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Programme for Promoting Nuclear Non-Proliferation, Newsbrief, Number 2

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PROGRAMME FOR PROMOTING NUCLEAR NON-PROLIFERATION

Number 2 **NEWSBRIEF** July 1988

Editorial note

PPNN **Newsbrief** 1 appeared in March 1988. It contained a brief introduction to the Programme for Promoting Nuclear Non-Proliferation (PPNN), under whose auspices the Newsbrief is prepared, and outlined the purposes which this publication is meant to serve. For the benefit of those not yet acquainted with the Programme or the Newsbrief, the introductory remarks are reproduced below.

The Programme

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. Its shorter-term goal is to contribute 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. To this end, the PPNN 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.

PPNN's central element is an international networking exercise based on a Core Group of high-level experts from a dozen industrialised 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 meets approximately twice a year. Between meetings they seek to keep in touch, inter alia, through the **Newsbrief**, which contains information on the work of non-governmental groups in related areas, highlighting topical developments of interest to the Programme, featuring extracts of and references to press reports, publications and articles on nuclear proliferation and on steps that are being taken, or that might be taken, to deter it.

The Newsbrief

The Newsbrief was initially conceived principally as a means of communication from the chairman of the PPNN Core Group to the members, to acquaint them with developments he considered to be relevant to the aims and activities of the Programme. Given its general nature, however, the Core Group felt that the **Newsbrief** might play a useful part in the outreach effort which constitutes a major element of the Programme. As such, the **Newsbrief** should be addressed to a somewhat wider audience of persons interested in the subject. It would supply them with material that might help them in alerting their respective environments to the issue of nuclear non-proliferation and inform them about developments in that context, including PPNN's activities.

Readers should note that the Group's chairman is responsible for the contents of the **Newsbrief** and that, unless expressly stated, the inclusion of any 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

Most of the events reported in the **Newsbrief** have long histories. Nuclear proliferation has been a matter of concern almost from the moment the destructive power of the atom became obvious and the question what measures might be taken to contain its spread dates from the early days of the atomic era. A full understanding of current events in the field requires at a minimum a general awareness of the events that have led to them. The Newsbrief is not designed to present topical developments against their historical background. It merely refers its readers briefly to recent reports on events relevant to the subject, to help give them a general picture of the prevailing situation in the area of non-proliferation, to assist in updating that picture and to permit those interested to look more deeply into the facts.

The period covered by the first issue of the **Newsbrief** began around mid-1987 and extended into early 1988. That first issue took some time to set up, and several weeks went by between the end of the period covered and the date of publication. In reporting on events that

took place in the past six months or so, the present issue should cover this gap and bring readers approximately up-to-date.

a. The Present Situation

The General Secretary of the Central Committee of the Communist Party of the USSR and the President of the United States met in Moscow from 29 May until 2 June, 1988. They exchanged instruments of ratification of the Treaty on the Elimination of Intermediate-range and Shorter-range Missiles (INF). In a Joint Statement of 1 June (Letter of 3 June 1988, in **UN Document A/S-15/28**) they note inter alia that a Joint Draft Text of a Treaty on the Reduction and Limitation of Strategic Offensive Arms has been elaborated; that this draft reflects the earlier understanding on establishing ceilings of no more than 1600 strategic offensive delivery systems and 6000 warheads as well as sub-ceilings of 4900 on the aggregate of ICBM and SLBM warheads and 1540 warheads on 154 heavy missiles; and that negotiations over a separate agreement concerning the ABM Treaty have continued. Detailed understandings have also been reached on START verification measures.

On 25 April, Saudi Arabia announced that it intended to accede to the Non-Proliferation Treaty. In accordance with its obligations under the Treaty, Nigeria has concluded a safeguards agreement with the International Atomic Energy Agency. After Egypt, Libya and Zaire, Nigeria is the only other African State party to the NPT with a nuclear programme, and its decision to enter into a safeguards agreement with the Agency therefore has some real significance.

The discussions between Argentina and Brazil on cooperation in the nuclear field, including mutual inspection of nuclear facilities, have culminated in the conclusion of an agreement for nuclear cooperation. The nuclear rivalry between these two States has apparently been defused for the moment, mainly as the result of the efforts of their present leaders.

Generally, there is reason to believe that in recent months the proliferation situation has not worsened perceptibly, at least in the short term, and some very positive developments can be reported. However, there is no reason to be sanguine over longer-term nuclear non-proliferation prospects. The Vanunu trial seems to have confirmed that at a minimum Israel is capable of assembling a sophisticated nuclear arsenal, possibly including a number of hydrogen weapons, in a very short time. Reports of cooperation between Israel and South Africa in the manufacture of nuclear weapons and in the development of their means of delivery continue. Pakistan is said to be inexorably bound on its way towards a nuclear capability and is reported to have test-fired a missile capable of carrying a nuclear warhead. The number of reports about India's resumed nuclear weapons programme is growing. Reports from Norway indicate that several shipments of heavy water may have been diverted to unknown destinations.

There is as yet no evidence of progress in connection with South Africa's stated willingness to accede to the NPT. Both the Israeli and the South African situation will figure on the agenda of the General Conference of the IAEA which will be held in September.

The third Special Session of the United Nations General Assembly devoted to disarmament ended on 26 June without agreement on a final document. One of the central issues in the debate was that of nuclear non-proliferation, and in particular the NPT, on which there was a substantive divergence in views between the parties to the NPT and a group of non-aligned nations including several of the threshold states. In that connection one may note the proposal by Prime Minister Ghandi of India, "...that negotiations must commence ...(right away) for a new Treaty to replace the NPT, which expires in 1995 (sic) ... (which) should give legal effect to the binding commitment of nuclear weapon States to eliminate all nuclear weapons by the year 2010, and of all non-nuclear weapon States to not cross the nuclear weapons threshold."

The move of several non-nuclear-weapon States towards the possession of nuclear-propelled submarines is adding a new dimension to nuclear proliferation and to the military nuclear rivalry between hitherto non-nuclear countries. The assistance to those countries rendered or offered in this matter by nuclear-weapon States would seem to indicate that the latter may see the cause of nuclear non-proliferation as second to other urgent political or economic considerations - a tendency seen by many to be implicit also in the attitude of the United States to Pakistan's nuclear adventurism. Situations of this kind may raise the question in the mind of opponents of the non-proliferation regime in its present form of how strongly the nuclear-weapon States are willing to support the regime and how far they are ready to go in defence of the NPT, in the two years that still separate us from the fourth Review Conference.

Another cause for serious concern is the acquisition of ballistic missiles by a growing number of nations. Conventionally armed surface-to-surface missiles are capable of adding to the intensity and lethality of warfare and their deployment tends to contribute to political instability and military insecurity in the regions concerned. Equipped with chemical warfare agents or nuclear warheads they could decisively alter the regional balance, and the fact that such potentially nuclear-capable States as India, Israel and Pakistan possess ballistic missiles is disquieting. Here again, it appears to be nuclear-weapon States which either supply the missiles or fail to exert pressure on client States to deter them in their efforts to develop their own. As a reaction to this, one recent report calls for a multilateral ballistic missile treaty (**Christian Science Monitor**, 25 April, 1988).

b. NPT Events

- On 29 February 1988 the agreement between the **IAEA** and **Nigeria** for the application of safeguards pursuant to the Treaty on the Non-Proliferation of

Nuclear Weapons was signed at Vienna. (**IAEA Newsbriefs**, Vol. 3, No.3, 1 April 1988).

- The joint statement issued on 1 June 1988, upon the conclusion of the meeting between the President of the **United States** and the General Secretary of the Central Committee of the Communist Party of the **USSR**, contains the following passages on nuclear non-proliferation:

  "The two leaders noted that this year marks the 20th anniversary of the Nuclear Non-Proliferation Treaty, one of the most important international arms control agreements with over 130 adherents. They reaffirmed their conviction that universal adherence to the NPT is important to international peace and security. They expressed the hope that each state not a party to the Treaty will join it, or make an equally binding commitment under international law to forego acquisition of nuclear weapons and prevent nuclear weapons proliferation. This will enhance the possibility of progress toward reducing nuclear armaments and reduce the threat of nuclear war.

  The two leaders also confirmed their support of the International Atomic Energy Agency, and agreed that they would continue efforts to further strengthen it. They reaffirmed the value of their regular consultations on non-proliferation and agreed that they should continue.

  The leaders agreed to bilateral discussions at the level of experts on the problem of proliferation of ballistic missile technology."

- On 25 April 1988 **Saudi Arabia** announced that it intends to accede to the Non-Proliferation Treaty. This move is said to be connected with that State's purchase of surface-to-surface missiles, in order to demonstrate that it is not the intention to provide the missiles with nuclear warheads (**Washington Post**, April 26, 1988; **National Public Radio**, "Morning Edition", April 29, 1988).

c. Other Non-Proliferation Developments

- **Argentina and Brazil:** On 8 April 1988 President Alfonsin of Argentina and President Sarney of Brazil signed an agreement for cooperation in the peaceful use of nuclear energy. The two presidents and the president of **Uruguay** jointly inaugurated a uranium enrichment facility at the Aramar Experimental Centre at Ipero in Sao Paulo State. Brazil announced earlier that it would sell five tons of low (0.85%) enriched uranium to Argentina, in 1989 (**Los Angeles Times**, September 5, 1987; **New York Times**, April 23, 1988).

- Argentina and Brazil have formally announced that they have no intention of joining the London Suppliers Group (**O Estado De Sao Paulo**, 2 March 1988).

- **Australia:** Mr. R. J. Thomas, Assistant Secretary in the Department of Primary Industries and Energy, has confirmed that Australia will export uranium only to non-nuclear-weapon states parties to the NPT that have concluded safeguards agreements with Australia. Nuclear-weapon states seeking Australian uranium must also enter into safeguards agreements with Australia and give assurances that the material will not be diverted to military or explosive purposes and will be covered by IAEA safeguards (speech to German Atomforum in January 1987 as reported in **Nuclear Spectrum**, 3 (2), 1987).

- **Israel:** Israel has agreed with **Norway** on the application of safeguards to the heavy water supplied by the latter in 1959. Eventually, the material is to be placed under **IAEA** safeguards, pursuant to a trilateral agreement (**Wall Street Journal**, May 5, 1988; **The New York Times**, June 11, 1988).

d. Nuclear Trade

- **Argentina:** Nuclear cooperation with **Cuba** has been expanded, on the basis of an agreement concluded in November, 1986. Argentina apparently hopes to obtain orders connected with other reactors of the same type as the two VVER 440-model (PWR) power reactors being supplied by the **USSR** (**Nucleonics Week**, February 11, 1988). But there is some doubt that Cuba will be able to realise its plans in that regard. Argentina would be ready to sell Cuba a research reactor in the 5-10 MW range if present plans by the USSR to do so should fall through (information provided by Dr.J. Redick, June 1988).

- **China:** Agreement has been reached with an engineering group from the **Federal Republic of Germany** on the construction of a 100 MW high-temperature reactor (HTR)(**The Financial Times**, 15 March 1988).

- **India: France** has supplied a new consignment of enriched uranium for India's Tarapur nuclear plant (2 x 160MWe BWRs) (**Nuclear Engineering International**, June 1988).

- An agreement for the **USSR** to supply **India** with two 1000MWe VVER reactors is reported to be close to completion. The USSR will provide the reactors and the enriched uranium fuel, with the spent fuel being returned to the Soviet Union. (**Nucleonics Week**, May 19, 1988).

- **Indonesia: Japan** has signed an agreement with Indonesia for expanded technological cooperation in nuclear research (**Nucleonics Week**, March 24, 1988)

- **Iran: Iraq's** bombing raids have resulted in construction being halted on the incomplete nuclear power station at Bushehr, Iran, putting an end to international co-operation in which firms from **Argentina**, the **Federal Republic of Germany** and **Spain** were to have been involved (**Nuclear Engineering International**, April 1988).

- **Republic of Korea: Canada** and Korea will jointly build a 30MWt research reactor of Canadian design at the Daeduk research site of the Korean Atomic Energy Research Institute (**Nuclear Engineering International**, March 1988).

- **Pakistan: France** is discussing the supply of a 900 -1,000 MW PWR to Pakistan to be constructed at Chasma. The plant would be under IAEA safeguards. France is reported to be willing to make this supply provided Pakistan surrenders all claims against France for its failure to supply a reprocessing plant it had contracted for (**Nucleonics Week**, March 10 and April 28, 1988).

- **Saudi Arabia:** The **Federal Republic of Germany** is discussing the possible sale to Saudi Arabia by Interatom (a subsidiary of Siemens) of a 10MW research reactor for isotope production and another small reactor for training purposes (**Nuclear Engineering International**, March 1988).

- **Turkey:** A nuclear cooperation agreement valid for 15 years has been signed with **Argentina** (**Nucleonics Week**, May 12, 1988).

- **United States:** The Senate has rejected a resolution disapproving a revised agreement for nuclear cooperation with **Japan**. The new agreement contains blanket authority ("programmatic consent") for thirty years for Japan to reprocess nuclear fuel covered by the agreement and to use the resulting plutonium without the case-by-case approval previously required (**Issue Brief** of July 21, 1987 by Warren H. Donnelly, Congressional Research Service). Objections had been raised in both houses of the Congress as well as by the Defense Department and the NRC. (**Washington Post**, December 18, 1987 and March 22, 1988; **Nuclear Fuel**, December 28, 1987; **The New York Times**, January 13, 1988; **Nucleonics Week**, March 24, 1988). In response to these objections the United States administration is reported to be considering imposing restrictions on aerial transport of the plutonium over United States territory (**Washington Post**, June 6, 1988).

- The **United Kingdom/Netherlands/Federal Republic of Germany** consortium URENCO is discussing with Duke Power Co. of North Carolina, United States, the possibility of jointly constructing and running an ultra-centrifuge enrichment plant in that state (**The Financial Times**, 15 April, 1988).

e. IAEA Developments

- Upon a request from the Government of the **Federal Republic of Germany** the IAEA is cooperating with that State and with **EURATOM** in examining the **Nukem/Transnuklear affair** involving the alleged unauthorized transport of fissionable material (**IAEA Press Release 88/3**). It is also cooperating with the Belgian authorities regarding this matter (**IAEA Press Release 88/4**).

- On 3 February 1988, there was a rumour that a **nuclear accident** had taken place in the **USSR**. When this turned out to be untrue, there were reports it might have arisen from a test by the IAEA of the system which it is setting up under the Convention on Early Notification of a Nuclear Accident. In response, the IAEA let it be known that it had received no report of any nuclear accident nor had any significant change in the level of radioactivity in the European environment been measured by any of the specialized European laboratories with which it was in contact (**IAEA Press Release 88/7**). The IAEA subsequently added that it had for some time been testing the Global Telecommunications System of the World Meterological Organization in connection with its early warning system, but that at no time had it used the word "accident" in these tests. It confirmed that there was no report about any nuclear accident in any one of its Member States (**IAEA Press Release 88/8**).

- The Director-General of the IAEA is asking the Board of Governors to authorize a $ 3.5 million growth in the IAEA's **safeguards budget**, necessitated by recent increases in the safeguards workload. (**Nucleonics Week**, March 3, 1988).

- The IAEA has agreed with **Canada** that the functions of the IAEA's Safeguards Field Office in Toronto will be extended to include other countries in the area. The office will be renamed "**IAEA Regional Office in Toronto**". This is expected to increase the effectiveness of the IAEA's safeguards operations in the area. Negotiations are also underway with the Government of **Japan** to extend the functions of the IAEA's office in Tokyo to cover some other countries in that region (**IAEA Press Release 88/12**).

- The FY 1988 budget appropriation by the United States Congress for the Department of State pertaining to the **United States' contribution to international organizations** includes the "General Rule" that "If **Israel** is illegally expelled, suspended, denied its credentials or in any other manner denied its right to participate in any principal or subsidiary organ or in any specialized, technical or other agency of the United Nations, the United States shall suspend its participation in any such organ or agency until the illegal action is reversed". [It further lays down the "Rule of Construction" that "Nothing in this section may be construed to diminish or to affect United States participation in the United Nations Security Council or the Safeguards Program of the International Atomic Energy Agency" (**Public Law 100-204**, Section 704, December 22, 1987).

- Effective 1 February 1988, Mr. Berhanykun Andemicael (Ethiopia) is appointed as the **Representative of the Director General of the IAEA to the United Nations** and head of the IAEA's Liaison Office in New York (**IAEA SEC/NOT/1201**, 19 January 1988).

f. Peaceful Nuclear Developments

- **Argentina:** The President of the National Atomic Energy Commission of Argentina, Dr. Emma Perez

Ferreira, announced that plans were being made for the shutdown of construction of Argentina's third power plant, Atucha-2. The $ 750 million needed for its completion are unlikely to be available. Dr. Perez Ferreira is quoted as saying that all existing installations will continue to operate and that work will "probably" be completed on a reprocessing plant for spent nuclear fuel. The heavy water plant at Arroyito, nearly 90 percent finished, was also said to have an uncertain future (**The New York Times**, April 23, 1988). (According to information obtained in Buenos Aires by Dr. J. Redick the decision to discontinue construction of Atucha-2 may not be final). President Alfonsin has pledged "total support" for the completion of these plants (**Nucleonics Week**, May 5, 1988).

- **India:** In a report to the Indian Parliament, the comptroller and auditor general of that country has criticized the delay in the realization of the Indian nuclear power programme and its enormous cost overruns. The report points out that only a minor part of the initial atomic power plan has been realized. Thus, the first stage in the Madras Atomic Power Project took eight and a half years and the second eight years and eight months longer than projected. The cost increase in the Indian component alone was more than 100% (**Nucleonics Week**, March 10, 1988).

- An explosion at the Baroda heavy water plant, on 18 March, following a series of problems there and at other installations will force India to turn increasingly to the **USSR** for heavy water imports (**Nucleonics Week**, March 24, 1988).

- Discussions are also underway with the **USSR** about the construction of two power plants of the VVER-1000 (PWR) type at Tamil Nadu, India. One consequence of the purchase of nuclear power plants from the USSR will be the acceptance of IAEA safeguards on those plants (**Nuclear Engineering International**, April 1988).

- **Indonesia:** The construction of a 900 MWe nuclear power station on Java, 285 miles east of Jakarta is planned. Firms from **Canada**, **France**, the **Federal Republic of Germany**, **Japan**, and the **United States**, separately and jointly, are competing for the job of building the plant (**Journal of Commerce**, March 30, 1988).

- **Republic of Korea:** The first unit of the Ulchin PWR station of the Korea Electric Power Corporation (KEPCO), the first of two power reactors to be supplied by the **French** manufacturer Framatome, went critical on 25 February 1988. KEPCO has seven existing operating reactors: six supplied by Westinghouse and one by Atomic Energy of Canada Ltd (**Nucleonics Week**, March 3, 1988).

- **United States:** The 809 MWe nuclear power plant at the Long Island town of Shoreham, New York, United States, which was completed in 1983, has been shut down and will not be operated (**The New York Times**, May 26, 1988).

g. Developments of Concern for Vertical Proliferation

- **United States:** According to a working paper released in January 1988 by the Nuclear Weapons Databook project of the Natural Resources Defense Council, the United States has a **covert nuclear testing programme** under which it has conducted at least 117 more tests since 1963 than it has announced making, and possibly several dozens more. Most of these tests had a yield well below one kiloton but could be detected with non-dedicated seismological equipment (**Bulletin of the Atomic Scientists**, March 1988, "Washington Report" and "Nuclear Notebook" and **National Journal**, January 23, 1988).

- In a secret experiment, codenamed "Centurion-Halite", researchers of the Los Alamos and Lawrence Livermore National Laboratories two years ago successfully brought about a **fusion reaction in hydrogen fuel pellets** by bombarding them with X-rays generated in underground nuclear tests. The programme, which continues to be classified, is said in the first place to have military use (**The New York Times**, March 21, 1988).

- There is doubt that the programme established by the United States Administration in 1978 to **reduce the use of high enriched uranium (HEU) in research and test reactors (RERTR)** will survive for long. Given what is said to be a lack of support both in the Congress and the White House for this programme, its budget for FY 1988, which forms part of the budget of the Arms Control and Disarmament Agency, has been halved, to $ 2.6 million. Meanwhile the Department of Energy is proceeding with its plans (reported in **Newsbrief**, no. 1, Editor.) to build a research reactor that will use HEU fuel, and the **Netherlands** is said to have gone back on its decision to convert its materials testing reactor to a lower enrichment (**Nuclear Fuel**, January 11, 1988).

- The United States is reinforcing the new version of its M-1 ("Abrams") battle tank with **armour that is reinforced with depleted uranium mesh**, to make it less vulnerable to penetration by anti-tank ammunition (**Defense Week**, March 14, 1988).

- Controversy surrounds plans to begin construction (in FY89) of a **Special Isotope Separation Facility** which would be able to convert low-grade plutonium into plutonium suitable for use in weapons. Proponents argue that the facility, which is to be based in Idaho and said to cost $1 billion, is needed because the existing production facilities at Savannah River (where safety problems have disrupted production) and at Hanford (which is on cold standby) are inadequate to meet future nuclear weapons needs. Opponents argue that the new plutonium facility is unnecessary, uneconomical and does not take account of arms control treaties (**Issue Preview,** Arms Control and Foreign Policy Caucus, May 3, 1988).

- **USSR:** A USSR satellite, Cosmos 1900, carrying a

nuclear power unit on board, is expected to re-enter the atmosphere in the summer of 1988 and to burn up in low orbit. Soviet and American scientists have called for a ban on nuclear reactors orbiting the earth, except when used aboard deep-space probes (**The New York Times**, May 14, 1988).

h. Developments of Concern for Horizonal Proliferation

- **Argentina:** The uranium enrichment plant at Pilcaniyeu is "not believed to be enriching at present to the 90 percent-level" (**The New York Times**, April 23, 1988). Another report (**The Economist**, 5 March, 1988) speaks of it enriching to "nearly 20%".

- Argentina is continuing its work on spent-fuel reprocessing (**The Financial Times**, 15 April, 1988). Early in 1989, if the government of the **Federal Republic of Germany** agrees, the Ezeiza pilot reprocessing plant will start test procedures on 400g. of German-supplied irradiated reactor fuel containing plutonium (**Nuclear Fuel** April 18, 1988).

- **Brazil:** On 8 April 1988, President Sarney of Brazil inaugurated a uranium enrichment facility at Ipero, Sao Paulo State (see also I (c), above). The facility, which is run by the national nuclear energy commission under the aegis of the Brazilian navy, operates by what is said to be an indigenously developed centrifuge process. It is to reach a 20% enrichment level by mid-1988, presumably sufficient for use in advanced submarine propulsion reactors (**Nucleonics Week**, April 14, 1988).

- Brazil is reported to be developing a ballistic missile, the SS-300, with a 600-mile-plus range, which will be operational and available for sale in 1990. It is also developing a longer range and more accurate missile, the SS-1000, which will be capable of carrying nuclear warheads and which should be available by 1991 (**Washington Post**, March 28, 1988).

- **Federal Republic of Germany:** Dr. Harald Mueller of the Peace Research Institute Frankfurt, a member of the PPNN Core Group, has provided the following summary of what has become known as the "Nukem Affair".

  There is no evidence that plutonium or highly-enriched uranium was smuggled to **Libya** or **Pakistan**;

  Some 2500 drums containing nuclear waste were shipped between NUKEM, at Hanau, the Belgian nuclear centre at Mol and several power plants in the Federal Republic of Germany. To circumvent restrictions in the licences held by the facilities involved as to what could be stored there and what could be shipped between them, false labels were used for part of the shipments and the storage. Several hundred drums contained traces of non-recoverable plutonium allegedly stemming from rod-failure at the BR-3 research reactor at Mol. Some 50 drums, at NUKEM in Hanau, contained a total of 750 kg of uranium of different degrees of enrichment (varying from 0.2% to 4.0%, of which the average was 0.69% enriched), apparently intended for eventual recovery and accordingly listed as "retained waste" in the books kept by EURATOM and the IAEA;

  There was extensive bribery, involving some 50 persons at Mol and several German utilities. Over a period of seven years, DM 21 million was paid to get business for Transnuclear (the shipping company involved, Editor.) and persuade power plant personnel to circumvent licencing restrictions. Thus, personnel of three companies licenced to handle weapons-usable material were involved and the leadership of two companies - Transnuclear and NUKEM - participated in or approved of these illegal activities;

  In accordance with the agreement between the member states of the European Community, EURATOM and the IAEA (**IAEA Doc. INFCIRC/193**), EURATOM has taken over from its member states the function of "national system of accountancy and control". Possibly as a result of this fact, the German authorities seem to be largely uninformed on movements and locations of nuclear material. They also seem to have been unaware of any bribery. Thus, the affair has revealed serious deficiencies in physical security arrangements in the Federal Republic of Germany, as well as in the way its export regulations are implemented.

  Dr. Mueller, who has closely followed the affair and has participated in the parliamentary hearings held on it, comments that the "scandal" has led to the first serious parliamentary hearings on the subject of non-proliferation since the Federal Republic of Germany became a party to the NPT. The new awareness may well lead to changes, including the upgrading of the physical security system and export controls regarding nuclear material and possibly also to a reconsideration of "time-honoured tenets of West German nuclear policy, such as its objection to full-scope safeguards as (a) basic condition for exports, or large-scale commercial reprocessing".

- **India:** Theoretically (i.e. if all its installations operated at capacity and if it required only 5 kg plutonium per weapon), India would be able to produce enough plutonium to manufacture 30 weapons annually. Assuming lower plant availability and 8 kg of plutonium per device, India could produce about 15 weapons annually. By mid 1987 it could have accumulated a stockpile of 100 to 200 kg of plutonium, enough for 12 to 40 weapons (**Nuclear Weapons and South Asian Security, Report of the Carnegie Task Force on Non-Proliferation and South Asian Security**, Carnegie Endowment for International Peace, Washington, 1988). According to " (t)he American estimate", by the end of 1987 **India** had produced enough plutonium for about 40 atomic bombs (**The New York Times Magazine**, March 6, 1988). India probably could produce a small nuclear arsenal within a few years but at the moment it seems likely that it will continue its course of restraint as long as Pakistan does not cross the nuclear threshold (**Issue Brief** of April 25, 1988 by Warren H.

Donnelly, Congressional Research Service).

- India has announced that it has successfully tested an indigenously constructed missile capable of carrying large warheads at least 150 miles. Military experts are quoted as saying that the relatively short range of the missile make its use as a nuclear delivery vehicle dangerous (**International Herald Tribune**, February 26, 1988).

- **Israel:** Mordechai Vanunu, a former technician employed at the Dimona reactor, who in 1986 gave extensive information to **The Sunday Times** about Israel's military nuclear programme, was found guilty by a court of law in Jerusalem on counts of aggravated espionage, disclosing state secrets and aiding an enemy in time of war. He was sentenced to 18 years in prison. Mr. Vanunu's revelations would indicate that the range and scope of Israel's military nuclear programme were more extensive than previously assumed (**The New York Times**, March 25 and 28, 1988; **Washington Post, Washington Times**, **Christian Science Monitor**, March 25, 1988). While Mr. Vanunu's evidence had led to estimates that Israel might have assembled between 100 and 200 nuclear weapons, experts now believe the number may be closer to 50 (**The Financial Times**, 25 March, 1988).

- **Norway:** Following an earlier disclosure that a shipment of 15 tons of heavy water intended for the **Federal Republic of Germany** had been "diverted to the international black market" by way of **Switzerland**, Norwegian officials are investigating reports that **Rumania** has re-exported 12.5 tons of heavy water that had been shipped to it in 1986. Some experts speculate that the material may have been sent to **India**; others mention **Israel** as a possible recipient (**Wall Street Journal**, May 5; **The New York Times**, May 7 and 25, 1988).

- **Pakistan:** Robert A. Peck, **United States** Deputy Assistant Secretary of State for Near Eastern and South Asian Affairs testified to the Congress in February 1988, that " Pakistan has acquired the technical capabilities needed to possess a nuclear explosive device but so far has not made the political decision to do so..." It is said to be the prevailing view of the United States Government that it would take Pakistan "at most a few days or months" to assemble a bomb; some officials share the view that it is more "a matter of hours or days". The American estimate is that by the end of 1987 Pakistan had produced enough fissionable weapons-grade uranium for four to six atomic bombs, and the build-up continues. Actual tests are not thought to be necessary: American experts say that in the early 1980s Pakistan obtained from **China** a "reliable, tested bomb design, in exchange for Pakistan sharing its modern uranium-enriching technology..." The design is said to be sophisticated, permitting Pakistan to make a bomb weighing less than 400 pounds (**The New York Times Magazine,** March 6, 1988. See also **Nuclear Weapons and South Asian Security**, as referred to under **India** above.).

- A **United States'** Administration official stated on 23 May that Pakistan had test fired "a missile capable of carrying a nuclear weapon". According to **The New York Times** of May 24, 1988, "a Pakistani with close ties to... (Pakistan's) Government..." stated that the test had taken place in the Thar Desert in Southern Pakistan and that the missile was of "home design" but produced with **Chinese** help.

- **Saudi Arabia:** A statement distributed by the official Saudi Press Agency confirmed that Saudi Arabia is buying **Chinese** intermediate-range surface-to-surface missiles, which would not be armed with nuclear warheads. The **United States** State Department says the deal involves CSS-2 missiles with a range of 2,200 miles (subsequently amended to 1,700-2,200 miles), capable of being fitted with nuclear warheads (**Associated Press**, as quoted in **The New York Times**, March 17, 1988; **International Herald Tribune**, March 19/20, 1988; **The Guardian**, 19 March, 1988; **The Independent** and **The Financial Times**, 22 March, 1988 and **The Independent**, 4 May, 1988; **Arms Control Today**, May 1988).

- **United States**: Concern has been expressed about the proliferation of ballistic missiles, with ranges long enough to reach deep into neighbouring countries, among the world's lesser military powers and the United States is "actively engaged" in dissuading such sales. **Egypt**, **Iran**, **Iraq**, **Israel**, **Libya** and **Syria** are mentioned as states that also have ballistic missiles, while **Argentina**, **Brazil** and **India** are cited as having "programs to design such missiles and appear willing to export them" (**The New York Times**, March 19, 1988).

- **Taiwan:** Under pressure from the **United States**, Taiwan is said to have stopped construction of a reprocessing facility. This follows the closure of the Canadian-supplied 40 MWt NRX research reactor, TRR, which had been a cause of concern. The reactor, suitable for the production of high-quality plutonium, has been under IAEA safeguards and inspections have been performed about every month. One inspection was made in January 1988, at which time TRR had already been shut down. During inspections scheduled for April 1988, the IAEA, which has stated that it sees no reason to believe there has been any diversion of fissionable material, intended to verify the presence of spent fuel and the shutdown state of the reactor. Taiwan's entire nuclear programme, which includes six nuclear power reactors, six research reactors, a uranium pilot conversion plant, two fuel fabrication plants and a research and development facility, is under IAEA safeguards on the basis of arrangements related to specific nuclear installations. (In the early 1970s, the "Republic of China" signed and ratified the NPT and negotiated a safeguards agreement with the IAEA pursuant to the Treaty. In light of the anomalous political position of Taiwan, that agreement was never formally brought into force. Editor.). Recent reports recall that in the 1970s " a laboratory to extract plutonium" (a large hot-cell assembly,

Editor.) was constructed in Taiwan; this was dismantled in 1977 on the insistence of the United States. Taiwan's latest efforts to obtain plutonium are said to have been revealed to American officials by Col. Chang Hsien-Yi, deputy-director of the nuclear energy research centre at the Chungshan Institute of Science and Technology. Col. Chang, whose whereabouts is not known, is reported to be in possession of "confidential blueprints disclosing that Taiwan plans to make nuclear weapons" (**Los Angeles Times**, March 14; **The New York Times**, March 23; **Washington Times**, March 14; **Liberty Times** (Hongkong), as quoted by **Agence France Presse** on 12 March; **The Economist**, 2 April; **IAEA Newsbriefs**, Vol. 3, No.3 of 1 April; **Nuclear Fuel**, April 4, - all in 1988).

- Press reports see a connection between Col. Chang's alleged defection and Taiwan's development of a surface-to-surface missile known as "Sky Horse", capable of hitting targets on the mainland (**Far Eastern Economic Review**, 31 March 1988).

I. Nuclear Submarines

- **Brazil:** In connection with the inauguration of the new enrichment facility at Ipero (developed by the Brazilian navy in cooperation with the Comissao Nacional de Energia Nuclear) it was announced that the development of nuclear propulsion systems for submarines is "also" part of the Navy's plans "in the long term" but that to begin with the facility will be dedicated exclusively to the production of radioisotopes (sic) for the medical sector (**Nucleonics Week**, February 25, 1988);

- **Canada:** The **United States** navy remains concerned about the transfer of nuclear submarine technology to Canada, via the **United Kingdom** but the Administration appears to be moving towards an agreement that would enable the United Kingdom to build nuclear submarines for Canada, using technology developed in the United States. However, before the United Kingdom can use American nuclear technology for this purpose, the United States Administration must notify Congress, which could stop the transfer by passing a joint resolution within 90 days of such notification (**The New York Times** and **Washington Post**, March 22, 1988). On the other hand, there are persistent reports that Canada is contemplating buying modified **French** submarines of the 'Amethyste' class (e.g. **Jane's Defence Weekly**, 14 May, 1988; **The Globe and Mail**, May 12, 1988). These boats are cheaper than those of the British 'Trafalgar' class ($ 350 million vs. $ 500 million, which would permit the purchase of 10 French submarines for the price of 8 British ones) and run on less than 10%-enriched uranium, which is seen as both a political and a technical advantage (**The Financial Post**, 8 February, 1988; **The Independent**, 4 May 1988). The project has caused controversy in Canada itself, with the military arguing that it will cost more than foreseen (up to C$8 billion) and leave less money for the army, and the Liberal opposition protesting the "militarisation" of the Arctic (**The Economist**, 5 March 1988). Prime Minister Mulroney has repeated his resolve to carry the project through (Interview with Robin McNeil on **McNeil/Lehrer Newshour** as broadcast on Public TV station WNET, Channel 13, March 29, 1988).

- It has been reported that a Canadian consortium is negotiating to sell five hybrid (nuclear/conventional) submarines driven by low-powered nuclear reactors to **Turkey**. These submarines are still at the experimental stage, but the consortium hopes to have an operational submarine within six years. **Pakistan** has also apparently been approached by the consortium, but any chance of a deal has been blocked by the Canadian government because Pakistan has not signed the NPT and is not covered by any bilateral nuclear cooperation agreement with Canada (**The Globe and Mail**, May 21, 1988).

- **India:** The first nuclear-powered submarine leased from the **USSR** was formally inducted into the Indian navy by Prime Minister Gandhi and renamed **INS Chakra**. The Indian government has said the boat is to be used for training purposes. The USSR will apply safeguards to the fuel, including inspection of the submarine (**The Guardian**, 6 January 1988; **Nucleonics Week**, February 11, 1988). India has been and continues working on an indigenous nuclear power plant for submarines. It may also purchase further nuclear submarines from the USSR "once the technology is assimilated" (**Times of India**, 7 January, 1988).

- **United Kingdom:** By the year 2000, the UK Ministry of Defence estimates that 10 nuclear submarines will have been taken out of service. The lack of any definite plans for decommissioning these boats was recently heavily criticised by the House of Commons Defence Committee (**The Progress of the Trident Programme**, Defence Committee, Third Report, HC 422 of Session 1987-88).

II. PPNN Activities

The **PPNN Core Group** (which had first met in June 1987 in Jersey, British Channel Islands, and subsequently at the University of Virginia, at Charlottesville in November 1987) held its **third semi-annual meeting** from 5 to 8 May 1988 in Guernsey, again in the Channel Islands. Members attending were Benson Agu (**Nigeria**), Jayantha Dhanapala (**Sri Lanka**), Warren Donnelly (**United States**), Lewis Dunn (**United States**), David Fischer (**United Kingdom**), Jozef Goldblat (**Sweden**), Oleg Grinevsky (**USSR**), Harald Mueller (**Federal Republic of Germany**), Jorge Morelli Pando (**Peru**), Joseph Nye (**United States**), Walter Rehak (**German Democratic Republic**), Ben Sanders (**Netherlands**; chairman), Mohamed Shaker (**Egypt**), John Simpson (**United Kingdom**; rapporteur) and Ian Smart (**United Kingdom**). Michael Wilmshurst was present as an observer from the **IAEA**.

The Core Group commenced a systematic analysis of the issues likely to be raised in the 1990 Review

Conference, on the basis of briefings by members and invited speakers. In this context, Lewis Dunn discussed the implementation of NPT Articles I and II; David Fischer spoke on implementation of NPT Article III.1; Walter Rehak discussed technical aspects of IAEA safeguards and Michael Wilmshurst made a presentation on the future of IAEA safeguards. Under the heading "Problem Countries or Regions", Ian Smart spoke about nuclear proliferation in the Middle East and Jorge Morelli-Pando about regional aspects of the non-proliferation regime - with special reference to Latin America. The third category of issues the Group had agreed to discuss: "Functional Issues", included presentations by Lewis Dunn on United States perspectives on nuclear supply; by Andrew Barlow on European supplier policies; and by Ben Sanders and John Simpson on nuclear submarines. Papers were presented on most topics, as well as on Nigeria's position with regard to the Non-Proliferation Regime and on recent press attacks on the IAEA safeguards system, about which Ben Agu briefed the Group.

In the discussion following the presentations and the reports made by members on further current topics, the Core Group identified several potential challenges to the non-proliferation regime and issues that might be expected to arise and that would be likely to play a role at the Review Conference. In each area of discussion proposals for action were generated. Considerable attention was given to the question whether and how it would be possible to achieve a nuclear test ban that would help strengthen adherence to the NPT.

The Group had a further discussion on its long- and medium term objectives and agreed on a short-term plan of action, including publication and conference activities. It was decided to expand the print-run of the **Newsbrief**, given the positive response met by its first issue. **Occasional Papers** will be published on especially topical and important issues. The Group felt that an effort should be made to enhance PPNN's image through frequent attendance by Core Group members, and especially the Directors, at international meetings relevant to the Programme's activities. The programme of meetings was further elaborated. The next Core Group meeting will be held from 17-20th November 1988 in Charlottesville, Virginia, United States and will concentrate on the implementation of Article IV of the Treaty and on specific problem areas, as well as the question of verification.

The Core Group decided that single copies of papers prepared for its discussion may be obtained upon request to John Simpson, Department of Politics, University of Southampton, Southampton, SO9 5NH, United Kingdom. A list of the titles and authors of papers presented to the Group so far is appended at the end of this Newsbrief.

Following an invitation to the Chairman of the PPNN, Dr Benson Agu represented the Programme at the International Meeting for Nuclear Free Zones held in East Berlin from 20-22nd June 1988 and sponsored by the National Preparatory Committee of the German Democratic Republic. This was a large gathering with some 900 delegates from over 100 states and organisations. A more detailed report from Dr Agu will appear in the next edition of the **Newsbrief**.

The Programme's **Occasional Papers Series** was initiated in June 1988 with the publication of Dr. J.R. Redick's, "**Nuclear Restraint in Latin America: Argentina & Brazil**". Occasional Paper Number Two, "**Nuclear Submarines and Non-Proliferation: Cause For Concern**", by Ben Sanders and John Simpson, will be published in July. **Copies of both these papers will be distributed to those on the PPNN mailing list as a matter of course. Persons wishing to be added to the mailing list or those requiring additional copies should write to John Simpson, at the address given above.**

III. Other Non-Governmental Groups Active in Related Areas

Non-Proliferation Initiatives. A European-American Project: 11632 Sourwood Lane, Reston, VA 22091, USA

The Executive Director, Rodney W Jones writes:

"On 8-10 May 1988 a major Non-Proliferation Initiatives conference of senior practitioners was held in Oslo, Norway to consider practical means of advancing nuclear non-proliferation objectives in South Asia and the Middle East. Johan Jurgen Holst, Norwegian Minister of Defence, and Gerard C. Smith, former U.S. SALT negotiator, co-chaired the conference.

Building on previous European-American collaborative work published in **Blocking the Spread of Nuclear Weapons**, (Council on Foreign Relations, 1986), the Oslo conference focused on the political and security aspects of proliferation in the two regions, and on the political approaches that could be adopted by key powers or by groups of states collectively to contain and arrest the spread of nuclear weapons. The dangers of a nuclear arms race in South Asia and of chemical and missile proliferation in both regions were examined, together with the potential opportunities for fresh efforts resulting from improvements in the U.S.-Soviet relationship and in nuclear arms control; a prospective settlement in Afghanistan; and new negotiations in the Middle East. The participants resolved to lend their individual and cooperative efforts to promoting non-proliferation objectives through government, international institutional, and private channels."

European Proliferation Information Centre (EPIC): Professor R.V. Hesketh and Dr.D. Lowry; 258 Pentonville Road, London N1 9JY, United Kingdom.

EPIC is a research, consultancy and promotional organisation, established in 1984 to serve as an information source for nuclear (especially non-proliferation) related issues.

Center for International and Strategic Affairs, UCLA, Los Angeles, CA 90024, United States of America:

William Potter has informed PPNN that the computer-based data system he has established is now capable of searching for all Zangger Committee and London Supplier Group "trigger list" items. **Peace Research Institute**, Frankfurt: Leimenrode 29, 6000 Frankfurt am Main 1, Federal Republic of Germany

A Workshop on nuclear non-proliferation decision-making structures in Western Europe, directed by Dr Harald Mueller, took place from 12-15th June at Bad Reichenhall, Federal Republic of Germany. It is hoped that a report on these discussions will appear in the next edition of the Newsbrief.

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

Books:

P.D. Brandes and B.G. Lall, **Banning Nuclear Tests: Verification, Compliance, Savings**, (New York: Council on Economic Priorities, 1987), 83 pp.

Carnegie Task Force on Non-Proliferation and South Asian Security, **Nuclear Weapons and South Asian Security**, (Carnegie Endowment for International Peace, 1988), 134 pp. (pbk)

R.W. Jones (ed.), **Small Nuclear Forces and U.S. Security Policy. Threats and Potential Conflicts in the Middle East and South Asia**, (Lexington, Mass.: Lexington Books/D.C Heath and Company, 1984), 320 pp. (hbk).

R.W Jones, C. Merlini, J.E. Pilat and W.C. Potter, **The Nuclear Suppliers and Nonproliferation. International Policy Choices**, (Lexington, Mass.: Lexington Books/D.C. Heath and Company), 288 pp.

M.Karem, **A Nuclear-Weapon-Free Zone in the Middle East: Problems and Prospects**, (New York and London: Greenwood Press, 1988)

J. Nye, A. Carnesale and G. Allison (eds.), **Fateful Visions**, (Cambridge, Mass.: Ballinger, 1987).

R. Rhodes, **The Making of the Atomic Bomb**, (New York: Simon and Schuster, 1986) 886 pp. (hbk).

S.R. Weart, **Nuclear Fear - A History of Images**, (Cambridge, Mass.: Harvard University Press, 1988).

H.F. York, **Making Weapons, Talking Peace**, (New York: Basic Books, 1987).

Articles and other materials:

D. Albright, "Israel's Nuclear Arsenal", **F.A.S. Public Interest Report**, Vol. 41, No. 5, May 1988, pp. 4-6.

R. Bolt and N. Sanders, **France: The Nuclear Renegade**, (Sandy Bay, Australia: Australian Democrats, 1987) 24 pp.

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P. Gold, "Nuclear Missiles Among the Jet Set", **Insight**, 18 April 1988, pp. 34-6.

D.M. Gormerley, "'Triple zero' and Soviet military strategy", **Arms Control Today**, Vol. 18, Jan-Feb 1988, pp. 17-20.

M.H. Halperin and M. O'Donnell, "The Nuclear Fallacy", **Bulletin of the Atomic Scientists**, Vol.44, No.1 January/February 1988, pp. 6-11.

D. Hart, "Separating civil and military nuclear programmes in the UK and France: a feasibility study", **Science and Public Policy**, Vol. 14, No. 4, August 1987, pp. 189-98.

International physical security standards for nuclear materials outside the United States, Reports to Congress pursuant to section 604 of the Omnibus Diplomatic Security and Anti-Terrorism Act of 1986 (P. L. 99-399), (Washington, D.C.: Washington G.P.O. for the Committee on Foreign Affairs, U.S. House of Representatives, 1988), 246 pp.

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N. Kamal, "Nuclear Diplomacy and Pakistan: the question of security assurances", **Strategic Studies: A Quarterly Journal from Pakistan**, Vol. 10, Winter 1987, pp. 23-40.

M.M. Kampelman and M.W. Glitman, "The INF Treaty: negotiation and ratification", **Department of State Bulletin**, Vol. 88, March 1988,.pp. 41-9.

A. Karp, "The Frantic Third World Quest for Nuclear Missiles", **Bulletin of the Atomic Scientists**, Vol. 44, No. 5, June 1988 pp.14-20.

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P. Leventhal, "U.S.-Japan accord invites proliferation", **Bulletin of the Atomic Scientists**, Vol. 44, No. 4, May 1988, pp. 11-3.

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D. McDowell, "The Treaty of Rarotonga", **Disarmament**, Vol. 11, Winter 1987-8, pp. 93-104.

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APPENDIX

Papers and Presentations at PPNN Core Group meetings:

Second Core Group Meeting, Charlottesville, November 1987

1. William C.Potter: **Creating a Database on International Nuclear Commerce** [published as Working Paper No 60, Centre for International and Strategic Affairs, University of California, Los Angeles, CA 90024-1486]

2. Tariq Rauf: **The Non-Proliferation Regime and Nuclear Submarines for Canada: A Critical Analysis** [revised and expanded version published (with Maria-France Desjardins) as "Opening Pandora's Box? Nuclear Powered Submarines and the Spread of Nuclear Weapons" **Aurora Paper 8**, Canadian Centre for Arms Control and Disarmament, 151 Slater Street, Suite 710, Ottawa, Ontario K1P 5H3]

3. John R.Redick: **Nuclear Restraint in Latin America: Argentina and Brazil** [subsequently published as PPNN Occasional Paper No 1]

4. Leonard S. Spector: **India, Pakistan and Nuclear Proliferation** [derived from work on "Nuclear Weapons and South Asian Security" **Report of the Carnegie Task Force on Non-Proliferation and South Asian Security**, Carnegie Endowment for International Peace, 11 Dupont Circle,N.W.,Washington D.C. 20036}

Third Core Group Meeting, Guernsey, May 1988

5. Ben Agu: **Nigeria and the Nuclear Non-Proliferation Regime**

6. Ben Agu: Recent Press Attacks on the IAEA Safeguards System

7. Andrew Barlow: European Supplier Policies

8. Lewis Dunn: Implementation of NPT Articles I and II

9. Lewis Dunn: US Perspectives on Nuclear Supply

10. David Fischer: Implementation of NPT Article III.1

11. Jorge Morelli Pando: The Prospects for the Non-Proliferation Regime in the Latin American Region

12. Walter Rehak: Technical Aspects of IAEA Safeguards

13. Ben Sanders and John Simpson: Nuclear Submarines and Non-Proliferation: Cause for Concern [revised version published as PPNN Occasional Paper No 2]

14. Ian Smart: **Nuclear Proliferation in the Middle East**

15. Michael Wilmshurst: **The Future of IAEA Safeguards**

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