



# TRUST AND VERIFY



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## Nuclear Testing Moves

There has been considerable movement towards a Comprehensive Test Ban in the last few months and it is clear that there is, at last, a small window opening up for a clearer discussion of the issue. Below is a synopsis of the recent developments:

- \* In August 1991, post-START but pre-Coup, Ambassador Richard Burt wrote an article in the Sunday Times calling for a CTBT. He said: "..... But today, with the problem of nuclear spread looming larger than the threat of a Soviet first strike, the time for a comprehensive nuclear test ban (covering Britain, France and China as well as the superpowers) may have finally come. If the existing nuclear powers can agree to give up testing, it will be that much harder for any would-be nuclear power to break through." (*Sunday Times*, 4/8/91).
- \* The Bush unilateral arms control initiatives were matched by Gorbachev who also announced a one-year moratorium on nuclear testing and called for a CTBT.
- \* A split between the US State Department and the Pentagon (and we understand the FCO and MOD in the UK) developed over the way they should respond to Gorbachev's proposal. The State Department thinks the US should respond favourably whereas the Defense Department says that issue is not for discussion. (25/10/91 *Washington Post*).
- \* Sam Cohen wrote in a *Washington Post* article calling for an end to nuclear testing that: ".....President Bush would be well advised to go Gorbachev one dramatic step better and order the immediate cessation of nuclear testing. No serious security risk seems at stake here and a great deal could be gained politically if such action, accompanied by a strong plea, persuades other nations to discontinue their nuclear warhead development programmes....." Dr Cohen is ex-Manhattan project, designer of the neutron bomb and known as a "hawk". (*Washington Post* 29/10/91).
- \* In response to the Gorbachev announcement, a consortium of Democrats put a Nuclear Testing Moratorium Act before Congress. (29/10/91)
- \* Several Member States of the United Nations put forward a resolution for a CTBT in November, only 2 countries voted against it - France and the USA. The UK abstained - in recent years the UK has voted with the USA on this issue. (UN 11/11/91, First Committee, meeting 33, resolution L.4, adopted). China also abstained in the vote and the USSR voted for the resolution.
- \* In the UK parliament, John Major, replying to Neil Kinnock, said that the UK Government is "working

towards a test ban treaty but it is some time away". (*Hansard* 12/11/91).

\* Lawrence Freedman, Professor of War Studies, Kings College, London, wrote an article in *The Independent* calling for a CTBT. He summed up with the paragraph: "The time when a comprehensive test ban could have halted weapons development has long since passed. In a limited sense, such a ban could still act as an obstacle to would-be proliferators. But its real importance would be symbolic: to show that an era of the nuclear age has now ended." (13/11/91).

All of these developments point to a fresh bout of thinking in Washington and London on the issue of a CTBT, although the UK has just carried out a nuclear test in Nevada (code-named Bristol),

Last year VERTIC produced a study report, commissioned by Parliamentarians Global Action, entitled "Scientific and Technical Aspects of the Verification of a Comprehensive Test Ban Treaty". The study looks at the requirements for verifying a global comprehensive test ban using seismic monitoring, remote sensing by satellite and aircraft, radioactive debris monitoring and on-site inspections. Parliamentarians Global Action have now kindly agreed to allow us to release the study to a wider audience. If anyone wishes to obtain a copy of the report, please contact the VERTIC office.

## Breakthrough on Open Skies

Negotiators in Vienna have cleared the major obstacle to concluding the Open Skies treaty between Nato and the former Warsaw Pact nations. The USSR has now dropped the demand to exclude areas within the Union, and the demand to fly over bases of treaty parties in third countries. Only normal civilian restrictions will apply to the overflights. The USSR has also proposed the frequency of overflights to be of the order of one per week which is in line with other proposals.

The USA has accepted complete equality of sensors so that there will be a sensor package for all weather 24 hour coverage. Currently available details on sensors are that these will probably include still cameras, electro-optic video cameras, synthetic aperture radar and infrared imaging systems capable of working in all weathers. Treaty participants will use standardised equipment. Countries can buy or lease from each other on a commercial basis.

It has been agreed, on USSR insistence, that Soviet planes will be used by delegations flying over Soviet territory if such planes are readily available, otherwise US planes will be used. Other states are more relaxed on this issue but the question of who will pay remains.

Data resulting from flights is to be shared with those treaty nations who want it. There will be 2 tapes for each of the infrared and synthetic aperture sensors. The overflying country will keep one and the overflown country will keep the other. Other countries can buy a copy of this raw data from either state, at a cost which will reflect the cost of the overflight and not just the cost of the tape. The issue of how to share photographs has still to be decided but perhaps an arrangement involving contact-prints will be the outcome.

The Open Skies regime will be of vital importance in verifying reductions mandated by the CFE agreement. It appears that no objections to the proposed regime have come from Soviet Republics. The Republics are consulting with the Soviet Central Authority in Moscow and agree to the proposals before they are put on the Table at Vienna. The Ukraine and Russia are also independently represented in the Soviet delegations.

The way is now clear to prepare a final draft of the treaty ready for signing, probably at the next Conference on Security and Cooperation in Europe (CSCE) meeting in Helsinki in March 1992.

## Soviet Optimism Over CFE Ratification

The Soviet Union's chief negotiator on the reduction of Conventional Forces in Europe, Oleg Grinevski, remains optimistic about the future of the CFE treaty. He believes that ratification by the USSR will be followed by full implementation and that although the effects of disruptions in the military command structure may require patience, they may actually have helped the Treaty (apparently also true also for Open Skies), because staunch opponents of it, like former defence minister Yazov, are no longer in post. However, both the CFE and START Treaties will need adjustments in the light of the ongoing upheavals in the Soviet Union, and some US Senators say that such adjustments must be approved by Congress. This debate may hold up ratification of the Treaties.

Grinevski says that, from the Soviet point of view, since the newly independent Baltic States are not mentioned in the CFE Treaty, their quota of tanks would have to be renegotiated if they decide to subscribe to it. If they do not want to subscribe to it then a timetable for withdrawal of Soviet tanks and troops would be worked out. It was agreed in October by the 22 CFE signatories that inspections, under the provisions of the CFE, of Soviet military equipment in the Baltic states can now only take place with those states' permission. The CFE Joint Consultative Group is working on arrangements. Grinevski did not mention the Ukraine; Ukrainian officials have said they will abide by both START and CFE but that they are not yet certain of how they view their obligations. Nato itself is still not clear whether the Baltics and the Ukraine are to be regarded as full successors to Soviet CFE obligations under international law.

Grinevski thinks that future arms control in Europe negotiations should move beyond "transparency of numbers" to "transparency of intentions" and common criteria for defence sufficiency. The CFE1a negotiations on reductions in the numbers of military personnel appear to be going well and it is hoped that they will be completed for the March 1992 Helsinki Summit.

## The Break up of the USSR and Nuclear Proliferation

Soviet Defence Minister Shaposhnikov has been reassuring the West that no republic was demanding sole control over nuclear weapons on its territory, although leaders had asked for numbers and locations. He also said that destruction of nuclear artillery and short-range nuclear missiles was going ahead as planned, with the help of republics. However, the call by the Soviet Congress of People's Deputies for secessionist republics to join the NPT and CSCE does not guarantee that they will do so. The *New York Times* has called on President Bush to act with urgency to prevent a dangerous situation becoming even more dangerous, by quickly ratifying START and then agreeing to cuts which would eliminate missiles outside Russia.

Particular aspects of the dangers of proliferation arising from the disintegration of the Soviet Union have been addressed in several articles. A Soviet company associated with the Soviet arms complex is offering to carry out nuclear explosions for peaceful purposes (*International Herald Tribune*, 8/11/1991). Initially it is proposed that nuclear detonations be used to incinerate toxic waste, with such waste being transported to the USSR in special canisters, trucks and ships, but other operations in other countries are foreseen. Such operations might include the creation of underground storage vaults, stimulation of gas and oil production, extinguishing fires in gas wells and seismic exploration of geologic formations. Destruction would take place 800 metres underground; a nuclear bomb would be surrounded by waste and then exploded. The cost would be between \$300 and \$1,200 per kilogram. Discussions with companies in the US and Canada have been taking place. A company spokesman said "It doesn't matter who, where or when. We have all the technologies and they are going to be used". Critics of the plan say that devices could get into the wrong hands and that environmental degradation would increase under such a plan. It is recognised, however, that such schemes arise from the fact that Soviet weapons scientists are desperate for hard currency.

An article in the *New York Times* (24/10/1991) by Thomas Neff, author of "The International Uranium Market" recommends striking a deal with the USSR over warhead uranium. At present the Soviet nuclear arsenals contain some 500 tons of highly enriched uranium and about 100 tons of plutonium and that some 40% of this will become available under arms control agreements. The fear is that either commercial markets will be flooded with such uranium or that weapons-grade materials could be sold to the highest bidders. Neff says that if diluted with natural uranium, both highly enriched uranium and plutonium could be used in civilian reactors in the West. He says that trade credits could be offered in return and that the central government could use such credits to negotiate with republics for their warhead materials. 10,000 warheads might be worth about \$2 billion to the Soviet Union. Neff says that the USSR and others could be reassured about their security by diluting the materials to a level that would make reuse of it for weapons difficult and transport safer. The IAEA could be involved in safeguarding the whole process from dismantling to conversion to reactor fuel. Neff says that his plan would help satisfy non-nuclear states that the superpowers were finally keeping their part of the bargain in the NPT

and ends by saying that if the bargain was struck the US should accept bilateral monitoring of its weapons and ensure that all subsequent processing of materials from the weapons should be carried out under international control.

## Iraq and Non-Proliferation

Documents seized by the UN inspectors indicate that the Iraqis had, in the year before the invasion of Kuwait, successfully carried out 20 tests of nuclear detonators produced at the Al-Athir nuclear facility. They had managed to direct the force of a conventional ring of explosives at an initiator consisting of polonium and beryllium separated by a thin layer of gold leaf. The shock waves from conventional explosives had been directed to rupture the gold leaf and bring the two elements together causing a surge of neutrons which could then have been used to initiate the nuclear chain reaction. The precise timing needed to set off the nuclear chain reaction had been achieved. It had previously been thought that the Iraqis had not been able to solve these technical problems. The primary limiting factor in the Iraqi nuclear program was therefore their problems in obtaining the necessary amount of enriched uranium or plutonium for a bomb. The documents appear to confirm that they had less than one gramme of plutonium. The scientists were also having some problems getting test results to correlate with computer calculations.

Before these latest revelations Robert Galluci, deputy chair of the UN special commission on Iraq had commented on the verification implications of what the commission was discovering: "We are struck by how much we didn't know about a nuclear weapons program in a country where we suspected a nuclear weapons program. We ought to be cautious about how much confidence we have in our estimates" (*Defense News*, 4/11/1991).

## Update on Iraqi Chemical Weapon Capabilities

Officials in the UN inspection team in Iraq have discovered that at least 30 Scud missiles in chemical weapon depots near Baghdad and at Basra had been fitted with warheads containing sarin and mustard gas. However, there are doubts that the missiles could have been accurate or even launched at all, due to the technical difficulties associated with mating unsophisticated ballistic missiles and crude chemical warheads. There was no evidence that the chemical-capable Scuds had ever been tested. Apart from the Scuds, many of the rockets, grenades and 122mm and 155mm artillery shells so far examined in the depots had also been crudely fitted with chemical warheads consisting often of plastic containers of chemical attached to explosive charge. The artillery shells had been filled with mustard gas and the rocket warheads with sarin.

In all, the Iraqis are now thought to have had some 100,000 chemical bombs rather than the 40,000 they declared. Half have been destroyed. Some of the remainder are in an unstable condition because the heat has caused build up of chemical pressure in the warheads. Some bombs contained 150 litres of sarin, enough to kill up to 150,000 people.

The USSR and Canada have offered the use of mobile incinerators to destroy the weapons, but the procedure is slow and costly. The UN commission is trying to determine whether the Al-Muthana chemical weapons production complex could be adapted to destroy nerve agents by caustic hydrolysis.

Other inspectors have been examining in detail and then destroying the 'superguns'. It now seems that their capabilities were less than was first thought. Apparently the assembled 350mm gun could only have launched a 15kg explosive charge some 150km. There was evidence that this gun had been test-fired. The larger unassembled 1,000mm gun could have launched some 408kg of explosives. It is now thought that the smaller gun may have been intended to launch small satellites.

Rolf Ekeus, the head of the commission, has estimated the cost of destroying the Iraqi conventional weapons alone at some \$200 million.

## Pressure on North Korea over Alleged Nuclear Weapons Programme

Western intelligence agencies continue to allege that nuclear reprocessing facilities capable of producing weapons grade plutonium are under construction at the Yongbyon site 100 km north of Pyongyang, North Korea's capital, and could be completed by 1993. They also say that North Korea could be able to produce nuclear devices possibly as soon as 1995. *Der Spiegel* says US intelligence agencies have discovered that German companies have been involved in the North Korean programme. North Korea continues to deny that it is attempting to build nuclear weapons.

However, North Korea still refuses to allow IAEA inspections which its Non-proliferation Treaty signatory status obliges it to do. North Korea signed the Treaty in 1985. It has consistently said that before it will allow inspections all US nuclear weapons in South Korea must be withdrawn, and has now added a new pre-condition: that South Korea must remove itself totally from the US nuclear umbrella. Recently, however, North Korea has made a conciliatory gesture by announcing that it is ready to permit international inspections of its nuclear installations if the US were to allow inspections to guarantee all US nuclear weapons are being removed from South Korea.

President Roh's promise that South Korea would not manufacture, store or use nuclear weapons has been described by the North Koreans as "insignificant". The US has some 40 nuclear-tipped artillery shells and 60 other nuclear bombs including Lance battlefield nuclear missiles in South Korea. There has been speculation that air-launched nuclear missiles could be left in place.

Multinational attempts are under way to persuade North Korea to stop its programme. Japan is applying economic leverage. China's relationship with North Korea has cooled as it recognises the destabilising effects of its former ally's activities, but it is warning against isolating the country. US Secretary of Defence Dick Cheney has said that he fears that some Soviet nuclear scientists could sell their expertise to North Korea. The US is encouraging the setting up of a North-East Asia forum on

security issues but neither it or South Korea has ruled out military action.

Such action, however, could have far more dangerous results than the US attacks on the Iraqi research reactors: "The possibility of an Asian Chernobyl is very real" (Michael Mazarr of the Centre for Strategic and International Studies, *Financial Times* 14/11/1991 ).

## In the News

### WEU Satellite Data Centre to be in Spain

The WEU Satellite Data Centre, which was a result of a decision taken on June 27, will be situated in Spain with a British Director (Barry Blaydes, MOD). This latest decision was taken at the WEU Ministerial meeting of 18 November. The UK had put in a bid to have the centre based at Farnborough, Hampshire. As the UK National Remote Sensing Centre Ltd (part of the British Aerospace Group) is also based at Farnborough the bid was clearly a strong one. It is a pity for the British Space Industry that the opportunity was lost - perhaps as a result of recent reticence on the part of the Government to back the concept of a WEU satellite system.

### UN Team Turns to Psychics for Help

A report in the *Guardian* by Martin Walker (20/11/91) reveals that US Army officers on a recent inspection team in Iraq have been assisted in their search by former US intelligence officers who have set up a psychic research consultancy. Apparently, the psychics identified telepathically two biological weapons sites which are now being sought by the team inside the country. Major Edward Dames, president of the PSI Tech company said:

"Our team.....are mostly ex-military intelligence and we have all been rigorously trained to unlock the data base inside our unconscious". VERTIC makes no comment.

### UK Nuclear Test

On the 26th November at 10.35 am, Pacific Standard Time, Britain conducted a nuclear test in Nevada, USA. The test, code-named Bristol was unannounced and therefore under 20kt.

## VERTIC News

On 14 February 1992, VERTIC will be co sponsoring a meeting of the Royal Astronomical Society and Joint Association of Geophysics. An international panel of speakers will discuss the subject which is entitled "Detection of Underground Nuclear Explosions". The meeting will be held at the Geophysical Society, Burlington House, Piccadilly, London. There will be more details of the meeting in the next issue of *Trust and Verify*

VERTIC has now employed a project director for a new study on the Verification of a Greenhouse Gas Convention. John Lanchbery will be spending the next few months carrying out groundwork for the study, the first phase of which will be completed in time for the UN Conference on Environment and Development (UNCED) in Brazil in June 1992. He would welcome contact with other researchers in the same field.

Copies of the VERTIC publication, *Verification Report 1991 - Yearbook on Arms Control and Environmental Agreements*, edited by J. B. Poole (£20) are still available by mail order from our office or can be ordered through your local bookshop.

### **What is VERTIC?**

VERTIC is an independent organisation aiming to research and provide information on the role of verification technology and methods in present and future arms control agreements. VERTIC co-ordinates six working groups comprising 21 UK consultants and 11 overseas advisors. VERTIC is the major source of information on verification for scientists, policy makers and the press. VERTIC is funded primarily by grants from foundations and trusts and its independence is monitored by an Oversight and Advisory Committee.

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