

## Bush ditches the BW protocol

In its latest assault on multilateral treaty-making, the administration of US President George W. Bush has rejected both the draft protocol to the 1972 Biological Weapons Convention (BWC) and the entire ‘approach’ that it represents. On 25 July, US Ambassador Donald Mahley told the Ad Hoc Group (AHG) of states parties, which has been negotiating the protocol for the past six years, that the so-called Composite Text produced by its Chairman, Hungarian Ambassador Tibor Tóth, ‘would not improve our ability to verify BWC compliance’ and would ‘put national security and confidential business information at risk’. Extraordinarily, the Ambassador said that Washington could not conceive of any changes that would improve the draft to make it acceptable. In an opaque reference to the constitutional requirement for the Senate to approve ratification of treaties, he admitted that it could not even be predicted with ‘reasonable probability’ that the US could have become a party to a protocol that did have ‘substantive merit’. Mahley pledged that his country would develop ‘other ideas and different approaches’ to strengthen the BWC, which would be explored over coming months.

Paradoxically, the relative weakness of the protocol’s proposed verification regime is of the United States’ own making. Contrary to its longstanding support for strong verification regimes generally, in this case it attempted consistently to water it down on the somewhat illogical basis that it regarded the BWC as inherently unverifiable. The US delegation even insisted that the AHG not use the word ‘verification’, preferring ‘strengthening compliance and transparency’. This implied that Washington was holding the exercise to lesser standards. But, as Mahley’s speech reveals, the US is holding the protocol not to the normal standards of verification, but to impossibly high ones. The claim that the BWC is unverifiable has thus had the beauty of becoming a self-fulfilling prophecy.

The arguments used against verifiability are specious, in logic and in practice. The Ambassador argued, for instance, that the protocol’s on-site verification provisions could never be strengthened to provide ‘useful, accurate, and complete information to the international community’. Even the ‘most intrusive and extensive on-site activities physically possible’, he said, could not do so. This is unconvincing: complete transparency of all BW-related activities and total intrusiveness would, of course, produce complete reassurance and verifiability. On more practical grounds, to expect ‘complete information’ from any politically acceptable verification system is unrealistic. As a result of its unparalleled verification experience, especially with a difficult interlocutor like the Soviet Union, the US knows better than any other country that verification systems can never be designed to be 100 percent effective in detecting non-compliance. What they aim for is high probability of detection and early exposure of non-compliance in order to deter potential violators. The question is how to balance effectiveness and intrusiveness with the costs and the potential for national security data and confidential business information to be inadvertently divulged.

### Inside this issue . . .

Angela Woodward examines the issue of domestic enabling legislation for the Landmine Convention. In addition, all of the usual features: Verification Watch, Science and Technology Scan, Verification Quotes, Book Reviews and VERTIC News and Events.

The Verification Research, Training  
and Information Centre (VERTIC)

Baird House  
15–17 St. Cross Street  
London EC1N 8QW  
United Kingdom

tel +44 (0)20 7440 6960  
fax +44 (0)20 7242 3266  
e-mail [info@vertic.org](mailto:info@vertic.org)  
website [www.vertic.org](http://www.vertic.org)

While less than perfect, the draft protocol would at the very least: create greater transparency than currently exists; open up the possibility of challenge on-site inspections in the case of suspected manufacture or use of BW; provide an international forum for any state party to air its compliance concerns; and create a relatively cheap verification organisation tasked with keeping global attention focused on the BW threat.

At the behest of the United States, the draft protocol tackles activities most relevant to clandestine BW production, including research involving listed agents, bio-defence programmes, high containment bio-facilities and aeriolisation of agents. And it contains more safeguards to protect confidential information, again at Washington's insistence, than the 1993 Chemical Weapons Convention (CWC), to which the US is a state party. In addition, the US would continue, even with a perfect protocol, to rely on its own 'national technical means' to detect BW programmes worldwide and to feed information into the international system as it chose.

Ambassador Mahley's claim that the draft protocol 'does not provide anything remotely resembling a deterrent function on a proliferator, even a non-state actor' is especially worrying. Its 'investigations' procedure in the case of alleged production or use of BW is equivalent to a challenge inspection found in other regimes and it alone would give a potential violator pause. To deny that such a provision has any deterrent value calls into question the deterrent effect of the CWC, the 1996 Comprehensive Nuclear Test Ban Treaty and other arms control and disarmament agreements. Moreover, it is misleading to suggest that the BW protocol was ever intended to deter non-state actors completely. The protocol would require that states parties enact domestic penal sanctions against non-compliance by

non-state actors within their jurisdiction. But the truth is that those non-state actors of most concern, such as Osama bin Laden's network, are by their very nature not under state control and, therefore, not deterrable by a treaty between states.

The great danger is that the querulous US stand on BW verification will give succour to states that have traditionally been anti-verification and will help them argue that the verification regimes of other existing or proposed treaties will damage their sovereignty, national security or commercial interests.

### What new ideas?

It is galling to other states, like the UK, which favour the protocol and have worked so hard to make it a reality, that the US has waited so long to pull the plug and only now promises 'new approaches'. If such new approaches are needed and conceivable, why has it taken the US delegation so long to produce them? It is highly suspicious that a government with such enormous resources has not been able to provide even a conceptual outline of new ideas, either in years past or in the six months since the Bush administration came to power. The probability is that there are no new ideas: the options are a legally binding treaty or a politically binding agreement, verification or confidence-building measures, intrusiveness or non-intrusiveness. All have been tried or proposed.

In fact, Mahley admitted that all of the United States' new ideas—reinvigorating' the Australia Group's system of export controls, increasing BWC membership, a code of conduct for biologists and strengthening human immunity to disease to decrease the effectiveness of a BW attack—could all be done outside of a protocol framework. This begs the question of why should they replace, rather than supplement, a protocol.

### Other recent American multilateral initiatives . . .

The UN Conference on the Illicit Trade in Small Arms and Light Weapons in all its aspects, held in New York from 9–20 July 2001, finally agreed a Programme of Action on 21 July, following tense negotiations on major items, including regulation of civilian ownership, arms brokering and the monitoring and tracing of global weapon sales. Consensus was only achieved by watering down key provisions, leaving many governments and civil society groups disillusioned by the aggressive stance taken by the US delegation in opposing any constraints on the legal, as opposed to the illegal, trade in conventional weapons. Two days later more than 180 parties to the 1992 UN Framework Convention on Climate Change reached agreement in Bonn, Germany, on implementing the 1997 Kyoto Protocol. Last-minute compromises were made to satisfy Australia, Canada and Japan, particularly with regard to the use of carbon 'sinks' to assist states in meeting their reduction targets and the use of penalties to enforce compliance. The US refused to join the consensus, after earlier this year pronouncing the Kyoto Protocol dead.

Detailed analysis of the verification aspects of these agreements will appear in the next edition of *Trust & Verify*.

## A hidden agenda?

The way that the Bush administration has handled the BW protocol is exactly how it dealt with the Kyoto Protocol: announce a policy review, reject the existing draft treaty, and promise consultations and new ideas. Both represent the type of strategy that would be adopted by a party seeking to destroy an agreement without paying too high a political price. So what are the true motivations behind Washington's policy? In this case, one can adduce a general antipathy to multilateral arms control and disarmament agreements and opposition to any constraints on US freedom of action. And yet the US itself does not want to produce BW and the current administration genuinely fears BW proliferation—two factors that would seem to demand binding, verifiable, multilateral treaties.

US policy towards the protocol appears, above all, to reflect the undue influence both of the biotechnology and pharmaceutical industries and of the Pentagon. The most vocal industry body, the Pharmaceutical Research and Manufacturers of America, is understandably preoccupied with the effect that intrusive verification might have on its members. The Pentagon is rightly concerned about its military secrets. But the US government as a whole needs to balance these worries with broader international and nonproliferation objectives and the concerns of its allies, all of which support the protocol.

## The way forward

Given the adamant US declaration that no BW protocol, however strong, will ever satisfy it, the only alternatives are to abandon the effort to establish a BWC verification mechanism, which is what the US really wants, or for those states committed to the undertaking to go it alone. The latter is more appropriate for the BW protocol than for the Kyoto Protocol: while the United States produces 25 percent of global greenhouse gases, and is, therefore, a major contributor to the climate change problem, it is not a likely BW proliferator. Moreover, the proposed verification regime is relatively inexpensive and would not necessarily require a US financial contribution.

An overwhelming majority of delegations have said that they view the Chairman's draft positively. At the very least, continuing with the negotiations will flush out other countries that have been hiding behind the policy of the United States, but which, in reality, also want to ditch the protocol. For the sake of preventing the real threat of BW proliferation, though, the goal should be a verification regime that most of the world can support now and which the US might eventually be seduced into joining.

Trevor Findlay  
Executive Director, VERTIC

## Verification Quotes

There are some who are bleating that any agreement is better than no agreement. That is simply foolhardy. The draft provisions, because they have no monitoring muscle, could make a weak treaty even weaker

*Amy E. Smithson, the Henry L. Stimson Center, Washington, DC, on the BWC draft protocol, quoted in Vernon Loeb, 'Bush Panel Faults Germ Warfare Protocol: Administration is Advised to Reject Proposed Inspection Rules for 1972 Treaty', Washington Post, 27 May 2001, p. A02*

It's now easier to monitor worldwide social ills—and to do something about them.

*Michael Elliott, 'Global agenda: we're all our brothers' keepers', Time, 7 May 2001, p. 55, commenting on 'No escape: male rape in US prisons', Human Rights Watch Report, April 2001, www.hrw.org*

In rejecting formal treaties, Bush abandons agreed verification procedures that will become increasingly important at lower force levels, as will specific provisions to guard against rapid breakout changing the strategic balance. In charting the nuclear future, Bush has apparently forgotten the admonition of President Reagan: 'Trust but verify'

*Spurgeon M. Keeny, Jr., 'The First 100 Days', Arms Control Today, May 2001, www.armscontrol.org*

The Bush administration and its supporters in Congress have claimed repeatedly that international agreements and treaties like the nonproliferation treaty are unverifiable. Clearly they can be cheated on and have been, most particularly by Saddam Hussein's Iraq. The obvious cure for such cheating is to deal with it directly and to remedy infractions of the nonproliferation norm when they occur, and at their root . . . The United States could start by giving full financial support to the International Atomic Energy Agency and the Organization for the Prohibition of Chemical Weapons

*Richard Butler, 'A Likely Result of Missile Defense? More Missiles', International Herald Tribune, 3 May 2001, p. 4*

We noted that the biological and toxin weapons convention, which entered into force in 1975, did not include a verification process, which severely undermines its credibility. Again, the United States argued for the right to refuse intrusive inspections on grounds of commercial confidentiality. We urge the Government to impress on the United States that a strong verification procedure is a viable goal, and to exert maximum efforts to that end

*Mr Donald Anderson, MP, during a House of Commons debate on Weapons of Mass Destruction, summarising the Foreign Affairs Select Committee's position, Hansard, 15 March 2001, column 1229*

# Implementing Ottawa: laying down the law on landmines

The 1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-personnel Mines and On Their Destruction (Ottawa Convention) obliges each state party, under Article 9, to take all appropriate legal, administrative and other measures to prevent and suppress forbidden landmine-related activity. This includes action by any person, or on territory, under the state party's jurisdiction or control. States are required to introduce penal sanctions to punish and deter such behaviour. Yet despite the impressive speed by which they have signed and ratified the accord, the rate at which states have enacted national legislation has been slow. While the quality of legislation passed to date is on the whole impressive, there is a danger that imprecise or narrowly drafted domestic enabling laws may weaken application of the treaty's provisions.

As of June 2001, only 30 countries—just over a quarter of all states parties—had enacted some form of domestic enabling legislation. Of these, eight claim that national legislation passed before the agreement entered into force, on 1 March 1999, effectively implements the treaty's provisions. The other 22 nations have passed legislation or amended existing laws since the treaty entered into force. While some of these states have passed legislation that is solely intended to implement the treaty, others have chosen instead to use legislation regulating a range of weapons, including anti-personnel landmines, for this purpose.

Of the 86 states without implementing legislation on 1 June 2001, at least 13 have a bill at the drafting, debating or development stage; the remainder have still to begin a legislative process. Some nations, including Ecuador, Fiji, Mexico, Pana-

ma, Portugal and Venezuela, have a provision in their respective constitutions that makes treaties self-enacting on ratification or accession. As a result, they consider the Ottawa Convention to be in force domestically, even though no legislation has been passed either to implement the agreement as a whole or specific treaty measures, such as penal sanctions. Other states, like Andorra and Denmark, have passed administrative orders or formed commissions or agencies to meet their obligations under Article 9. But these measures do not put in place the penal sanctions required by the treaty. Jordan, Peru, Thailand and Tunisia, meanwhile, have statutes applying to broad categories of weapons, such as explosive devices, which predate the Ottawa Convention. However, pre-existing statutes may not implement the treaty as effectively as specific ones passed after the accord entered into force.

In many cases, the delay in enacting legislation is due to limited resources or to the presence of more pressing domestic issues. Some states feel that legislation is unnecessary, since no landmine-related activities have ever taken place within their borders. This position is unsatisfactory, as creating penalties for treaty violations is a mandatory obligation. Also, there is no guarantee that prohibited actions will not occur in such countries in future. Without legislation that has extraterritorial coverage, moreover, there is nothing to prevent nationals from these nations carrying out prohibited activities in other states not party to the Convention.

While the provisions of the Convention have been broadly implemented by those states with legislation, their enactment varies considerably. Some countries have left out elements of

## States parties with pre-existing implementation legislation at entry into force

Austria [1997] Belgium [1995] Guatemala [1997] Ireland [1996] Italy [1997] Jordan [1953] Luxembourg [1995] Switzerland [1996]

## States parties that have enacted implementation legislation since entry into force<sup>1</sup>

Australia [1998] Cambodia [1999] Canada [1997] Czech Republic [1999] France [1998] Germany [1998] Honduras [2000] Hungary [1998] Japan [1998] Malaysia [2000] Mali [2000] Monaco [1999] New Zealand [1998] Nicaragua [2000] Norway [1998] Peru [1998] Senegal [1999] Spain [1998] Sweden [1998] Trinidad and Tobago [2000] United Kingdom [1998] Zimbabwe [2001]

NOTES 1 Information correct as of 1 June 2001

the treaty from their legislation, some have been reluctant to go beyond its basic provisions, while others have gone well beyond them. Issues of concern include definitions of anti-personnel mines, provisions implementing treaty prohibitions, the extent of penal sanctions, the treatment of anti-personnel mine inventories retained for training purposes under Article 3, and potential exemptions to the ban during joint force operations with non-states parties.

Ideally the legislative definition of an anti-personnel mine should reproduce the one contained in the treaty text. Although some states have adopted a broader definition and, therefore, expanded the scope of the agreement as it applies to them, others have created their own definition that may extend or limit the definition in the Convention.

National legislation criminalising activities prohibited under the treaty should include provision for extraterritorial application. This is needed to prevent all legal entities—citizens or companies—from conducting prohibited activities in non-states parties, or from contracting these activities out to companies in foreign, non-state party jurisdictions. To further preclude the involvement of indigenous firms in offshore production, states parties should also impose bans on the transfer of related technology.

The imposition of penal sanctions for activity prohibited under the treaty not only serves as a useful deterrent, but is also a legal obligation under Article 9. Examples of such penalties in current legislation include a combination of fines and terms of imprisonment for a range of offences. The severity of the penalty reflects both the deterrent effect that each state believes it will have on its citizens and the seriousness with which it regards the offence.

Under Article 3 of the treaty, states parties are authorised to retain mines for development of, and training in, detection, clearance and destruction techniques. General agreement among states parties is that the number of mines retained should not exceed the absolute minimum necessary. While many nations have expressly authorised the retention of mines under the Article 3 exception, few have legislated a ceiling on the number to be kept.

The most contentious provisions in national legislation are those authorising the participation of armed forces of states parties in joint military operations with non-states parties that continue to use anti-personnel mines. Many states parties face competing commitments both to meet Ottawa treaty requirements and to fulfil obligations under security alliances. In particular, members of the North Atlantic Treaty Organisation (NATO) are under pressure to maintain joint force interoperability and integrated command structures with the US, a non-state party. While some legislation enacted to date

### The OSCE Handbook, third edition

Organisation for Security and Co-operation in Europe,  
Vienna, 2000, pp. 199, ISBN 3-902107-00-6  
Available free from the OSCE

The purpose, structure and operation of the Organisation for Security and Co-operation in Europe (OSCE) are difficult for the outside observer to ascertain. The OSCE essentially provides an umbrella for a wide and sometimes confusing range of politically binding activities designed to enhance economic, political and social stability in Europe. The third edition of the handbook thus provides a useful, updated introduction to its structures and institutions, field activities, decision-making mechanisms and procedures, and outside contacts, including 'partners for co-operation' and non-governmental organisations. It contains lists of OSCE meetings, maps and contact information. As an official text, the handbook is also a useful introductory guide to official terminology and its usage. For all its worth, however, it provides only the basic facts: the reader will have to turn elsewhere for analysis of the broader implications of the regime and possible future developments.

John Hart, On-Site Inspection Researcher, VERTIC

authorises joint operations, this is often limited to activity that does not constitute 'active assistance' in prohibited activity. Ambiguity over the definition of 'active assistance' creates uncertainty on its future application, despite the well intentioned protestations of states parties that they will act in good faith in these circumstances.

Propensity towards full compliance with Article 9 reflects how seriously states regard landmine and other humanitarian issues. It may serve as an indicator of a country's political support for the landmine ban. There is still much to be done to implement Article 9: three-quarters of all states parties have yet to pass legislation. If states parties adopting Ottawa Convention legislation or regulations enact sufficiently stringent measures, avoiding potential loopholes, domestic implementation will amply fulfil the promise of the treaty.

Angela Woodward  
Legal Researcher, VERTIC

This is a summary of the VERTIC paper 'The Mine Ban Treaty and National Implementation Legislation', *Landmine Monitor 2001*, Human Rights Watch, Washington, DC, 2001 (forthcoming).



### Nuclear safeguards round-up

The International Atomic Energy Agency (IAEA)'s Board of Governors evaluated implementation of nuclear safeguards in 2000 at their meeting from 11–14 June in Vienna, Austria. In the 140 states with safeguards agreements (70 of which are engaged in significant nuclear activities), the IAEA 'found no indication of diversion of nuclear material placed under safeguards or of misuse of facilities, equipment or non-nuclear material placed under safeguards'. For seven states that had a comprehensive safeguards agreement, as well as an Additional Protocol in force and being applied, the Agency also announced that it had found no indication of undeclared nuclear activities. The IAEA is still unable to draw the same conclusion for the 12 other states that have an Additional Protocol in force but which are not implementing it. The Board of Governors noted that the IAEA could not verify that there had been no diversion of safeguarded material by North Korea and that Iraq was not in compliance with its safeguards obligations under relevant UN Security Council resolutions.

Implementation and development of strengthened IAEA safeguards in 2000 focussed on six major areas: the use of additional sources of information; increased access for inspectors; safeguards technology and verification procedures; co-operation with state and regional accounting systems; training; and integrated safeguards.

Subject to approval by the IAEA General Conference, Dr Mohamed ElBaradei was appointed for a second four-year term as Director-General of the Agency.

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management entered into force on 18 June 2001, creating common standards for managing radioactive waste. The Convention covers spent fuel and radioactive waste from civilian sources, but potentially could also be applied to waste from military sources. While it does not provide for formal verification, the Convention does

As of 31 December 2000, 902 nuclear facilities and other locations were under IAEA safeguards. During 2000, a total of 2,467 inspections were performed at 584 facilities, representing 10,264 days of inspection work in the field. Safeguards expenditure from the regular budget amounted to US\$70.6 million. Member states contributed extra-budgetary funds of US\$10.3m for safeguards purposes.

establish a binding reporting system. At entry into force, the Convention had 25 states parties.

The need for improved verification of fissile material was highlighted during an International Conference on Security of Nuclear Material and Radioactive Sources organised by the IAEA, Interpol and the World Customs Organization in May 2001 in Stockholm, Sweden. During the meeting, experts revealed that the number of cases of nuclear smuggling has doubled over the past five years. Since 1993, 370 cases of illegal trafficking involving plutonium or enriched uranium have been revealed. One expert estimated, however, that these amount to only five to 10 percent of all actual cases. Only a few countries have radiation monitoring equipment on their borders. Moreover, according to an IAEA survey, 12 out of 14 installed systems did not meet minimum standards and 11 of 24 portable monitors failed or could not be tested. Meanwhile, a worker at the Karlsruhe recycling plant in Germany, which is being dismantled, was arrested in July for smuggling out a phial of plutonium, allegedly to prove how lax security was. In late July French police seized a small amount of highly enriched uranium, possibly smuggled from the former Soviet Union.

**Source** 'IAEA Board reviews record of safeguards implementation', *IAEA Press Release 2001/14*, Vienna, 18 June 2001; 'IAEA Board of Governors appoints Mohamed ElBaradei for second four-year term as Director General', *IAEA Press Release 2001/13*, 14 June 2001; 'Joint Convention comes into force', Vienna, 18 June 2001, [www.iaea.org](http://www.iaea.org); Rob Edwards, 'Plutonium for sale', *New Scientist*, 26 May 2001, pp. 10–11; *The Times*, 18 July 2001, p. 13; *The Times*, 24 July 2001, p. 11.

### OPCW's 1000th inspection

On 20 June the Organization for the Prohibition of Chemical Weapons (OPCW) completed its 1,000th inspection under the provisions of the 1993 Chemical Weapons Convention (CWC). A total of 462 facilities in 49 states parties have been inspected since the treaty entered into force in April 1997. Approximately two-thirds were chemical weapon-related facilities, while the rest were chemical industry plants. There have been no allegations of loss of confidential business information by parties.

The Sixth Conference of the States Parties, from 14–19 May, was dominated by the OPCW's financial shortfalls in 2000–01, totalling some €8.7m. The OPCW budget for 2002 was increased by 2.8 percent to €61.9m, a small decrease in

real terms over the 2001 budget. Although a voluntary fund has been established to offset the current budgetary shortfall, no contributions had been received as of the end of June.

Source 'The OPCW completes its 1,000th inspection', *OPCW press release no. 15/2001*, 4 July 2001; Pamela Mills, 'Progress in The Hague, developments in the Organization for the Prohibition of Chemical Weapons, quarterly review no. 34', *CBW Conventions Bulletin*, June 2001, no. 52, pp. 3–6; Alexander Kelle, 'Implementation on a low-flame', *Disarmament Diplomacy*, May 2001, no. 57, pp. 18–22.

## US alleges Russian violation of CFE

Following the Second Review Conference of the Conventional Armed Forces in Europe (CFE) Treaty in Vienna, Austria, from 28 May–1 June 2001, the US Department of State declared that 'Russia is not in compliance with certain aspects of the Treaty, in particular current or adapted Treaty limits in the so-called "flank" area, which includes Chechnya'. According to the US, it and other NATO member states will not ratify the adapted CFE treaty, which was agreed during the 1999 Organisation for Security and Co-operation in Europe (OSCE) summit in Istanbul, Turkey, until Russia is in full and verifiable compliance with its commitments. The Review Conference underscored the need for progress in implementing agreements between Russia and Georgia and Russia and Moldova on the withdrawal of Russian forces and installations from these states.

Source Press statement by US Department of State spokesman Richard Boucher, Washington, DC, 5 June 2001.

## Open Skies: ratification and certification

As reported in the last edition of *Trust & Verify*, Russia ratified the 1992 Open Skies Treaty in April 2001. Consequently, it was assumed that only ratification by Belarus was required for entry into force. It has since emerged that the Belarussian parliament (the Rada) ratified the treaty in May and that the presidents of Russia and Belarus signed their respective ratification bills in June. It is expected that the instruments of ratification will be deposited with the Hungarian and Canadian governments, which are the depositaries for the treaty, in November. The treaty would enter into force 60 days later, in early 2002.

Meanwhile, the German government is organising a 'test certification' of Open Skies aircraft at the German air force base in Fürstenfeldbruck from 30 July–10 August 2001. More than 30 nations will participate, some of which, including Bulgaria, Russia, Ukraine and the UK, will display their Open Skies planes for certification. The US Open Skies plane will be displayed, but it will not participate in the certification.

## New verification-related websites

*Information on Iraq at the University of Arizona*  
[www.geo.arizona.edu](http://www.geo.arizona.edu)

*Regional Arms Control Verification and Implementation Assistance Centre* [www.racviac.org](http://www.racviac.org)

Sponsored by Germany and located in Zagreb, Croatia, the Centre is part of the EU-initiated Stability Pact for Southeastern Europe.

*Military Abbreviations Dictionary* [www.bits.de](http://www.bits.de)

A searchable database of more than 37,000 abbreviations and acronyms from many official sources in a number of languages.

Belgium, Canada, Greece, Iceland, Luxembourg, Netherlands, Norway, Portugal and Spain will seek certification of their shared 'pod' containing Open Skies sensors, which is to be used under *Hercules* transport planes. If no problems arise, parties could decide that the exercise constitutes the real certification that is required after entry into force of the treaty.

Germany itself does not have an Open Skies aircraft because it was lost after colliding with a US transport plane off the coast of Africa in 1997. The German government apparently has no plans to replace it. To participate in the treaty, Germany would, therefore, have to rely on host countries providing a plane under the so-called 'taxi option'.

Source 'Duma ratifies Open Skies Treaty', *Disarmament Diplomacy*, May 2001; personal communication with the Zentrum für Verifikationsaufgaben der Bundeswehr, Geilenkirchen, Germany.

## Missile warning centre stalled over taxes

Construction of the Joint Data Exchange Center, agreed by the US and Russia on 4 June 2000, has reportedly not begun because of disagreements between the two sides over the payment of taxes. The Center, for which a site has already been selected near Moscow, would be staffed 24 hours a day by US and Russian personnel in order to prevent false interpretation of early-warning data. Originally, construction was to have been completed last year. The disagreement over tax liability, according to a US official, 'is the small flea on the tail of the dog of the issue'. The US is allegedly afraid of setting a precedent for other co-operative projects by giving in to Russian demands that American contractors pay taxes in Russia. The US is providing US\$7m towards the project.

Source Pamela Hess, 'US–Russia Missile Warning Center Stalled', *UPI*, 11 June 2001.



### Verifying torture

Dr Hermann Vogel, a consultant radiologist at one of the major hospitals in Hamburg, Germany, medically assesses and verifies claims of persecution and torture using x-rays as his main tool. He is reported to be able to prove whether someone has been physically or mentally abused or tortured, even if there are no external signs because of the lapse of time. Torture takes many forms and leaves varying signatures of psychological and physical damage on its victims. The validation of torture claims is often, as a result, a multi-disciplined investigative task. 'As a radiologist', Vogel said, 'I can identify the pathological changes in the bones and the soft tissues which are characteristic of torture. This can prove approximately when it happened, as the healing process may take several months'. Other methods, such as computer-aided topography and magnetic resonance imaging, can show up injuries to the nervous system, and other soft tissues, that are undetectable using x-rays.

Other types of torture, such as rape, can be harder to detect, but even this, Vogel claims, can be proven through automatic nervous system responses, such as sweating, pupil dilation, and the increased heart rate produced when people are asked to describe their ordeal. Vogel argues that these responses are impossible to fake. According to the UN, torture is carried out in more than a third of its 188 member states. Being able to verify that it has taken place can help to bring war crimes charges against those responsible and help monitor compliance with the 1984 Torture Convention.

Source 'On the trail of the torturers', *New Scientist*, 12 May 2001, p. 46.

### Tracking snipers

US-based BBN Technologies has developed a sniper detection device mounted on a helmet, which allows soldiers to track the trajectory of a bullet to its source. The US government's Defense Advanced Research Projects Agency financed the work as part of a programme to tackle the sniper problem that confronted peacekeepers in the Balkans in the 1990s.

Two or more sensors detect the acoustic vibrations from both the explosion of the gunpowder and the supersonic crack of the bullet as it travels. The sensors then radio the data to computers worn by soldiers. The computers combine a Global Positioning System with the ability to estimate the trajectory, calibre and speed of the bullet, the distance that it travelled

and the elevation of the sniper. The system displays the location of the sniper on a map. The new design has the advantage over earlier systems in that it works at greater distances and uses cheaper acoustic microphones, and simpler computers. The equipment still works even if it only detects the muzzle blast—if the gun is equipped with a silencer, for example. The ability to verify where snipers are located could help to save the lives of peacekeepers and assist with the enforcement of peace agreements. It would also assist in verifying compliance with cease-fire accords by permitting peacekeepers to determine which side was responsible, thereby permitting political pressure to be applied to end the attacks.

Source 'Sounding out snipers', *Scientific American*, July 2001, p. 22.

### Tracking greenhouse gasses back to source

Researchers have drawn the first global maps showing the presence of the greenhouse gas, carbon monoxide (CO). They have been produced using data provided by the National Aeronautics and Space Administration (NASA)'s *Terra* satellite. Launched in December 1999, the satellite, which has been collecting data since February 2001, orbits the earth 16 times a day. It measures the amount of CO in the atmosphere.

It is hoped that such pollution maps, when combined with more detailed and accurate models of atmospheric flows, will demonstrate how atmospheric pollution travels, thus allowing scientists to pinpoint the exact source of its production. Daniel Jacob of Harvard University said that this, in turn, would prove the viability of a tax on carbon emissions, a necessary part of the carbon trading system provided for by the 1997 Kyoto Protocol to the 1992 UN Framework Convention on Climate Change. Some scientists are confident that modelling techniques will become so accurate that it will be possible to identify pollution from particular road networks and individual factories, providing a very powerful verification tool.

Source 'Smoking gun', *New Scientist*, 9 June 2001, p. 13.

### Satellites: Americans go commercial . . .

The Pentagon is examining the possibility of using commercially available satellite imagery to help monitor arms control agreements and to reduce tensions in the Middle East. On 29



May a *Commerce Business Daily* notice was issued by the Defense Threat Reduction Agency asking industry for information on technology that can be used for such purposes.

Source 'DoD may hire private satellites', *Defense News*, 4–10 June 2001, p. 4.

### ... while Russia's are obsolete

Yuri Koptev, Director-General of the Russian Aerospace Agency, recently told the Russian parliament that the country's military and communication satellites are old and obsolete and cannot be replaced due to lack of funds. Russia's satellite fleet has shrunk by 50 percent over the past decade (from 600). Seventy-five percent of those remaining have reached the end of their lifespan—some are 20–30 years old. With a current budget of only US\$193m, compared to the \$1 billion that is to be spent by West European countries, there is little hope that the situation will be rectified soon. The collapse of the satellite network has worrying implications for Russia's early-warning capabilities, on which the stability of nuclear deterrence depends, and its ability to use national technical means to monitor existing and future arms control and disarmament agreements.

Source 'Russia's satellites are "obsolete"', *BBC News Online*, 13 June 2001, [www.news.bbc.co.uk](http://www.news.bbc.co.uk)

### Airships back up

The North American Aerospace Defense Command (NORAD) is working with the US army to develop two airships within the next five years to provide both wide area surveillance of the North American periphery and advance warning of approaching cruise missiles and other low-altitude aircraft. The helium-filled airships would be able to carry a 4,500-pound payload of communications and observation equipment, and would be capable of operating autonomously for as long as one year at a time. With a visibility of up to 400 nautical miles, this technology would be highly suited to a number of monitoring applications, including verifying compliance with disengagement and demilitarisation agreements.

Source 'NORAD eyes high-altitude airships for surveillance', *Jane's Defence Weekly*, 16 May 2001, p. 6.

### Solar powered plane soars

*Helios*, an unmanned aircraft powered by 62,000 solar cells, reached an altitude of 22,800 metres during its first test flight over the Pacific Ocean in mid-July. The craft is expected to beat the world record for the highest unmanned flight later this year. The plane has a wing span of 74 metres, its solar cells are capable of generating 40 kilowatts of power and its 14 pro-

pellers are powered by electric motors no bigger than those found in hairdryers

Scientists plan to fit the plane with fuel cells so that it can fly at night, giving it the ability to stay aloft for months at a time. Programme manager John Hicks described the plane as the 'poor man's satellite'. NASA managers plan to load it with scientific instruments, allowing them to study the depletion of the ozone layer, weather conditions and hurricanes. The plane's capability opens the door to a host of monitoring and verification tasks, and its cheapness suggests that developing countries, which often lack sophisticated verification tools, may be able to use it.

Source 'NASA readies solar-powered, high-altitude plane', *Reuters*, 26 June 2001; 'Solar craft aims for altitude record', *BBC News Online*, available at [www.news.bbc.co.uk](http://www.news.bbc.co.uk).

### Nanowalkers

Scientists at the Massachusetts Institute of Technology in the US have invented a tiny robot called a nanowalker, which is extremely agile and can take up to 4,000 steps per second. The three-legged, three-centimetre tall walkers are designed to act as precision tools to manipulate individual atoms or to build other nanomachines. The three legs can be made to change their length and even to bend according to the voltage applied, allowing the nanowalker to move at varying speeds. The nanowalker is capable of carrying out 200,000 measurements per second, and hordes of them can work in concert. Nanowalkers could be a useful verification tool in checking for the presence of chemical weapons or other dangerous munitions or working in dangerous environments.

Source 'Lord of the dance', *New Scientist*, 26 May 2001, p. 22.

### Handy landmine detector

A new handheld landmine detection system, developed by CyTerra Corporation after 15 years of research, combines, for the first time, a metal detector with ground-penetrating radar. The Handheld Standoff Mine Detection System promises to improve significantly the speed and safety of mine detection and operations. It can positively identify both plastic and metal landmines, avoiding the need to treat every piece of buried metal as a potential mine. The US army has awarded a contract to the company to reduce the present 17-pound package to just seven pounds, comprising a backpack with battery and computer equipment, and a detection wand. The lightweight version should be ready for deployment by 2004.

Source 'Handheld detector could speed clearance of land mine threat', *Defense News*, 26 February 2001, p. 16.

## New grant awarded to VERTIC

The Joseph Rowntree Charitable Trust has awarded VERTIC a new grant of £90,000 for operating costs over the next three years. VERTIC is deeply grateful to the Trust for its support over the past three years and for its expression of faith in the future of the organisation.

## Verification Organisations Directory 2001

VERTIC is set to release its *Verification Organisations Directory 2001*, a unique listing of all national and international organisations, non-governmental organisations and academic institutions involved in verification work and research. For example, the Directory covers national and international organisations involved in verifying the Conventional Armed Forces in Europe Treaty, the Chemical Weapons Convention, nuclear weapon-free zones and the Open Skies Treaty. The 60-page publication is organised alphabetically by country, listing the organisations based in each state. It is an invaluable reference tool for all organisations and individuals involved in every aspect of verification. Priced at just £15 (plus postage), there is a 10% discount for orders received before the end of August. For further details contact Thomas Withington@vertic.org. E-mail orders to info@vertic.org. An order form is available at [www.vertic.org](http://www.vertic.org).

## New briefing papers

VERTIC will publish three new *Briefing Papers* in July, tackling diverse issues. Daniel Feakes investigates the composite text of the Biological Weapons Convention protocol in 'The BW Protocol: Dissecting the Draft' (*Briefing Paper 01/1*). The ending of 13 years of continuous on-site inspections under the Intermediate-range Nuclear Forces (INF) Treaty and the agreement's indefinite verification are analysed by John Russell in 'The end of On-Site Inspections under the INF Treaty' (*Briefing Paper 01/2*). Pete Smith examines to what extent the use of 'carbon sinks' for mopping up greenhouse gases under Article 3.4 of the Kyoto Protocol is verifiable in 'Verifying Sinks under the Kyoto Protocol' (*Briefing Paper 01/3*).

## New Environment Researcher

Molly Anderson joined VERTIC as its Environment Researcher on 6 August. Molly previously worked at the Science Museum

in London, where she was a Senior Exhibition Developer. She holds a PhD in High Energy Physics from the University of Manchester and a first class BSc in Physics from the University of Sussex.

Meanwhile, Angela Woodward has ended her administrative role at VERTIC and become its Legal Researcher, while Ben Handley has taken over as the organisation's Administrator. VERTIC is indebted to Angela for her sterling work in reorganising and streamlining its administration since she joined the centre in April 1999.

## Staff News

TREVOR FINDLAY, along with other VERTIC staff, met with Jane Boulden on 24 May for a progress report on the *Verification and Compliance Handbook*, which is being prepared in co-operation with the UN Institute for Disarmament Research, as well as to plan a panel discussion on the draft in October. On 13–14 June, he attended a conference in Washington, DC, with Oliver Meier, organised by the Institute for Science and International Security, marking the tenth anniversary of the establishment of UNSCOM. Also in Washington, from 18–19 June, he and Oliver attended the annual Carnegie Conference on Non-Proliferation. On 20 June, they met with OJ Sheaks, head of the Department of State's Verification Bureau and Wade Huntly of the Nautilus Institute. On 26 June Trevor met with Dmitry Poliakanov of the Moscow-based Centre for Policy Studies (PIR) to discuss potential co-operation with VERTIC and with Paul Morris of the Royal Institute for International Affairs (RIIA), for a similar purpose. On 28 June, in The Hague, he met with Serguei Batsanov and Rolf Trapp of the OPCW for a briefing on verification of the CWC. Finally, on 6 July, he and Oliver Meier met with Ambassador Nobuyasu Abe, Japanese Ambassador to the UN in Vienna, to discuss the CTBT Article XIV Conference, to be held in September. He was otherwise involved in recruiting VERTIC's new Environment Researcher and editing various VERTIC publications.

BEN HANDLEY has been carrying out an increasing amount of VERTIC's administration, as well as being trained for assuming the full-time position of Administrator. He has also been involved in the recruitment of VERTIC's new Environment Researcher and has investigated new Internet Service Providers for the

## Sustainable Development International: Strategies and Technologies for Agenda 21, fourth edition

ICG Publishing Ltd., London, 2001, ISSN 1466-4379, pp. 212

Annual subscription £99 (two editions); back copies £49 each

Order at [www.sustdev.org](http://www.sustdev.org)

*Sustainable Development International* is a periodic publication, somewhere between a magazine and a journal. It seeks to draw together technical, strategic and commercial information related to the implementation of Agenda 21—the sustainable development agreement adopted at the Earth Summit in Rio de Janeiro, Brazil, in 1992. Short articles by experts are divided into seven sections, covering key sustainable development themes: energy, transport, water resource management, forestry, agriculture, health and social issues, and sustainable marine development. A section on ‘global issues’ precedes these articles. Somewhat incongruously, articles are interspersed with advertisements for relevant commercial organisations.

Like Agenda 21 itself, the articles cover a wide range of issues, so that no one item is dealt with in depth. However, the publication does provide a useful overview of the kind of action being undertaken to move the world towards sustainable development. It thus augments the work carried out by the UN Commission for Sustainable Development in monitoring implementation of Agenda 21. Although there is no particular section on verification, several of the contributions touch on verification issues, in particular the report by UN Secretary-General Kofi Annan on Information for Decision Making and Participation, which was presented at the ninth session of the Commission on Sustainable Development in April 2001. There are also interesting articles on the ‘Global Responsibility Communication Platform’, a tool to help companies and organisations with sustainability reporting obligations, and on the growing role of multi-stakeholder processes in international environmental governance.

Clare Tenner, Royal Botanic Gardens, Kew, UK

Centre. On 18 May, he attended a training session on negotiating skills at the Directory of Social Change in London.

**JOHN HART** published an article in the June issue of *The ASA Newsletter*, entitled ‘Preventing health and proliferation problems stemming from the Soviet BW legacy in Central Asia’. In May he attended the Sixth Conference of the States Parties to the CWC in The Hague, Netherlands, and on 5 July he attended the London-based Institute of Biology’s Workshop on the Biological and Toxin Weapons Convention.

**OLIVER MEIER** spoke on ‘Verification and Compliance—what’s needed’ at the seminar on ‘Biological Weapons and New Genetics—Avoiding the Threat’, organised by GeneWatch UK in London on 18 May 2001. He attended presentations by Professor Joseph Nye on ‘The future of American Power’ on 21 May at the International Institute for Strategic Studies (IISS). Along with Trevor Findlay he visited Washington, DC, attending seminars, conferences and discussions. While in

Washington, Oliver met with Ann Florini of the Carnegie Endowment for International Peace to discuss his work on the involvement of NGOs in the monitoring of international agreements. Between 23–29 June he participated in a conference organised by the Heinrich-Böll Foundation on ‘Arms control in Cyberspace: Perspectives for Peace Policy in the Age of Computer Network Attacks’ in Berlin, Germany, where he gave a paper on ‘Open Sources and Transparency: The Use of Cyberspace for Arms Control’.

Oliver contributed to the April 2001 issue of *Nuclear Weapons Convention Monitor* with an article entitled ‘The Verification of a Nuclear Weapon Free World: Closing the Gaps’. He has also become a consultant for the publication. Oliver wrote an article entitled ‘Will the EU Fill The Gap Left By US Reversal In Non-Proliferation Efforts?’ for *BASIC Reports*, and reviewed Michael Staack’s *Handelsstaat Deutschland* for the German political science quarterly, *Politische Vierteljahresschrift*. He has continued to edit VERTIC’s *Verification Yearbook 2001* and has worked on his own contributions for that publication.

**JOHN RUSSELL** continued to work with Jane Boulden on VERTIC's *Verification and Compliance Handbook*, as well as on his own work on the INF treaty. On 31 May he attended a public meeting on US missile defence, sponsored by Abolition 2000 and the British–American Security Information Council (BASIC). Speakers included Professor Paul Rogers of the University of Bradford and Nick Cohen of *The Observer*. On 11 June he and Oliver Meier attended a speech by NATO Secretary-General Lord Robertson at the RIAA on 'European Defence: Prospects and Challenges'. On 17 June John attended a meeting of the All-Party Working Group on missile defence at the House of Commons in London.

**THOMAS WITHINGTON** has been putting the finishing touches to VERTIC's forthcoming *Verification Organisations Directory 2001*. He has also assisted John Russell in publicising his forthcoming *Briefing Paper*. Thomas has organised the distribution of VERTIC's *Verification Yearbook 2000* to all UN missions in

Geneva, Vienna and New York. He has also maintained the VERTIC database and library.

**ANGELA WOODWARD** continued to train Ben Handley in the organisation's administration and finances. She co-authored VERTIC's paper for *Landmine Monitor 2001*, assessing national implementation legislation enacted under the Landmine Convention. On 15 June she met with Paul Ellis of the UK Ministry of Defence to discuss her research and practical implementation of the treaty by the UK. Angela attended the Peace and Disarmament Conference of the United Nations Association (UK) in London on 16 June and represented VERTIC at the UN Conference on the Illicit Trade in Small Arms and Light Weapons in All its Aspects in New York from 9–20 July. Angela is currently managing production of VERTIC's *Guide to Reporting under Article 7* for presentation at the third meeting of states parties to the Landmine Convention in Managua, Nicaragua, from 18–21 September 2001.



VERTIC is the Verification Research, Training and Information Centre, an independent, non-profit making, non-governmental organisation. Its mission is to promote effective and efficient verification as a means of ensuring confidence in the implementation of international agreements and intra-national agreements with international involvement. VERTIC aims to achieve its mission through research, training, dissemination of information, and interaction with the relevant political, diplomatic, technical, scientific and non-governmental communities.

**Baird House**  
15–17 St. Cross Street  
London EC1N 8UW  
United Kingdom

tel +44 (0)20 7440 6960  
fax +44 (0)20 7242 3266  
e-mail [info@vertic.org](mailto:info@vertic.org)  
website [www.vertic.org](http://www.vertic.org)

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**EDITOR** Trevor Findlay. **DESIGN, PRODUCTION & SUB-EDITING** Richard Jones.

**ANNUAL SUBSCRIPTION RATES** £20 (individual); £25 (organisation). To subscribe or to obtain a free e-mail copy, complete the coupon located on VERTIC's website.

**CURRENT FUNDERS** Ford Foundation, Joseph Rowntree Charitable Trust, Rockefeller Family Philanthropic Offices, W. Alton Jones Foundation, the John D. and Catherine T. MacArthur Foundation, Landmine Monitor.

**PERSONNEL** Dr Trevor Findlay, *Executive Director*; Dr Molly Anderson, *Environment Researcher*; Ben Handley, *Administrator*; John Hart BA (HONS), MA, *On-Site Inspection Researcher*; Dr Oliver Meier, *Senior Arms Control & Disarmament Researcher*; John Russell, MSC ECON, *Arms Control & Disarmament Research Assistant*; Thomas Withington BA (HONS), MA, *Networker & Information Officer*; Angela Woodward BA (HONS), LL.B., *Legal Researcher*.

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Printed in the UK by print@work, 5–8 Helmet Row, London EC1V 3QJ.