the Soviet news agency Tass maintains that more than 10,000 people were evacuated but there were no casualties. According to American sources, which note that 30 towns and villages in the area are no longer indicated on Soviet maps, the event has caused severe contamination in the region. According to the Tass report, by 1978 economic activity had been restored in 80 percent of the contaminated zone (*The New York Times*, April 27 and June 18 1989; *The Washington Post*, June 17, 1989).

● **USSR/USA:** Two American institutes (Greenpeace and the Institute for Policy Studies) have compiled a report on a series of mishaps with American and/or Soviet naval vessels, aircraft and missiles that have involved some degree of nuclear risk. The report — which lists 1,276 accidents suffered by all the world's navies since World War II — says that accidents involving American and Soviet craft since 1956 have left at least 50 nuclear warheads and nine reactors on the ocean floor. Besides reported sinkings of Soviet and American submarines, the report refers to such events as the loss of weapons

and a fire on board of an American cruiser which narrowly missed her nuclear-weapon store. The news that an American warhead was lost overboard off the coast of Okinawa, in 1965, has caused comment in Japan. The Government of Norway has asked the USSR to provide it with information on the design of the reactors, and particularly of their titanium housings, in the Soviet submarine that sank in the Atlantic, 400 km off the Norwegian coast, on 7 April 1989. The USSR has formally notified the IAEA of the accident (IAEA Press Release PR 89/9, 8 April 1989; *Nucleonics Week*, April 13 1989; *Arms Control Today*, May 1989; *The New York Times*, May 9 and 25 and June 7 1989)

- A Soviet Echo II class submarine, powered by two reactors and equipped with cruise missiles, apparently caught fire some 70 miles off the coast of northern Norway in late June, but returned to its base on its auxiliary diesel engines (*Evening Standard* (London) 26 June 1989, *The Guardian* and *Financial Times* 27 June 1989). A report quoting the submarine commander said that the primary cooling circuit around the core of the reactor had failed. (*Daily Telegraph*, 28 June 1989). Norwegian scientists later stated that traces of Iodine 131 had been found in water samples taken close to the spot where the incident occurred, indicating that one of the reactor cores "must have leaked coolant, exposing (uranium) fuel rods that may have burst or even began to melt". (*Jane's Defence Weekly*, 15 July 1989).
- The United Kingdom is buying depleted uranium in the USA, for use in armour-piercing ammunition. This news has led the press to question the need to import depleted uranium when the Sellafield reprocessing works have stockpiled 16,000 tons of that material. BNFL has responded that its stockpile was "too valuable" to be used in shells and bullets and that it could still be used as fuel. The real reason might be that it contains radioactive fission products (*The Guardian*, 11 May 1989).
- The United Kingdom is considering disposing of its decommissioned nuclear-propelled submarines by scuttling them at sea. One boat is now awaiting disposal; by the end of the next decade the total will be eight. British sources comment that in the United States decommissioned nuclear submarines are buried on land and that, alternatively, they could be cut up and disposed of by deep land burial, either at Sellafield or at Dounreay ("Decommissioning of Nuclear Submarines", Seventh Report from the Defence Committee, House of Commons, 21 June 1989).
- The United States press continues its disclosures of badly deficient health and safety conditions at nuclear-weapon production sites. Recent reports tend to concentrate on the managerial issues that are said to lie at the root of the problem. The newly appointed Secretary of Energy, Adm. James D. Watkins (the US Department of Energy is responsible for nuclear weapon production — editor) has publicly stated that managers and supervisors in his Department lacked

needed technical skills and were giving him unreliable information about problems at their plants. Major restructuring is expected at the Department to improve management accountability for the weapons production complex and to establish greater day-to-day oversight of operating contractors. The changes are to begin at the Savannah River Operations office, with operations offices at Albuquerque, Idaho, Oak Ridge, Tenn., Richland, Wash. and San Francisco to follow. Problems at the plutonium plant at Rocky Flats, Colorado, have become a particular subject of recent concern following the discovery of radioactive fission products, generated apparently by an accidental chain reaction. There are allegations of wide-spread violations of anti-pollution legislation, some of which are said to have gone on for years, in the apparent knowledge (or even with the support) of management. Pending the outcome of a criminal investigation by Federal authorities, the Government has suspended the bonus payments for good performance which the operating company, Rockwell International Corporation, has customarily received. For the latest seven-month period, that bonus would have amounted to \$4 to \$5 million. A three-year investigation carried out under Congressional auspices, which found health and safety conditions at the nation's 17 nuclear weapons facilities "in disarray" and speaks of "a crisis of the highest order", also criticizes lax security at storage sites of nuclear arms. It speaks of a "no-win situation" in which the Department of Energy is called upon simultaneously to clean up massive pollution and rebuild aging plants, at an estimated cost of \$100 to \$130 billion (*Inside Energy/With Federal Lands*, May 22; *The New York Times*, June 7, 15 and 17 1989; *Washington Post*, June 19 1989; *The New York Times*, June 28, 1989).

- United States: the closing of all three reactors at Savannah River, the major source of America's tritium, has prompted an accelerated search for alternative sources of that material. It is estimated that, beside the stock of tritium the USA has on hand, it must produce 5 to 6 kilograms a year to maintain its present weapon stockpile. Hopes that one of the reactors would be ready again for low-level operation in 1990 seem to be dwindling. The Department of Energy has estimated that two new tritium-production reactors could be built in ten years for around \$7 billion; the General Accounting Office considers both time and cost figures unrealistically optimistic. The alternative of converting a partly completed commercial reactor at Hanford, Wash., which it is estimated would take seven years and cost \$2.2 billion, would meet serious legal, political and environmental opposition. Proposals to use accelerators for tritium production are said not to be feasible within the time available. Various fusion technologies are being studied on a laboratory scale but have not so far been successful. France and the United Kingdom need all the tritium they can produce, and Canada, which might have been in a position to help, will not sell for military purposes (*New Scientist*, 18 March and 15 April 1989; *Science*, 21 April; *Wall Street Journal*, April 25 1989; *Washington Post* and *The New York Times*, May 25, 1989).
- United States/USSR: Under these conditions, reactions to the announcement by USSR President Mikhail



Gorbachov, on 7 April, that the Soviet Union will this year stop producing enriched uranium and shut down two plutonium production reactors have been divided. Official American sources have responded that such measures would still leave the USSR with a substantial production capacity of for nuclear materials; that it would not constrain the Soviet nuclear weapons programme; and that the real issue is not a cut-off but the mutual reduction of nuclear weapons. This initial reaction is still being elaborated. Officials point out that the United States halted its production of enriched uranium in 1964, once it had an adequate supply on hand. Furthermore, closing two plutonium reactors still leaves the Soviet Union with twelve operating. A bilateral agreement to stop plutonium production would leave the USSR with 14 dual purpose reactors capable of quick conversion to plutonium production. The United States lacks those means at present. Moreover, neither the present extent of the Soviet stockpile of enriched uranium and plutonium, nor the balance between the use of those materials in Soviet warheads is known in the United States, so that the real impact of the proposal cannot be judged (US Department of State Press Guidance, April 7 (PM) 1989; *The Times*, *Financial Times*, *New York Times* (two articles); *Washington Post*, - all April 8 1989; *Arms Control Today*, May 1989; *The Energy Daily*, June 9 1989; *Defense Week*, June 12, 1989).

On the other hand, a number of prominent American scientists are appealing to the Administration not to pass up this "extraordinary opportunity", the more so since it would avoid the need of reconstructing America's production capability at a huge cost. They maintain that the USA does not have a present shortage of tritium (of which, they say, there is a stockpile adequate for at least five years) nor of plutonium. Tritium and plutonium can also be recovered from discarded warheads, they say, and it is inappropriate to increase or revive production capacity of those materials in the face of the enormous existing arsenals and while negotiations to reduce them are going on. They propose offering to the USSR not to restart the Savannah River reactors or start constructing new plant for a designated period, to give the Soviet Union time to reciprocate (NOTE: many of the Soviet production reactors are considered to be obsolete and unsafe as well and will sooner or later also have to be overhauled or shut down completely — editor.) and eventually conclude a verified production ban. Meanwhile, as indicated in Section Ib above, bills have been introduced in the US Senate and the House of Representatives, calling on the USA and the USSR to negotiate a ban on the production of nuclear material for nuclear weapons. One of the principal sponsors of the Bill in the House of Representatives, Rep. Dante Fascell, Chairman of the House Committee on Foreign Affairs, has emphasised that it is the purpose of this legislation to "redress the current asymmetry in US-Soviet nuclear materials production capabilities which favours the Soviet Union" (*Washington Post*, April 8 and 16 1989; *Release of House Committee on Foreign Affairs*, May 18 1989; *Senate Bill* (101st Congress, 1st Session): S. 1047, May 18, 1989; *House Bill* (101st Congress, 1st Session): H.R. 2403, May 17, 1989. See also various previous publications released by the *Nuclear Control Institute*, Washington DC)

● **United States:** the Department of Energy wishes to terminate the programme for reduced enrichment in research and test reactors (RERT) which has developed low-enriched uranium fuel for use in most research reactors around the world. The move is strongly contested by the Nuclear Control Institute and by several members of Congress (*Nuclear Fuel*, April 17, 1989). Proposals of the Department of Energy to construct a special isotope separation plant (SIS), in which plutonium not initially produced for weapons purposes (i.e. generated in commercial power reactors) would be purified to make it suitable for weapons-use, are arousing opposition from a number of prominent American arms control experts who fear that it would undermine US non-proliferation policy and jeopardise verification of future arms control agreements. The Department of Energy, which estimates total construction costs at \$1.23-billion, defends the project on the grounds, among others, that a refusal by the Congress to grant sufficient funding would endanger the commercial atomic vapour laser isotope (AVLIS) enrichment programme (*Nuclear Fuel*, May 29, 1989).

#### i. Developments of Concern for Horizontal Proliferation

- The new Government of **Argentina** is said to be ready to revive plans to develop a reactor for the propulsion of submarines. Feasibility studies were made in the 1970s but not vigorously pursued under President Alfonsín, although they were apparently not shelved altogether. Admiral Carlos Castro Madera, head of the Argentine nuclear programme under the military regime (who might come back as such if, as may be the case, the question of the 'vindication' of military officers for their role under the military regime is settled to their satisfaction) estimated in 1983 that it would cost \$250-million to build a prototype reactor and President Menem is expected to back the project, all the more since Brazil decided to go ahead with its plans to obtain nuclear submarines (*Nucleonics Week*, June 8, 1989).
- **Brazil** is working on a propulsion reactor for a submarine which it hopes to put into service by the year 2002. The boat is expected to be based on a scaled-up version of the S-NAC 1-class vessels the Brazilian navy is now planning to construct with help from the Federal Republic of Germany. By November 1989, the ultracentrifuge uranium enrichment pilot plant run by the Navy at Ipero, which so far had achieved an enrichment level of five percent, should be producing twenty percent enriched uranium, which is enough for use in submarine propulsion (*Jane's Defence Weekly*, 1 April 1989, *O Estado De Sao Paulo*, 8 April 1989). The new chief of staff of the Brazilian Air Force has declared that "Brazil is going to acquire from China, France, Russia, and anywhere else possible" the technology for manufacturing a rocket guidance system (*Folha De Sao Paulo*, 6 April 1989, JPRS-TND-89-010). Brazil is currently building a pilot heavy-water production plant for an annual production of 7 tons. It is to be ready within 5 years. The heavy water is intended for fusion research and as a moderator in compact reactors which it intends to develop. The process to be used as well as the site of the plant are kept secret (*O Globo* [Rio de Janeiro], 16 April 1989)

- **India:** The 100-MW 'Dhurva' reactor at Trombay (near Bombay), which was commissioned in 1985, combined with the reprocessing facility there, when operated at full power is able to provide enough plutonium for the production of five bombs a year. The reprocessing installation at Prefre has been separating plutonium from the natural-uranium power reactors at Madras. By end 1988, India was estimated to have about 200-250 kilograms of unsafeguarded plutonium, enough for 40-50 weapons. This stockpile could increase at the rate of roughly 75 kilograms of weapon-grade plutonium, or fifteen bomb quantities, annually. It is capable of fabricating nuclear warheads small enough to be deliverable by airplane or on the AGNI medium-range ballistic missile, which has recently been tested successfully. In this, it may be helped by the almost 100 kilograms of beryllium it is said to have imported from the Federal Republic in Germany in 1984, and it has since commissioned its own beryllium plant. It also produces tritium; production capacity is not known. Finally, there is said to be evidence that India is interested in obtaining thermonuclear weapons capability (*Washington Post*, May 19 and 20 1989; *The Hindu*, 23 May and 2 June 1989; *NRC-Handelsblad* [Netherlands] 24 May 1989; *Washington Times*, May 29 1989; *The New York Times*, June 2 1989; *Bulletin of the Atomic Scientists*, June 1989).
  
- **Iran** is accused of harbouring plans to develop nuclear weapons (*Middle Eastern News Agency* from Cairo, datelined Kuwait, April 21, 1989).
  
- Concern that **Iraq** is actively seeking a nuclear-weapon capability persists, although it is a party to the NPT and all nuclear material in Iraq is subject to IAEA safeguards. Experts question allegations that the country is engaged in a "crash program to develop nuclear weapons", but in March the US Commerce Department stopped a shipment of vacuum pumps to Iraq which it thought might be used in the production of nuclear fuel. France has denied that it is negotiating with Iraq for the reconstruction of the Osirak (Tamuz-1) reactor which was destroyed in an Israeli air raid in 1981; there are reports that Saudi Arabia would be prepared to fund the rebuilding. Iraq's intentions and capabilities in the area are the subject of debate and contradictory reports. At the request of the Resident Representative of Iraq to the IAEA, the latter has recently confirmed that based on the data collected between June 1988 and March 1989, the conclusion was reached that all material under safeguards has been accounted for. Against strong denials from the government that Iraq is cooperating with any other country in the development of ballistic missiles, reports continue to appear that it is working with Argentina and Egypt, actively assisted by Austrian and German aerospace firms, on a two-stage missile, the Condor-2, propelled by solid fuel, with a range of one thousand km. (*NEA/OES Press Guidance*, March 31 1989; *Nucleonics Week*, April 6 1989; *Al-sharq Al-awsat*, 24 April/JPRS; *Iraqi News Agency*, 27 April/JPRS; *Profil* [Vienna], 20 March, 24 April and 8 May/JPRS; *The Washington Post*, May 5 1989; *International Herald Tribune*, May 6/7 and May 8 1989; *IAEA Document INFCIRC/364*, 19 May 1989;
  
- Washington Times*, May 23 1989; *The Washington Post*, June 4, 1989)
  
- A senior consultant to the US Secretary of Defense and the National Strategy Information Center in Washington has said in an interview that if **Japan** is to assume greater defence responsibilities in its geographic area, it may for budgetary reasons have to consider becoming a nuclear military power (*Jane's Defence Weekly*, 27 May 1989)
  
- **Pakistan:** On the occasion of her visit to Washington in June, Prime Minister Benazir Bhutto has assured American authorities that her country was not interested and would not make nuclear weapons. In a statement to Congress, she declared that Pakistan would "not possess, nor do we intend to make a nuclear device". US analysts – including the Director of the CIA – remain concerned, however, in the face of increasing evidence that Pakistan is close to acquiring a nuclear weapons capability, if it does not already have it. A large number of foreign firms, especially West German ones, have supplied technology and equipment, including, it now appears, an installation for the purification of tritium. In sum, US sources appear to agree that although Pakistan may to some extent take its sensitivities into account by refraining from various actions, it is pursuing its development of a nuclear arsenal and the President will find it hard this year to make his annual certification that it is meeting American non-proliferation norms. Pakistan is also working on a short- to medium-range ballistic missile (*Asian Bulletin*, Vol.14 No.4, April 1989; *Nuclear Engineering International*, April 1989; *Wall Street Journal*, April 21 1989; *The Independent*, 26 April 1989; *Nucleonics Week*, April 27 1989; *Nuclear Fuel*, May 1 1989; *The New York Times*, May 3 1989; *Nuclear Fuel*, May 15 1989; *Hearings before the US Senate Committee on Governmental Affairs*, May 16-19 1989; *The New York Times*, May 19 1989; *International Herald Tribune*, May 20-21 1989; *The Sunday Times*, 21 May 1989; *Nuclear Fuel*, May 29 1989; *The Washington Times*, June 6 1989; *The New York Times*, June 7 1989; *Washington Post*, June 8 1989; *The Christian Science Monitor*, June 9 1989; *The New York Times*, June 11 and 12, 1989)

## II. PPNN Activities

- The **PPNN Core Group** held its fifth semi-annual meeting from 13-14th May 1989 at the Old Government House Hotel, Guernsey, one of the British Channel Islands. This meeting was held in association with the first PPNN Conference for Diplomats. All the members of the PPNN Core Group were present, with the exception of Ambassador Oleg Grinevsky (USSR). Michael Wilmshurst was present as an observer from the IAEA for the substantive sections of the meeting, together with Charles Van Doren, John Redick (United States) and Ambassador Frans Terwisscha van Scheltinga (Holland).

The Core Group continued its systematic analysis of the issues likely to be raised in the 1990 NPT Review Conference by focusing on Article VI of the Treaty. This discussion was introduced by a presentation by Lewis Dunn. As part of its consideration of 'Problem Countries or Regional Questions', Harald Mueller introduced a discussion on 'France and the NPT' (Core Group Paper (CGP) 24). Finally, in the context of 'Functional Issues', presentations were made by Ian Smart on 'The Significance for the NPT of Missile Technology Proliferation and Attempts at Control' (CGP 25); by Dennis Fakley on 'New Technologies and Nuclear Proliferation' (CGP 23) and by Adolf von Baeckmann on 'The Safeguards Implications of New Civil Technologies' (CGP 22).

In the discussions which followed the presentations and reports from members on other current topics, the Core Group assessed the problems facing the non-proliferation regime, and how they might be ameliorated. Attention was focused in particular upon the expectations for progress in nuclear disarmament held by NPT states parties; the consequences of the western states using non-proliferation as a justification for their missile control regime; whether the technical objectives of non-proliferation policies were in need of revision and whether materials such as tritium should now be brought within the IAEA safeguards system.

The Core Group also discussed the details of the PPNN Sixth Core Group meeting, which will be held in Baden, just outside Vienna, from 17-19 November, 1989. Invitations are to be issued to a small number of senior diplomats stationed in Vienna and IAEA staff to attend the substantive elements of this meeting, which will concentrate on current and future issues likely to affect the NPT/IAEA relationship.

Single copies of papers prepared for Core Group meetings are available on personal request to John Simpson at the address on the back cover. A list of papers prepared for earlier meetings is also available.

- The first PPNN Conference on issues likely to arise during the 1990 NPT review conference took place in Guernsey from 14-17 May. Working level officials nominated by 36 states parties to the NPT attended. Core Group members participating in the work of the conference, were supported by Charles Van Doren, John Redick, Lawrence Scheinman and Frans Terwisscha van Scheltinga. Michael Wilmshurst attended as an observer from the IAEA.

All participants were provided with a PPNN bound volume of papers relevant to the subject matter of the conference prior to attending. The conference, chaired by Ben Sanders, was opened with a general overview of the subject from Ambassador Mohamed Shaker, the President of the 1985 NPT review conference. This was followed by the conference breaking into working groups, which discussed the three main areas of debate in 1990, disarmament, peaceful uses and regional issues, in rotation, led by a PPNN Core group briefing team. The conference ended with a plenary session in which the chairmen of the briefing teams summarised the working group exchanges, and a discussion took place of the impact of the 1995 extension conference upon the

1990 review conference.

Reactions to the conference indicated that the meeting had fulfilled an obvious need. Plans are being drawn up to repeat the enterprise in the early months of 1990.

- PPNN published the third study in its **Occasional Paper Series** "China and Nuclear Non-Proliferation: Two Perspectives" by Charles van Doren and Rodney Jones at the end of July. This was launched at a meeting with the international press in Washington. Occasional Paper Number One, John Redick's "Nuclear Restraint in Latin America: Argentina and Brazil" is now out of print, but will be republished in a revised edition at the end of the year. Copies of all Occasional papers are distributed to those on the PPNN mailing list as a matter of course. Persons wishing to receive additional copies should write to John Simpson at the address given at the end of this Newsbrief.

### III. Other Non-Governmental Groups Active in Related Areas

- The Centre for European Policy Studies held two three day seminars in Brussels over the weekends of 19-21 May and 26-28 May 1989 on Europe, Nuclear Non-Proliferation Policies and the 1990 NPT Review Conference. Organised by Peter Lomas, the research fellow at the Centre responsible for their non-proliferation work, the first one was aimed at European Parliamentarians and the second at journalists.
- A further meeting of UK Officials and academics, sponsored by the British members of the PPNN Core Group, took place in London on 30th June 1989. This was the second of a regular series of meetings to discuss NPT related issues in advance of the 1990 review conference.
- A workshop was held on Wednesday, May 10th 1989 in the US Library of Congress, organised by Warren Donnelly, on "International Verification of Non-Proliferation and Nuclear Arms Reduction Commitments". Speakers included Nelson F. Sievering, former deputy director general of the IAEA; David Albright of the Federation of American Scientists and Berhanykun Andemicael, Representative of the IAEA's Director General at the United Nations.
- Pugwash held their 55th Symposium on "Non-Proliferation and the Non-Proliferation Treaty" in Dublin, Ireland from 5-8 May. Among those invited to present papers were four members of the PPNN Core Group: David Fischer (Drawing the Threshold States into a Regime of Restraint by Joining the NPT or Otherwise); Jozef Goldblat (The Non-Proliferation Treaty: Status of Implementation and the Threatening Developments); Harald Mueller (The Nuclear Trade Regime: a Case for Strengthening the Rules) and Benjamin Sanders (The

Treaty of the Non-Proliferation of Nuclear Weapons and the relations Between the Super-powers). In addition, David Fischer also produced an "International Non-Proliferation Regime Fact Sheet" as background for the meeting.

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

##### Books:

T.B.Cochran, W.M.Arkin, R.S.Norris and J.I.Sands, **Nuclear Weapons Databook, Part IV: Soviet Nuclear Weapons** (Hagerstown, MD: Ballinger 1989)

P.Everts and G.Walraven (eds.), **The Politics of Persuasion, Implementation of Foreign Policy by the Netherlands**, especially Chapter 9, (Aldershot, U.K.: Gower Press).

S.Landgren, **Embargo Disimplemented: South Africa's Military Industry**, especially Chapter 12, (Oxford: Oxford University Press for SIPRI, 1989).

R.E.White, **Nuclear Ship Visits. Policies and Data for 55 Countries**, (17 Gladstone Rd, Dalmore, Dunedin, New Zealand: Tarkwode Press, 1989), 43 pp.

##### Articles and other materials:

D.Albright, "Bomb potential for South America", **Bulletin of the Atomic Scientists**, Vol. 44, No. 4, May 1989, pp. 16-20.

D.Albright and T.Zamora, "India, Pakistan's nuclear weapons: all the pieces in place", **Bulletin of the Atomic Scientists**, Vol. 44, No. 5, June 1989, pp. 20-26.

W.M.Arkin and J.M.Handler, "Nuclear Disasters at Sea, Then and Now", **Bulletin of the Atomic Scientists**, Vol. , July/August 1989, pp. 20-24.

A.R.B.de Castro, N.Majlis, L.P.Rosa and F.de Souza Barros, "Brazil's nuclear shakeup: military still in control", **Bulletin of the Atomic Scientists**, Vol. 44, No. 4, May 1989, pp.22-25.

D.Charles, "Exporting trouble-West Germany's freewheeling nuclear business", **Bulletin of the Atomic Scientists**, Vol. 44, No. 3, April 1989, pp. 21-27.

**Decommissioning of Nuclear Submarines**, Defence Committee, Seventh Report, House of Commons, Session 1988-89, Report and Appendices, together with the Proceedings of the Committee, Minutes of Evidence and Memoranda, (London: HMSO, 21 June 1989).

L.A.Dunn, "Nuclear exports and supply issues", **Critical Technologies Newsletter**, June 1989, Vol. 7, Issue 3.

L.A.Dunn, with A.E.Gordon, "On-Site Inspection for Arms Control Verification: Pitfalls and Promise", especially section on IAEA safeguards experience, **The Center for National Security Negotiations, CNSN Paper**, Vol. 1, No.2.

W.Epstein and G.T.Seaborg, "Non-nuclear states move to end testing", **Bulletin of the Atomic Scientists**, Vol. 44, No. 5, pp. 36-37.

D.Fischer, and reply by R.Bolt, "Safeguards controversy, continued", **Bulletin of the Atomic Scientists**, Vol. 44, No. 5, June 1989, pp. 38-40.

E.Fujita, **The Prevention of Geographical Proliferation of Nuclear Weapons: Nuclear Weapon Free-Zones and Zones of Peace in the Southern Hemisphere**, (United Nations Publications, Sales No. GV.E.89.0.8, April 1989).

J.Goldblat "L'interdiction des essais nucleaires: une utopie?" **Le Recherche**, April 1989.

J.Goldblat and P.Lomas, "Nuclear Non-Proliferation: The Problem States", **Transnational Perspectives**, Vol. 14, No. 1, 1989.

J.Horan, "World nuclear power operators unite", **Bulletin of the Atomic Scientists**, Vol. 44, No. 3, April 1989, pp. 39-40.

N.Joeck, "Tacit Bargaining and Stable Proliferation in South Asia", **CISA Working Paper No. 66**, Center for International and Strategic Affairs, University of California, Los Angeles, April 1989.

R.W.Jones, "Pakistan After Afghanistan", **The Washington Quarterly**, Vol. 12, No. 3, Summer 1989, pp. 65-87.

R.Kessler, "Peronists seek 'nuclear greatness'", **Bulletin of the Atomic Scientists**, Vol. 44, No. 4, May 1989, pp. 13-15.

M.Kuentzel, "Wackersdorf und die Plutoniumachse Bonn-Paris", **Blaetter fuer Deutsche und international Politik** (Pahl-Rugenstein Verlag Koeln), June 1989, pp. 747-758.

J.Prados, "China's 'new thinking' on nuclear arms", **Bulletin of the Atomic Scientists**, Vol. 44, No. 5, June 1989, pp. 32-35.

Report on a Workshop co-sponsored by the Nuclear Control Institute and The American Academy of Arts and Sciences, **The Tritium Factor: Tritium's Impact on Nuclear Arms reductions**, (Cambridge, Mass., 1989).

"Resolution 202 on Nuclear Non-Proliferation", **Policy Recommendations**, North Atlantic Assembly, Thirty-Fourth Annual Session, Hamburg, 13-18 November 1988.

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"The Implications of the Arshad Pervez case for U.S. policy toward Pakistan", *Hearing before the Subcommittees on Asian and Pacific Affairs and on the International Economic Policy and Trade of the Committee on Foreign Affairs, House of Representatives, One Hundredth Congress, Second Session, February 17, 1988, (Washington, D.C.: U.S. Government Printing Office, 1989).*

"Too Hot To Handle", *South*, June 1989, pp. 12-16.

M.Tucker, "Non-Nuclear Powers and the Geneva Conference on Disarmament. A Study in Multilateral Arms Control", *Occasional Papers No. 7*, Canadian Institute for International Peace and Security, Ottawa, Ontario, March 1989.

J.A.Yager, "Nuclear Nonproliferation Strategy in the Middle East and North Africa", *The Center for National Security Negotiations, CNSN Paper, Vol. 1, No.1.*

## V. Documentation

### AGREEMENT ON THE PROHIBITION OF ATTACK AGAINST NUCLEAR INSTALLATIONS AND FACILITIES BETWEEN THE REPUBLIC OF INDIA AND THE ISLAMIC REPUBLIC OF PAKISTAN

The Government of the Republic of India and the Government of the Islamic Republic of Pakistan, hereinafter referred to as the Contracting parties,

Reaffirming their commitment to durable peace and the development of friendly and harmonious bilateral relations;

Conscious of the role of confidence building measures in promoting such bilateral relations based on mutual trust and goodwill;

Have agreed as follows:

#### Article I

1. Each party shall refrain from undertaking, encouraging or participating in, directly or indirectly, any action aimed at causing the destruction of, or damage to, any nuclear installation or facility in the other country.

2. The term "nuclear installation or facility" includes nuclear power and research reactors, fuel fabrication, uranium enrichment, isotopes separation and reprocessing facilities as well as any other installations with fresh or irradiated nuclear fuel and materials in any form and establishments storing significant quantities of radio-active materials.

#### Article II

Each Contracting Party shall inform the other on 1st January of each calendar year of the latitude and longitude of its nuclear installations and facilities and whenever there is any change.

#### Article III

This Agreement is subject to ratification. It shall come into force with effect from the date on which the Instruments of Ratification are exchanged.

Done at Islamabad on this Thirty-First day of December 1988, in two copies each in Hindi, Urdu and English, the English Text being authentic in case of any difference or dispute of interpretation.

(K.P.S.Menon)  
Foreign Secretary

For the Government of the  
Republic of India

(Humayun Khan)  
Foreign Secretary

For the Government of the  
Islamic Republic of Pakistan

## The Programme for Promoting Nuclear Non-Proliferation and the Newsbrief

The Programme for Promoting Nuclear Non-Proliferation was established in the Spring of 1987 with the ultimate purpose of helping to strengthen the nuclear non-proliferation regime and with the shorter-term goal of contributing to the success of the fourth review conference of the Non-Proliferation Treaty and of the 1995 conference that will decide on the Treaty's extension. The Programme provides for the creation of an international, non-governmental and informal system of collecting, exchanging and analysing relevant information which should be brought to the attention of government officials, diplomats, the research community, parliamentarians, non-governmental organisations and the media, so as to help foster among those groups, and particularly among their younger members, a greater interest in, and a deeper 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 eleven industrialized and 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 was initially conceived as a means of communication from the chairman of the Core Group of the Programme for Promoting Nuclear Non-Proliferation to the members, to acquaint them with developments relevant to the aims and activities of the Programme. Given its general nature, however, the Newsbrief has become part of the outreach effort which constitutes a major element of the Programme. It is therefore now addressed to a wider, though still limited, audience of persons not directly involved with the Programme for Promoting Nuclear Non-Proliferation but interested in the subject, 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 Centre for International Policy 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. Those relating to production and distribution should be addressed to John Simpson, Department of Politics University of Southampton, Southampton, SO9 5NH, United Kingdom.

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