State compliance with the Ottawa Convention

Self-reporting slow and loose

The 1997 Ottawa Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Landmines and on their Destruction seeks to ensure compliance through mutual transparency and co-operation, rather than via a verification mechanism as found in other disarmament treaties. The key to this approach is self-reporting by states on their own compliance. In the absence of even a standing secretariat for the Convention, the UN is charged with receiving, collating, and disseminating such documentation.

Under Article 7 of the Convention, each state party is required to submit information on its compliance to the UN Secretary-General as soon as practicable, but no later than 180 days after the treaty enters into force for that particular country. For states parties that signed and ratified the treaty before it entered into force on 1 March 1999, the deadline was 27 August 1999. Each state party is required to update its report by 30 April each year. Documentation may be submitted in any of the six official languages of the Convention: Arabic, Chinese, English, French, Russian and Spanish. Information must be given in regard to nine categories of compliance (see the box on page two). While the treaty itself offers no further details about the form or method of transmission of such reports, the First Meeting of States Parties (FMSP) — held in Mozambique in May 1999 — adopted a standard reporting form. The FMSP also recommended that countries submit their reports electronically in order to expedite receipt and dissemination.

The UN is responsible for collating and transmitting the reports to all states parties, and its Department for Disarmament Affairs (DDA), which handles the UN Secretary-General's responsibilities under the Ottawa Convention, has created an 'Article 7 Transparency Measures' database for this purpose. It displays the reports in full in the language in which they were submitted. In addition each report is disaggregated into the various categories of information required. The general public can access the database on the UN website (www.domino.un.org/Ottawa.nsf), following a decision by the FMSP to facilitate its use by other states and organisations involved in landmine action activities.

So far the record of reporting under Article 7 has been patchy. As of 8 March 2000, 38 states parties had filed their reports, and 33 had not submitted their reports, many of which are the countries most affected by landmines. The remaining 21 states parties are not yet required to submit their documents, since 180 days have not elapsed since the treaty entered into force for them.

Some states are clearly experiencing difficulties with acquiring and determining the necessary information to include in their reports. Data held by militaries concerning the numbers and types of anti-personnel landmines owned, possessed, stockpiled or destroyed is not always available to the foreign ministry officials charged with compiling the reports. This culture of secrecy needs to be addressed: the Ottawa Convention was intended to usher in a new era of transparency and openness in landmine disarmament which needs to be

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The Verification Research, Training and Information Centre (VERTIC)

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
website www.vertic.org

recognised by all of the actors involved with the treaty. Other required information, such as the location of areas that are either mined or are suspected of having being mined, has never been accurately determined in some states.

Both the quality and quantity of data in some reports is questionable. Occasionally there are obvious discrepancies between information filed in national documents and that available from other sources. Even though the standard form provides for the minimum information legally required under the treaty, it has not resulted in the submission of standardised reports. Some papers are missing vital documentation. Both Yemen and Thailand submitted their Level One Surveys (describing the extent to which they are affected by landmines), which were prepared for them by the UN Mine Action Service (UNMAS). Although a 'supplementary information' category was included to allow states to offer further data voluntarily, few of them have done so. Some states parties, including South Africa, have placed restrictions on the publication of parts of their declarations, presumably for reasons of pride or national security.

Some states, though, have provided great detail. For instance, Slovenia submitted comprehensive information on the lot numbers of its stockpiled landmines. Canada offered map grid references for two sites that contain inert landmines used for the research and development of detection and clearance equipment. Australia and Canada have provided links to government websites, which offer more data under the 'supplementary information' category.

Procedural and technical issues

Reports have been submitted in Arabic, English, French and Spanish, but few of them have yet been accompanied by a translation. The UN has no funds at this stage to translate the documents into all official languages of the Convention. So far, Jordan is the only country to have filed a report in Arabic. However, given that such documents can only be incorporated in the UN database as picture files (requiring additional computing power to access) the transparency of the information, even for Arabic speakers, is hindered. It has been recommended that a summary of all of the reports be made available in the Ottawa Convention's six languages at the Second Meeting of States Parties (SMSP) in Geneva, Switzerland, in September 2000.

Encouragingly, initial indications show that among the states utilising electronic means to submit their reports and to access the database are developing and/or landmine-affected countries. But some states parties, both developed and developing, are filing only paper copies. Surprisingly, the UK — one of the most technologically advanced states parties — only submitted its lengthy report in a hard copy format. This increases the work of the DDA in terms of entering the

What the states parties to the Ottawa Convention must report

- Legal, administrative and other measures taken to implement the Convention, including the imposition of penal sanctions to prevent and to suppress prohibited activity carried out by persons or on territory under the state party's jurisdiction or control.
- The total number of stockpiled anti-personnel landmines owned, possessed or under the state's jurisdiction or control, including a breakdown of the type, quantity, and, if possible, lot numbers of each type of stockpiled anti-personnel landmine.
- To the extent possible, the location of all areas under the state's jurisdiction or control that contain, or are suspected of containing, anti-personnel landmines, including as much detail as possible on the kind and quantity of landmines and when they were emplaced.
- Types, quantities and, if possible, lot numbers of all anti-personnel landmines retained or transferred for development of, and training in, detection, clearance or destruction techniques, or transferred for the purpose of destruction. In addition, details of the institutions authorised by the state party to retain or transfer anti-personnel landmines.
- The status of programmes for conversion or decommissioning of anti-personnel landmine production facilities.
- The status of programmes for the destruction of anti-personnel landmines, including details of the methods used, the location of all destruction sites, and applicable safety and environmental standards.
- Types and quantities of all anti-personnel landmines destroyed after entry into force of the Convention, including, if possible, the lot numbers of each type of destroyed landmine.
- The technical characteristics of each kind of anti-personnel landmine produced, to the extent known, and those currently owned or possessed by the state party.
- Measures taken to provide an immediate and effective warning to the population of all mined areas.

State compliance with Article 7

The good[1]

Australia, Austria, Belgium, Bulgaria, Canada, Denmark, Former Yugoslav Republic of Macedonia, France, Ireland, Japan, Jordan, Netherlands, New Zealand, Norway, Slovak Republic, Slovenia, Spain, Switzerland and the UK.

The late[2]

Benin, Croatia, Germany, Holy See, Honduras, Hungary, Mexico, Niue, Portugal, Senegal, South Africa, Sweden and Thailand.

The really late[3]

Belize, Bolivia, Fiji, Swaziland, Yemen and Zimbabwe.

The missing

Andorra, Bahamas, Barbados, Bosnia-Herzegovina, Burkina Faso, Costa Rica, Djibouti, Dominica, El Salvador, Equatorial Guinea, Grenada, Guinea, Jamaica, Lesotho, Malawi, Mali, Mauritius, Monaco, Mozambique, Namibia, Nicaragua, Niger, Panama, Paraguay, Peru, Qatar, Saint Kitts and Nevis, Samoa, San Marino, Solomon Islands, Trinidad and Tobago, Turkmenistan and Uganda.

Notes: 1 Submitted early or on time; 2 Submitted less than one month late; 3 Submitted more than one month late. Information correct as of 8 March 2000.

information, and inevitably delays its availability on the UN database.

As to the requirement for states to submit their annual reports by April each year, it has not been decided whether this should involve the submission of a new report or simply amendments to the previous one, thereby creating a 'rolling text'. The SMSP needs to specify whether it is satisfied with the manner of reporting and whether future documents should be presented in a different form. The DDA will not change the structure of the database until it receives such clarification.

Conclusion

A number of decisions need to be taken by the SMSP if the self-reporting system for the Ottawa Convention is to function effectively:

- bilateral and multilateral assistance needs to be made available to ensure that all states have access to the necessary information technology to participate;
- states parties need to assess correctly and to make provision for the true costs of the reporting system, including those of the UN in maintaining and upgrading the database and translating national documentation. So far the UN has simply absorbed the costs of the necessary technology and human resources, despite the fact that its own budget is under severe pressure;
- states parties need to ensure that their own reports are correct and comprehensive and, where possible, supplemented with additional information relevant to their compliance; and
- a culture of transparency needs to be embedded in the activities of states parties that fall within the purview of the Ottawa Convention if self-reporting is to work properly.

Self-reporting already has a poor reputation in other arms control contexts, notably in respect of the 1993 UN Conventional Arms Transfers Register and the confidence-building measures for the 1972 Biological and Toxin Weapons Convention. It would be a pity if the Ottawa Convention added to this less than illustrious record.

Trevor Findlay, Executive Director
Angela Woodward, Administrator and Legal Researcher

This article is based on research for VERTIC's contribution to Landmine Monitor's second report on state compliance with the Ottawa Convention, which will be presented to the SMSP. VERTIC's first contribution, on national ratification and implementation legislation, was published in *Landmine Monitor Report 1999: Toward a Mine-Free World* under the title 'Landmines in International Law: Ratification and National Implementation'. A longer version was published as Joe McGrath and David Robertson, 'Monitoring the Landmine Convention: Ratification and National Implementation Legislation', *VERTIC Research Report* no. 5, September 1999.

Testing the politics of verification

Despite its title *The Politics of Verification* by Nancy Gallagher is one of the most comprehensive historical accounts of the negotiations to ban nuclear testing. The author uses this extended case study to track the debates about verification over more than four decades of arms control. She argues that verification is neither a dependent nor an independent variable in international politics, but an indivisible part of the political debate.

Gallagher identifies three main positions in political debates about verification in particular and arms control in general: advocates; cautious co-operators; and unilateralists. She describes how these different groups have dominated US arms control policies and how shifting coalitions among them can explain the US stance on verification issues. In so doing she explicitly rejects the argument that verification is a 'technical' question that can be solved in isolation from politics:

'Verification decisions cannot be completely "depoliticized"; domestic and international agreement depend on strategies to build blocking and winning decisions' (p. 214).

It is fascinating to read how different actors were able to create and to use 'myths' about verifiability in the case of the test ban. While it is unfortunate that the author could only devote a short chapter to the negotiations on the 1996 Comprehensive Nuclear Test Ban Treaty, it is one of the most succinct accounts of the politics of verification.

The book is exhaustively researched. Although the level of detail makes for hard reading at times, the inter-relationship between politics and technology in the context of (multilateral) negotiations has rarely been so meticulously examined. However, Gallagher's conclusion that 'the tremendous complexity of arguments over test ban verification makes the metaphor of a Rubik's Cube seem more appropriate than that of a standard two-level game' (p. 241) is somewhat far-fetched given that her own examination of domestic politics often resembles the conventional two-level analysis of international politics. Nonetheless, this book is a must read for everybody working on verification, test ban issues, or the politics of multilateral negotiation.

Reviewed by Oliver Meier

The Politics of Verification by Nancy Gallagher
(Baltimore/London: The Johns Hopkins University Press, 1999)
£37.00 (hardcover)

Verification Quotes

'As the chief negotiator for China, I would say this is an insult to the intelligence and capabilities of all negotiators who worked so diligently day in and day out and for so long on the treaty. I would strongly advise those guys to read the treaty, particularly the verification protocol, before jumping to such a conclusion.'

Ambassador Sha Zukang, Arms Control Director, Chinese Foreign Ministry, Beijing, on claims that the CTBT is unverifiable. Quoted in John Pomfret, 'Official Says U.S. Missile Shield Would Shift Balance of Power', *Washington Post* Foreign Service, 11 Nov. 1999, p. A01.

'If that stone is removed, the whole system of treaties will collapse. The ruins will be as follows. START I will be dead, all mutual exchanges of information will be ended, hundreds of verification missions that both sides carry out on a reciprocal basis will be discontinued.'

Russian Major General Vladimir Dvorkin, head of the Russian military's Central Research Institute, referring to US pressure for the 1972 Anti-Ballistic Missile Treaty to be amended to accommodate US plans for a limited missile defence system. Quoted in the *International Herald Tribune*, 4 Nov. 1999, p. 5.

The information revolution and verification

Developments in information and communications technology (ICT) are driving change in the economic, political and military spheres. Powered by the forces of global capital, this wave of transformation is unstoppable, although its direction can to some extent be guided. The challenge for the verification community is to exploit the benefits of the information revolution, rather than allowing it to create new problems.

The benefits

The information revolution is having a major impact on the sourcing, processing, and dissemination of intelligence. For governments with established intelligence bureaucracies, this will make verification easier. However, the information revolution also has ramifications for the multilateral verification of arms control, disarmament, and confidence- and security-building (CSBM) agreements. Most significant of these implications are the effects on information power differentials and on the role of third parties.

Information power has been broadly described as the sum of a country's resources for shaping the global information space, just as military power moulds the strategic environment. Some strategists argue that the information age plays to the strengths of the US — the remaining superpower — which will continue to have a global advantage in terms of 'hard' military and 'soft' information power. Similarly, in particular regions, states that have the appropriate social, educational, political, and technological foundations are likely to be better placed to exploit the information age and so increase their information dominance over rivals. This may apply to Israel vis-à-vis its Arab neighbours.

But there is a countervailing trend of perhaps greater significance. The rise of open sources of information and the diffusion of ICT through globalised commercial channels will put powerful intelligence capabilities into the hands of even technologically backward and impoverished states, as well as non-governmental organisations (NGOs). This will go a long way towards countering data imbalances between states and will make it much easier for them to gather, analyse, and share information equitably.

This could have three consequences for verification. First, all parties to an agreement can have access to the intelligence capabilities that were previously monopolised by the superpowers or regional hegemons. This is likely to have an effect on the willingness of states to enter into agreements and the structure of the verification regimes established. Second, the increased role of open sources and commercially available processing tools should make it easier for countries to share information. National intelligence agencies that are reliant on their own sources and methods will always be reluctant to share data and intelligence. However, CSBMs and arms control regimes rely on transparency and information sharing. Squaring this circle has been a vital but tricky process. The information revolution eases this problem. For instance, an increasingly popular concept is that of regional conflict prevention and crisis monitoring centres. Since the mid-1990s, the concept has been mooted in both the Association of South East Asian Nations (ASEAN) Regional Forum and the Arms Control and Regional Security talks in the Middle East.

Increasingly, such centres could rely exclusively on open sources, assisted by advanced processing and knowledge management techniques. These facilities would be able to produce unclassified intelligence on issues like military deployments, doctrines and budgets. As important, staff seconded to such centres would have the opportunity to work with erstwhile enemies in a relatively open atmosphere and to arrive at common understandings of their operational environment.

Third, and perhaps most significantly, the information revolution could transform the role of outside parties in verifying the implementation of peace accords and, in some respects, arms control regimes. Generally, the parties themselves, often with help from a small number of outside states, notably the US, have verified peace agreements. This was the case with the 1974–75 Egypt–Israel Sinai Disengagement Agreements.

Similarly, with global arms control regimes, such as the 1968 Nuclear Non-Proliferation Treaty (NPT), it has been certain leading countries that have sometimes supported verification with national intelligence. Overwhelmingly, the international community has relied on American sources, since the US was the only state that had the global monitoring resources needed for the job. While the US intelligence community will continue to have capabilities unmatched by other states or by the commercial sector, an increasing number of verification tasks can be carried out using open sources and methods.

This means that the capability to monitor agreements is proliferating along with the technology. Since 1995 the Western European Union has operated a satellite centre that

primarily uses commercial satellite imagery (CSI) to assist with monitoring the 1990 Conventional Armed Forces in Europe (CFE) Treaty. The International Atomic Energy Agency (IAEA) is beginning to fuse a range of open sources to enable it to detect proactively violations of the NPT. Research centres are showing an increasing capability to track global developments pertaining to weapons of mass destruction (WMD). NGOs, such as the London-based Forum on Early Warning and Response, are exploiting open sources and communication networks to help to predict humanitarian crises. And companies like US-based Open Source Solutions and Stratfor offer routine political and military monitoring services.

The challenges

However, developments in ICT will pose new problems for verification. Three of the most significant are:

- encryption;
- technology diffusion; and
- electronic attack capabilities.

The debate over encryption policy is a well-worn one in Western countries. Towards the end of 1999 the US government seemed to have acknowledged that it was fighting a losing battle in seeking to limit the trading of encryption technology by loosening its export controls. Nonetheless, intelligence agencies in the West are still grappling with the likely loss of one of their most useful sources of information: signals intelligence (SIGINT) from unencrypted civilian, military, and government voice and data communications.

Encryption presents a similar problem for CSBMs and arms control verification. Western intelligence agencies that help to monitor such regimes rely heavily on SIGINT. Although they have the computing power to crack most encryption codes, the widespread availability of encryption to governments, citizens, and sub-state groups will gradually make their job much harder, more time consuming, and more resource intensive.

The problem posed by encryption is part of the wider dilemma presented by the diffusion of ICT in the global market. While progress in ICT is enabling the US and some of its allies to become even more powerful in conventional military terms, states and sub-state groups will be able to take advantage of niche technologies, ranging from mobile, secure, satellite communications, through intelligence gathering and mission planning tools, to precision-guided munitions. If exploited by networked, media-savvy groups or state organisations, this combination of technologies could result in serious military threats to status quo powers. Russia has faced a precursor to this problem with the Chechen rebels, and the US with Osama bin Laden. In verification terms, this proliferation of capability raises difficult questions about the nature of dual-use technology and the convergence of military and civilian technologies and applications.

These difficulties are brought into sharp focus in the emerging debate over information warfare (IW). Particularly problematic is electronic attack or, more specifically, Computer Network Attack (CNA). The latter involves the use of computers to launch logical strikes on other terminals via digital networks and telecommunication links. Assaults may result in the denial of service or the compromising of data integrity and confidentiality. Although long used as a tool of espionage and to some extent integrated into battlefield electronic warfare, CNA is becoming of increasing concern to states and businesses that are ever more reliant on networked information systems and the Internet.

These worries have led to a debate over how best to characterise and to deal with the threat. The approach currently favoured by the US and its allies, which are investing in offensive IW techniques, is to treat it as a criminal or terrorist problem. They are pushing for enhanced international co-operation in order to put in place the legal, technical and policing measures necessary to ensure that all countries work together to protect their interdependent Critical National Infrastructure (CNI) and the global information infrastructure.

An opposing perspective has emerged from countries that feel threatened by possible Western use of offensive IW against them or their allies. Russia has championed this approach, and has proposed that the UN treat CNA as military technology and devise laws of armed conflict and possibly arms control measures to restrict its proliferation and use.

Paradoxically, the problem is that any conceivable regime to control the use or possession of IW capabilities poses tremendous challenges for verification. The tools and skills needed to conduct CNA are not only inherently dual-use, including being useful for verification purposes, but they are also virtually impossible to monitor in a globalised, digital economy. In sum, the information revolution poses the same essential dilemmas that technology has always presented for verification: how to harness the benefits while minimising the downsides.

Dr Andrew Rathmell
Executive Director
International Centre for Security Analysis
King's College, London (www.icsa.ac.uk).

This article is an abridged version of a chapter on the same subject to be published later this year in VERTIC's *Verification Yearbook 2000*.

Verification Watch

New satellites up and looking

The launch of the Ikonos satellite in September 1999 to provide high-resolution imagery to commercial customers is beginning to revolutionise non-governmental monitoring and verification efforts. The most dramatic example to date was the posting on the Washington-based Federation of American Scientists (FAS)'s website of Ikonos images of North Korea's missile launch site. According to FAS political analyst John Pike, it revealed a 'singularly unimpressive facility', confounding claims that North Korea is developing a sophisticated ballistic missile capability.

In its 8 March 2000 edition, *Jane's Defence Weekly* produced a special report on Iran's Persian Gulf islands, which used Ikonos images to reveal how Tehran has turned them into unsinkable 'aircraft carriers' through a large military build-up. The use of such images is likely to become commonplace. Ann Florini, an Associate at the Washington-based Carnegie Endowment for International Peace, told the *Los Angeles Times* on 18 January that, 'There could be a dozen or so of these satellites in orbit over the next few years. It is going to be a lot harder to hide'.

Meanwhile, the Earth Observing System (EOS) has débuted with the launch into polar orbit of the NASA Terra Earth Observation Satellite Spacecraft. It is the first in a series of 10 satellites that are designed to spend at least 15 years gathering data on the global environment and the effects of human activity. In addition, the satellites will measure land cover and surface temperature, snow cover, ocean surface and atmospheric temperatures, as well as humidity, cloud and aerosol properties. Terra, formerly known as EOS-1, will circulate the earth 16 times per day for the next six years in polar orbit, allowing its sensors to scan the entire planet every two to three days. Key devices include Measurements of Pollution in the Troposphere, the first instrument to analyse air pollution in the lower atmosphere from space, and Clouds and the Earth's Radiant Energy System, which will measure the amount of solar radiation reflected from earth into space. EOS data will possibly help verify multilateral environmental treaties like the 1992 Climate Change Convention and the 1994 Convention to Combat Desertification.

Source Michael Flynn, 'Private Eye, Public View', *Bulletin of the Atomic Scientists*, March–April 2000, pp. 6–7; William J. Broad, 'We're Ready for Our Close-Ups Now', *New York Times Weekly Review*, 21 Jan. 2000, p. 3; *Jane's Defence Weekly*, 6 March, 2000, pp. 28–29; 'Earth Observing System Takes to the Sky at Last', *Nature*, 23–30 Dec. 1999, p. 850; Duncan Graham-Rowe, 'Watching Gaia from Above', *New Scientist*, 25 Dec. 1999–1 Jan. 2000, p. 7.

UNMOVIC readies itself

Hans Blix, the Executive Chairman of the UN Monitoring, Verification and Inspection Commission (UNMOVIC), which is charged with resuming examination of Iraq's weapons of mass destruction programmes and capabilities, has reported that he is finalising a new organisational plan to restart inspections. The proposal will be submitted to the Security Council for approval by 15 April 2000. Blix stated that UNMOVIC did not intend to attempt to inspect Iraq before that date, and that the new mission would not 'lower any standards' established by its ill-fated predecessor, the UN Special Commission (UNSCOM).

Meanwhile, membership of the new Commission has been confirmed as comprising: Argentina, Brazil, Canada, China, Finland, France, Germany, India, Japan, Nigeria, Russia, Senegal, Ukraine, the UK and the US. The UN Department of Disarmament Affairs is also represented on the Commission. UNMOVIC is more representative of the UN membership as a whole than UNSCOM was — clearly to avoid the accusations made against the latter that it was dominated by Western states. The former US Commissioner and Deputy Executive Chairman of UNSCOM, Charles Duelfer, has not been re-nominated to represent the US on UNMOVIC. The new Commission includes fewer scientists and technical experts and more diplomats than UNSCOM. This may lessen its capacity to make technical decisions, but help it to avoid some of the political pitfalls that led to UNSCOM's demise.

Source *Jane's Defence Weekly*, 8 March 2000, p. 6; Barbara Crossette, '17 Appointed to UN Panel on Iraq Arms', *International Herald Tribune*, 10 March 2000, p. 4.

Refined verification arrangements in new Vienna Document and CFE Treaty

On 16 November 1999 in Istanbul, Turkey, member states of the Organisation for Security and Co-operation in Europe (OSCE) committed themselves to the Vienna Document 1999, a strengthened version of the confidence- and security-building Vienna Document 1994. The new document provides for a moderate increase in on-site inspections by member states of each others' military facilities. Each state party is obliged to accept up to three annual inspections by any other state party, but no more than one per year from the same state party. Prior notification and observation of certain military activity is mandated. The agreement also recognised

that 'national technical means' can play a role in monitoring compliance with agreed confidence- and security-building measures.

On the last day of the Istanbul summit, 30 countries also signed a revised Conventional Armed Forces in Europe (CFE) Treaty. The accord will reduce levels of main battle tanks from 39,142 to 31,740; artillery systems from 38,286 to 35,312; armoured combat vehicles from 59,822 to 56,570; and combat aircraft from 13,362 to 13,282. The number of attack helicopters that are permitted under the Treaty will increase moderately from 3,892 to 3,994. The signatories also recognised the need for additional information exchange and verification requirements 'consistent with systems of national and territorial ceilings, as well as temporary deployments'.

Source *Jane's Defence Weekly*, 24 Nov. 1999, p. 3; Colonel Jeffrey McCausland, 'Endgame: CFE Adaptation and the OSCE Summit', *Arms Control Today*, Sept–Oct. 1999, p. 17; www.osce.org; *Arms Control Reporter 2000*, pp. 402. D. 219–220.

Turkish seismic station boosts verification

The February 2000 edition of *Trust & Verify* reported that a US seismic station in Belbasi, Turkey, is being upgraded and transferred to Ankara's control. It will become part of the International Monitoring System (IMS) for verifying compliance with the 1996 Comprehensive Nuclear Test Ban Treaty (CTBT). CTBT officials in Vienna have been reported as describing the upgraded facility as the 'best station in the global seismic network'. The monitoring range will cover several key regions and states, including the Arabian Peninsula, Libya, Pakistan and Ukraine — countries lining the northern area of the Black Sea and most of Central Europe.

Turkey ratified the CTBT on 16 February 2000, making it the 53rd party and the 27th of the 44 states parties required for entry into force of the Treaty. So far, 155 states have signed the CTBT.

Source *Jane's Defence Weekly*, 16 Feb. 2000, p. 20.

CTBT: legislative developments

On 1 March 2000, China announced that it had submitted the CTBT to its parliament (the National People's Congress) for consideration at its annual meeting, beginning on 5 March. In the US, the Department of Energy has made its case to Congress for continued American financial support for establishing the CTBT's global verification system. President Bill Clinton's Fiscal Year 2001 Budget Request for Non-proliferation, Anti-Terrorism, De-mining, and Related Programs (NADR) includes $21.5 million for the US assessed contribution to the funding of the Provisional Secretariat of the CTBT Organisation in Vienna.

Source Daryl Kimball, 'Nuclear Testing Update', *Coalition to Reduce Nuclear Dangers*, 6 March 2000; *Reuters*, 'China Submits N-Test Ban Treaty to Parliament', 1 March 2000.

Luring Israel into arms control through verification

On 22 February 2000, Israel and the US signed an accord on scientific co-operation in 25 civilian nuclear and non-nuclear areas. Among these will be co-operation to detect underground nuclear tests and measures to prevent the 'leakage' of nuclear materials and expertise from the states of the former Soviet Union. The US hopes to draw Israel into further involvement in bilateral projects on non-proliferation and arms control as a result of the increased scientific exchanges. Officials in Tel Aviv indicated that such co-operation could be extended to other regional countries that have signed peace treaties with Israel.

Source *Jane's Defence Weekly*, 1 March 2000, p. 8; Barbara Opall-Rome, 'Government Labs to Israeli Scientists', *Defence News*, 6 March 2000, p. 6.

New genetically modified organisms protocol neglects verification

After five years of negotiation, representatives of over 130 governments have finally adopted a legally binding agreement for protecting the environment from the risks posed by the cross-boundary transportation of living modified organisms (LMOs) created by biotechnology. The Cartagena Protocol to the 1992 Convention on Biological Diversity was adopted in Montreal, Canada, on 29 January 2000.

The Protocol, which must be ratified by 50 parties before it can enter into force, establishes a system of prior informed consent for trade in LMOs that are to be released into the environment. Parties will signal via an Internet-based biosafety clearing house whether or not they are willing to accept imports that include LMOs.

In common with most international environmental agreements, however, Protocol negotiators paid scant attention to multilateral verification. But 'markers' were included in the treaty, signalling the need for further work on verification. Article 33 of the Protocol states that each party will monitor its implementation and report to the Conference of the Parties on measures taken. Article 34 stipulates that the first meeting of parties shall consider and approve co-operative procedures and institutional mechanisms to promote compliance and to address non-compliance.

Source Report of the Resumed Session of the Extraordinary Meeting of the Conference of the Parties for the Adoption of the Protocol on Biosafety to the Convention on Biological Diversity, *Earth Negotiations Bulletin*, 31 Jan 2000.

Science & Technology Scan

Microbes against landmines

US scientists have developed genetically modified microbes that can be used for landmine detection. *Pseudomonas putida* is a microbe that feeds on Trinitrotoluol (TNT) — the explosive used in most anti-personnel landmines. By inserting a gene from a fluorescent jellyfish, the scientists at the Oak Ridge National Laboratory in Tennessee, US, have produced microbes that glow under laser or ultra-violet (UV) light when they eat TNT.

Since about 90% of all landmines leak TNT, the method is supposed to be more effective and cheaper than traditional detection systems. During a trial, the microbes were able to identify the location of five landmines buried at a depth of at least 10 centimetres for three months.

The method has been criticised because genetically modified organisms would have to be released in large amounts in landmine-affected countries. But scientists claim that their microbes usually live no longer than 48 hours because they are killed by daylight.

A scientist at the Savannah River Technology Center in Aiken, South Carolina, US, believes that he has solved the problem. Carl Fliermans has identified bacteria that occur naturally, consume TNT, and glow without being exposed to laser or UV light.

Source 'Appetit auf Explosives,' *Der Spiegel*, no. 2/2000, 10 Jan. 2000, www.spiegel.de

Deep-sea verification with new sub?

A radical new underwater submersible may drastically change deep-sea exploration. Graham Hawkes, an American marine engineer, has invented an aeroplane-like submarine that 'flies' underwater using inverted wings to create downward thrust. It is considerably cheaper, faster, more manoeuvrable, and easier to use than its conventional predecessors.

The submarine can submerge to depths of 650 metres at more than 10 kilometres per hour and move with breath-taking agility, allowing the deep seabed to be much more accessible than ever before. In future it might be used for detecting submarines, underwater submarine bases, or nuclear weapons emplaced on or in the seabed.

Source Mark Schrope, 'Voyage to the Bottom,' *New Scientist*, 12 Feb. 2000, pp. 36–39.

More new US detection technologies

A researcher at the National Institute of Standards and Technology in Maryland has developed a new detection technology, which could be able to detect single molecules of target substances. Andrew Pipino believes that his laser-based detector will be 100 times more capable than conventional methods. A commercial prototype might be ready within two years. One of the first applications could be in mine detection or other areas where explosives need to be found. 'Next we want to go after chemical and biological weapons detection', says Pipino.

Another new sensor, for chemical detection, is reported to have been developed at Sandia National Laboratories, New Mexico. The soccer ball-size system can detect minute traces of explosives underwater. The technology could be used to locate unexploded mines, bombs or other explosive devices, even though deployment techniques are still under development. The sensor is described as unique because it does not rely on detecting anomalies, like conventional metal detectors do. Rather it uses a polymer fibre to attract explosive chemical molecules, making detection in underwater environments, such as deep oceans or rice fields, much more reliable.

Source *New Scientist*, 23 Oct. 1999, p. 7; *Defense News*, 1 Nov. 1999.

Virus-detecting biosensor chip

A team of scientists at the Massachusetts Institute of Technology in the US has developed a hand-held device for early detection of infectious biological agents. The biosensor, which contains B cells from the human immune system imbedded on a chip, can successfully identify a particular bioagent in less than two minutes — a significant improvement over slower and less sensitive methods of biodetection.

The chip, which functions by using the B cells to bind antibodies to the infectious particles (just as they do in the human body) could be useful in containing biological warfare attacks and detecting production of biological and toxin weapons. A prototype model will probably be produced within 18 months.

Source 'Bioagent Chip,' *Scientific American*, March 2000, p. 20.

Readers are reminded that the VERTIC website has moved from www.fhit.org/vertic to www.vertic.org

The United Nations' 16 principles of verification

In 1988 the UN General Assembly endorsed the following 16 principles of verification, which were developed by the UN Disarmament Commission (UNDC). Each year the principles are re-endorsed by the General Assembly in a resolution that is sponsored by Canada, and which is normally adopted by consensus.

While predictably prosaic, they are reproduced in this issue of *Trust & Verify* as a reminder that verification, at least in principle, does have universal support.

1 Adequate and effective verification is an essential element of all arms limitation and disarmament agreements.

2 Verification is not an aim in itself, but an essential element in the process of achieving arms limitation and disarmament agreements.

3 Verification should promote the implementation of arms limitation and disarmament measures, build confidence among states and ensure that agreements are being observed by all parties.

4 Adequate and effective verification requires employment of different techniques, such as national technical means, international technical means and international procedures, including on-site inspections.

5 Verification in the arms limitation and disarmament process will benefit from greater openness.

6 Arms limitation and disarmament agreements should include explicit provisions whereby each party undertakes not to interfere with the agreed methods, procedures and techniques of verification, when these are operating in a manner consistent with the provisions of the agreement and generally recognised principles of international law.

7 Arms limitation and disarmament agreements should include explicit provisions whereby each party undertakes not to use deliberate concealment measures which impede verification of compliance with the agreement.

8 To assess the continuing adequacy and effectiveness of the verification system, an arms limitation and disarmament agreement should provide for procedures and mechanisms for review and evaluation. Where possible, time-frames for such reviews should be agreed in order to facilitate this assessment.

9 Verification arrangements should be addressed at the outset and at every stage of negotiations on specific arms limitation and disarmament agreements.

10 All states have equal rights to participate in the process of international verification of agreements to which they are parties.

11 Adequate and effective verification arrangements must be capable of providing, in a timely fashion, clear and convincing evidence of compliance or non-compliance. Continued confirmation of compliance is an essential ingredient to building and maintaining confidence among the parties.

12 Determinations about the adequacy, effectiveness and acceptability of specific methods and arrangements intended to verify compliance with the provisions of an arms limitation and disarmament agreement can only be made within the context of that agreement.

13 Verification of compliance with obligations imposed by an arms limitation and disarmament agreement is an activity conducted by the parties to an arms limitation and disarmament agreement or by an organisation at the request and with the explicit consent of the parties, and is an expression of the sovereign right of states to enter into such arrangements.

14 Requests for inspections or information in accordance with the provisions of an arms limitation and disarmament agreement, should be considered as a normal component of the verification process. Such requests should be used only for the purposes of the determination of compliance, care being taken to avoid abuses.

15 Verification arrangements should be implemented without discrimination, and, in accomplishing their purpose, avoid unduly interfering with the internal affairs of state parties or other states, or jeopardising their economic, technological and social development.

16 To be adequate and effective, a verification regime for an agreement must cover all relevant weapons, facilities, locations, installations and activities.

Source Verification in All its Aspects: Study on the Role of the United Nations in the Field of Verification, UN document A/45/372, 28 Aug. 1990, Section II.

VERTIC | *News & Events*

VERTIC's mission expanded

VERTIC's Board of Directors decided at its Annual General Meeting on 25 February to remove the reference to security in VERTIC's mission statement. VERTIC's new 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'. The change was made to permit VERTIC to research the verification aspects of agreements other than those that have a direct impact on international or national security. In comparing verification regimes and identifying synergies, VERTIC has found it increasingly useful to draw on cases outside its traditional focus on arms control, disarmament, peace accords, and the environment. In future it will be possible for VERTIC to conduct research projects on, for example, the verification aspects of human rights, and environmental agreements that do not have such obvious security implications as the Climate Change Convention.

VERTIC co-hosts seminar on US BWC verification policy

Dr Marie Chevrier, Associate Professor of Political Economy at the University of Texas at Dallas, spoke on 9 March on 'Understanding the US Position in the Negotiations to Strengthen the Biological and Toxin Weapons Convention' at a seminar organised by VERTIC and the London School of Economics and Political Science (LSE). In her talk to more than a dozen participants from academia, non-governmental organisations (NGOs) and government, she outlined the US position and explained the internal dynamics and complexities of current US arms control policies on biological weapons.

During the discussion Dr Chevrier argued for American participation in a strong verification regime and called for the intensification of efforts to convince US pharmaceutical and biotechnology industries of the need for effective verification, including an appropriate mechanism for non-challenge visits to declared facilities.

New employment positions at VERTIC

On-Site Inspection Researcher

VERTIC seeks an expert familiar with on-site inspection theory and practice. The successful applicant will conduct an 18-month research project on the modalities, techniques and technology of on-site inspections, spanning the range of international agreements that are of interest to the organisation — principally arms control, disarmament, the environment, and peace accords. He/she will have direct experience of conducting on-site inspections or will have carried out considerable research into the subject. Proficiency in English is essential. The salary range is £22,000–32,000 for a senior researcher, and £15,000–24,000 for a researcher.

Information Officer/Networker

VERTIC seeks a unique individual to expand its contacts with the outside world — notably the global verification community, governments, the media, and other non-governmental organisations (NGOs) — and to develop further the organisation's role as a clearing-house for verification information. Ideally, the successful applicant will have experience of public relations, working with the media and/or outreach programmes. He/she will have an understanding of international politics, preferably in areas relevant to the work of VERTIC. Duties will include maintaining and expanding VERTIC's verification network, organising conferences and workshops, managing the promotion and distribution of VERTIC's publications, and producing its annual *Verification Organisations Directory*. Proficiency in English and computer literacy are essential. A one-year contract is offered in the first instance, with the possibility of extension subject to funding. A part-time arrangement may also be considered. The salary range is £15,000–24,000.

Applicants should send a curriculum vitae and a cover letter addressing the selection criteria and providing the names and full contact details of three referees. For detailed job descriptions, see VERTIC's website at www.vertic.org or contact VERTIC's Administrator, Angela Woodward. The closing date for applications for both positions is now 20 April 2000.

VERTIC co-sponsors commemoration of BWC 25th birthday

The 26th of March 2000 marks the 25th anniversary of entry into force of the Biological and Toxin Weapons Convention (BWC). To commemorate the event, VERTIC is jointly sponsoring a public seminar in Geneva, where negotiations on a Protocol to the BWC are taking place. The meeting is co-organised by the UN Institute for Disarmament Research (UNIDIR), Geneva; the Department of Peace Studies, Bradford University, UK; the Federation of American Scientists (FAS), Washington, DC; the International Security Information Service (ISIS), London; and VERTIC.

Four experts will discuss the Convention's future role and the importance of new measures to strengthen the BWC: Dr Nicholas Sims, Senior Lecturer in International Relations at the London School of Economics, UK, will speak on 'The Convention in Historical Perspective: The First and the Next 25 Years'; Dr Mark Wheelis, Microbiology Section, University of California at Davis, US, and member of the FAS Working Group on Biological Weapons will describe the role of 'Biological Weapons in the 21st Century: the Convention, the Protocol, and the Changing Science'; Antonio de Aguiar Patriota, Minister of the Brazilian Mission to the UN in Geneva, will speak on the 'The Importance of Technical Co-operation for the Biological and Toxin Weapons Convention'; and Dr Patricia Lewis, Director of UNIDIR, will be 'Putting the BWC in the Disarmament Context'.

The seminar will begin at 18.00 on 26 March 2000 at Salle XXIV, Palais des Nations, Geneva, Switzerland, and will be chaired by Tibor Toth, Chairman of the Ad Hoc Group, which is negotiating the BWC Protocol.

For further information see the VERTIC website at www.vertic.org.

Verification Yearbook 2000

VERTIC is resuming publication of its *Verification Yearbook* later this year with a special 23-chapter millennial edition. The 2000 issue will survey verification developments in a range of fields over the past 50 years. With a foreword by the former UNSCOM Executive Chairman, Richard Butler, the *Yearbook* will be divided into four sections: arms control and disarmament; the environment; peace accords; and verification and compliance tools and mechanisms.

It is expected that the *Yearbook* will be published in the second half of 2000. Among the chapters commissioned are: 'Verification Under Duress: the Case of the UN Special Commission for Iraq' by Steve Black, Harvard University, US; 'Verifying and Monitoring the Military Aspects of Peace Accords' by Jane Boulden, Queen's University, Canada; 'Human Rights Monitoring' by Sandra Mitchell, Chief of Human Rights, Organisation for Security and Co-operation in Europe (OSCE)'s Mission to Kosovo, Pristina, Kosovo; and 'Remote Monitoring from Space: the Resolution Revolution' by Dr Bhupendra Jasani, King's College, London, UK.

VERTIC

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
website www.vertic.org

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.

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