UNMOVIC's balancing act

If you thought that the United Nations Special Commission (UNSCOM), which operated in Iraq from 1991–98, was a verification regime of unprecedented intrusiveness, just look at its successor, the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC). On 8 November the United Nations (UN) Security Council passed resolution 1441, offering Iraq a final chance to comply with more than a dozen previous resolutions designed to achieve the elimination of its weapons of mass destruction capabilities and associated delivery systems. It ordered Baghdad to provide UNMOVIC and the International Atomic Energy Agency (IAEA) with 'immediate, unimpeded, unconditional, and unrestricted access to any and all, including underground, areas, facilities, buildings, equipment, records, and means of transport which they wish to inspect'. These two bodies may impose no-drive and no-fly zones around suspect sites and may destroy, impound or remove any armaments, materials or records. They are also entitled to receive comprehensive lists of and 'immediate, unimpeded, unrestricted, and private access to all officials and other persons' whom they wish to interview in a mode or location of their choosing, without the presence of Iraqi observers. Gone is the exemption for the presidential palaces of Iraqi President Saddam Hussein—negotiated by UN Secretary-General Kofi Annan in February 1998—as presumably are the confidential 'understandings' previously reached with Iraq by Rolf Ekéus, the first head of UNSCOM. Inspectors are to be protected by UN guards, have unimpeded entry to, and exit from, Iraq, and the right to import and export any equipment and material required.

Not only is UNMOVIC's mandate tougher and more intrusive than that of UNSCOM, but also it is politically more compelling. Unlike the resolution establishing UNSCOM, UNMOVIC is specifically authorised under Chapter 7 of the UN Charter, leaving no doubt that compliance with the terms of the resolution is mandatory. It was also adopted unanimously (even Syria voted in favour), whereas Cuba voted against the initial UNSCOM resolution, while Ecuador and Yemen abstained. Resolution 1441 also explicitly states that failure to comply at any point 'shall constitute a further material breach of Iraq's obligations', which will be reported to the Security Council for immediate assessment, with the possibility of 'serious consequences'. This is the first time that such a direct threat of force has been employed in a resolution concerning the UN inspection regime. Previously, it had been linked indirectly by virtue of the fact that self-disarmament was one of Iraq's general requirements following the Gulf War ceasefire of 1991.

The language reflects, however, a protracted dispute over whether further Security Council authorisation will be required for force to be used against Iraq. France and Russia and critical non-members of the Security Council like Turkey claim that only the Council can decide that. The US, meanwhile, undoubtedly will argue that the resolution does not rule out a unilateral US or a US-led coalition attack. Paradoxically, the resolution may be the stronger for leaving Iraq guessing as to how 'serious consequences' might be determined.

In this issue . . .

Trevor Findlay analyses the challenges facing the UN inspection mission in Iraq, while Kenneth Boutin assesses methods of verifying technology transfer controls. Plus all of the usual features: Verification Watch, Science and Technology Scan, Peace Missions Monitor, Verification Quotes and VERTIC News and Events.

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The greatest difference between resolution 1411 and its antecedents is apparent US determination to enforce it. President George W. Bush recently relaxed his earlier insistence on 'regime change' as the only way to deal with Iraq's ambitions to acquire weapons of mass destruction. However, there is little doubt that he is prepared to wage war—with or without further Security Council backing—if Iraq fails to comply. Clearly this is one of the factors that has induced Iraq to conform thus far. A difficulty that increasingly plagued UNSCOM was the time that elapsed between the original resolutions that established the Commission at the end of the Gulf War—when coalition forces in the region still presented a credible threat—and the mounting challenges posed by Iraq to its authority. When these challenges culminated in UNSCOM having to leave the country in late 1998, Security Council unity had frayed beyond repair and even the US lacked the will to enforce seriously Iraqi compliance.

Capabilities of UNMOVIC

While UNSCOM successfully uncovered and destroyed large quantities of Iraqi weapons and materials and was by no means the failure that the Bush administration seems intent on portraying it as, UNMOVIC is in many respects better prepared, equipped and trained than its predecessor. Its 250-strong inspectorate, some 100 of whom are expected to be on duty in Iraq at any one time, is a mixture of new personnel and experienced former UNSCOM staff. The inspectors will have the benefit of lessons learned from UNSCOM's experience, especially with regard to Iraqi deception and denial techniques. In addition they have received training to understand better Iraqi culture and to minimise avoidable communication problems.

UNMOVIC's capabilities will also be enhanced by two regional offices, freedom to fly into Baghdad rather than an airport several hours' drive away, a fleet of helicopters, access to colour satellite images and data from unmanned aerial vehicles (UAVs) and use of Mirage and U-2 aircraft for extra reconnaissance. Furthermore, it has the latest ground-based technologies at its disposal. Thanks to the digital revolution that has occurred since UNSCOM's inception, detection devices are now smaller, lighter, faster and more accurate. Such technologies include miniature radiation sensors, portable chemical and biological weapon detectors and ground-penetrating radar. The IAEA will use environmental sampling techniques developed for improved nuclear safeguards verification. Perhaps most important will be UNMOVIC's ability to interview Iraqi officials in private and if necessary to whisk them and their families out of the country. It would only take one or two key defectors to bring the whole story out.

So far, so good?

UNMOVIC has got off to a good start. It was authorised to begin inspections no later than 45 days after resolution 1411 was adopted, and deployed its first personnel to Baghdad on 18 November. Its first inspections, of three sites that had been previously covered by UNSCOM, took place on 28 November. Several more were conducted on successive days. All inspections to date have seemingly enjoyed full Iraqi co-operation, but the results remain closely guarded. They have been low-key affairs, designed as an early test of Iraqi co-operation. More sensitive sites are clearly on UNMOVIC's list as it intensifies its work. On 3 December the first presidential site was inspected, again without incident.

On 7 December a crucial deadline was met when Iraq provided, more than 24 hours before it was required to do so, what purported to be an 'accurate, full, and complete declaration of all aspects of its programmes to develop chemical, biological, and nuclear weapons, ballistic missiles, and other delivery systems'. Comprising over 11,800 pages, with 352 pages of annexes, and 529 megabytes of data, the declaration is detailed, technical and partly in Arabic. It will take time to analyse and translate. This will leave the US facing a dilemma. Resolution 1411 threatens serious consequences if the declaration includes false statements or omissions, yet it may be difficult for Washington to prove this, especially without revealing its intelligence sources. Iraq may also plead for more time, arguing plausibly that to comply with other arms control regimes many states initially have legitimate difficulties making accurate declarations.

In attempting to lower expectations of what UNMOVIC might accomplish, Bush has inadvertently increased the commission's importance in proving the veracity of Iraq's first declaration. Speaking at the Pentagon on 2 December he noted that: '[t]he inspectors are not in Iraq to play hide and seek with Mr Saddam Hussein. Inspectors do not have the duty or ability to uncover terrible weapons hidden in a vast country. The responsibility of inspectors is simply to confirm the evidence of voluntary and total disarmament'. Yet if US claims about Iraq's extensive capabilities are true, it will take months for UNMOVIC to verify Iraq's declaration and, assuming that Iraq has not already destroyed its capabilities, to remove or otherwise eliminate them. This provides Iraq with further room for manoeuvre, even as it continues outwardly to co-operate with UNMOVIC. Indeed, the more Iraq co-operates and the more early success that UNMOVIC has, the harder it will be for the US to maintain Security Council solidarity in order to gain authorisation to use force, or, if it decides to act unilaterally, to put a convincing case before the

rest of the world. Moreover, credible Iraqi non-compliance must come by February–March 2003, before the Iraqi summer makes desert warfare much more difficult.

UNMOVIC, too, confronts profound dilemmas. Washington is watching it like a hawk for the first sign of incompetence, insouciance or appeasement of the Iraqis. At the same time, UNMOVIC continues to require Iraq's co-operation to do its job and must not antagonise it unnecessarily, even though such an intrusive verification regime would test the patience of the most innocent of countries. UNMOVIC's task is made harder by the fact that, in the four years since UNSCOM's departure, Iraq has had ample time to refine its deception techniques and to hide its capabilities even further. If UNMOVIC uncovers little evidence of major Iraq capabilities the Americans will judge it to be a failure—even if it conducts its search professionally and convincingly in the eyes of the majority of Security Council members. If it does uncover major capabilities that Iraq has lied about, or has difficulty destroying them quickly enough, it may be swept aside in a US military assault.

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Peace Missions Monitor

IRA breaks relations with decommissioning body

The Provisional Irish Republican Army (IRA) announced on 30 October that it had stopped engaging with the Independent International Commission on Decommissioning, apparently because of the British government's decision to end the power-sharing government in Northern Ireland. The commission was established following the 1998 Good Friday agreement, which was intended to bring peace to Northern Ireland. The IRA has undertaken two acts of verified decommissioning, in October 2001 and April 2002.

US Sinai withdrawal denied

The US has denied that it plans to withdraw from the Multinational Force and Observers (MFO) in Sinai, which is tasked with observing Israeli and Egyptian compliance with their 1979 Peace Treaty. US Under Secretary of Defense Douglas Feith says Washington only proposes 'rationalising' its presence, in consultation with Egypt and Israel, since the mission has succeeded in helping to build a 'substantial amount of confidence' over the past 20 years.

OSCE verifies Georgia incident

Observers from the Organisation for Security and Co-operation in Europe (OSCE) have confirmed Georgian allegations that Russian forces dropped bombs on Georgian territory in an attempt to dislodge Chechen rebels believed to be sheltering in the Pankisi Gorge. This is the first such incident to be verified by OSCE monitors in Georgia.

UN mission in Ethiopia and Eritrea faces non-compliance

The United Nations Mission in Ethiopia and Eritrea (UNMEE), which is mandated to verify the July 2002 ceasefire and withdrawal agreement between the two countries, facilitate demarcation of their disputed border and carry out de-mining, has endured non-co-operation from both sides, particularly Ethiopia. The latter has refused UNMEE access to the 15-kilometre area adjacent to the buffer zone between the two states and has imposed airport restrictions on UN personnel in violation of its Status of Forces Agreement. In October, the UN protested after Ethiopian villagers and militia threatened peacekeepers. UNMEE, which largely comprises Indian, Jordanian and Kenyan contingents, is currently mandated until March 2003.

Source 'IRA breaks contact with arms body', BBC News, 30 October 2002, www.news.bbc.co.uk; Barbara Opall-Rome 'Israel, Egypt urge US to retain Sinai force', *Defense News,* 5–11 August 2002, p. 17; 'Defense department report: Sinai peacekeeping, Iraq', US Department of State, 2 August 2002, www.usinfo.state.gov; Nick Paton Walsh 'Monitors confirm Russian attack on Georgia', *The Guardian*, 24 August 2002, p. 15; 'Security Council adopts resolution adjusting mandate of United Nations Mission in Ethiopia and Eritrea', UN press release, SC/7481, 14 August 2002, www.un.org; 'Security Council resolution 1434 (2002)', 6 September 2002, www.un.org; 'Ethiopia condemns UN "threat" claims', BBC News, 19 October 2002, www.news.bbc.co.uk.

Verifying technology transfer controls: grasping at shadows?

Effective verification, while crucial to the integrity of technology controls, involves unique difficulties due to the ambiguity surrounding the definition of technology, inherent weaknesses in technology controls and inadequate support from many supplier states. Conceptual ambiguity has provided considerable scope for self-serving interpretations of export guidelines and has hindered efforts to develop effective multilateral arrangements. Technology can range from end products like aircraft, components or machine tools to intangibles such as design principles or electronic data. A technology transfer occurs whenever technological knowledge, an item embodying technology or from which it can be derived, passes to a recipient based in or representing another state. However, the extent to which such transfers contribute to technological proliferation largely depends on recipients: the more technologically adept they are, the greater their capacity for obtaining and applying technology.

Technology controls

Technology controls are an integral component of export controls; they are largely driven by the politico-military concerns of supplier states. The 1987 Missile Technology Control Regime (MTCR), for example, resulted from fears regarding proliferation of nuclear-capable delivery systems to developing nations. Technology controls are being undermined, though, by economic trends. International technology flows have expanded in concert with the growth of multinational enterprises linking far-flung firms, and with the rise of transnational production networks. Technological globalisation over the past decade, in which high-technology research and development (R&D) increasingly is conducted transnationally, is reinforcing this tendency, particularly in terms of intangible technology transfers. Many states support these processes, considering technology transfers important instruments for market penetration and the outsourcing of production and R&D vital to economic competitiveness.

While many suppliers acknowledge the danger of uncontrolled technological proliferation, this is not necessarily reflected in effective controls. Generally these are limited to export guidelines and licensing requirements, particularly for items incorporating sensitive arms-related product technologies. Controls on 'dual use' and production technologies are much weaker. This is a serious defect, given the growing complementarity between military and civilian R&D and the potential contribution of production technologies to proliferation. In Iraq, for example, imported machine tools have provided a basis for producing a wide range of armaments. Few states have developed controls that address all or most of the alternative ways of transferring technology provided by transnational production and R&D networks. One example is the lack of oversight mechanisms for collaborative R&D involving participants based in different states and for processes of industrial consolidation involving foreign acquisitions of local firms. In addition, technology controls are not always enforced, the result of weak regulatory mechanisms or pressures to approve particular exports for reasons of profit or politics.

Multilateral technology controls supplement, but have not supplanted, national technology controls. Resistance to legally binding arrangements has ensured that multilateral controls provide relatively broad scope for the interpretation of agreed export guidelines and rely on states 'self-policing' their own exports. Existing regimes are characterised by disagreements over what should be controlled and by whom, and by lack of accountability. Controls promoted under the MTCR, the 1995 Wassenaar Arrangement and the Nuclear Suppliers Group (NSG) have, as a result, been implemented inconsistently by participating states. Furthermore, the comprehensiveness of multilateral regimes is threatened by 'secondary proliferation' from emerging suppliers—such as North Korea—that remain outside of their orbit. Efforts to expand the membership of technology control regimes, however, only exacerbate the difficulties of harmonising export guidelines.

Verifying technology controls

Technology control-related verification is relatively underdeveloped and remains a national responsibility. It reflects many of the structural shortcomings of technology controls themselves, such as resistance to binding and intrusive arrangements. Verification measures provided for under multilateral technology controls require that states monitor and report on their exports of items identified for control. In some cases this includes export denials as well as approvals. The difference is that state technology control lists are supplemented with export

guidelines. Although consultative mechanisms are in place, the dearth of binding measures means that verification standards differ greatly, reflecting the varying effectiveness of states' technology controls and different levels of official concern. Even the US, which devotes by far the most attention and resources to technology controls and their verification, finds this an uphill task.

Verification of technology controls rests on export-related data exchanges. These are essentially voluntary, though, and there are problems with the quality and timeliness of reporting. This is particularly apparent for export denials, which many states do not report; others report only a portion, often well after the fact. The timely reporting of all exports and export denials of controlled technologies would enable suppliers to develop a more complete picture of the technological acquisition programmes of potential proliferants and would provide a stronger basis for harmonising technology controls.

Data exchanges are not, however, currently supported by measures that would confirm compliance with export guidelines, verifying the comprehensiveness or accuracy of reported information from fellow regime participants. This lack of transparency in data exchange arrangements illustrates states' concerns regarding the release of proprietary information to actual or potential competitors.

There is considerable scope for promoting more effective verification of technology controls. The most promising approach involves strengthening present data exchange provisions. Development of mechanisms for verifying information provided under data exchange arrangements will require information barriers to encourage participating countries to be more transparent about sensitive export items while protecting valuable proprietary information. Such confidentiality will be difficult to ensure without expanding multilateral regimes' institutional mechanisms so that they can undertake this task.

Prospects for developing technology control-related verification measures other than data exchanges are much more limited. It would be difficult to apply more intrusive verification methods to the large number of activities and facilities that are potentially involved in technology exports. Verification of demand-side activities would contribute little to effective technology controls because indications of supplier non-compliance with export guidelines would likely not be apparent until well after technologies had been transferred.

Development of more effective verification measures will be complicated by the need for consensus. Technology controls are very much 'coalitions of the willing', and worries about technological proliferation have failed to generate the unanimity needed for more effective measures, as noted above. If there is no change in this situation, incentives will likely be necessary to secure agreement on enhanced verification measures, including perhaps facilitating participating states' access to advanced technologies. The US has demonstrated the potential usefulness of this approach, using access to its technology to leverage more effective controls by other states.

The fact that many countries have technology controls that include licensing requirements provides a basis for verification in terms of data exchanges. Enhancing verification in this area will, however, require a sea change in attitudes towards technological proliferation. The successes of Iraq and North Korea in circumventing technology controls do not inspire confidence in extant multilateral technology control regimes, but they might provide the crucial impetus to improve them.

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Verification Quotes

The production of mustard gas is not like the production of marmalade. You're supposed to keep some track of what you produce. There must be documentation, records of what was produced.
UNMOVIC Executive Chairman Hans Blix on Iraq, quoted in Sam Dillon, 'Inspectors urge Iraq to document arms claims', *New York Times,* 20 November 2002, www.nytimes.com.

We have assurances from the Iraqi side that we will have unrestricted and uninhabited access to all sites in Iraq . . . Of course, this has to be tested.
Mohamed ElBaradei, IAEA Director-General, quoted in 'Iraq agrees to inspections', *The Washington Post,* 2 October 2002, www.washingtonpost.com.

As a signal of the clear political will of the Cuban government and its commitment to an effective disarmament process that ensures world peace, our country has decided to adhere to the Treaty on the Non-Proliferation of Nuclear Weapons. In doing so, we reaffirm our hope that all nuclear weapons will be totally eliminated under strict international verification.
Statement by H.E. Mr. Felipe Perez Roque, Cuban Foreign Minister, UN General Assembly, 14 September 2002 (available at cns.miis.edu).

The voting system employed by the BBC would probably not be recognised by the Electoral Reform Commission or a team of eminent international observers.
Historian Graham Stewart, commenting on the voting system for choosing Sir Winston Churchill as the greatest Briton of all time, *The Times,* 25 November 2002, p. 11.

Verification Watch

OPCW on the mend?

The Seventh Conference of the States Parties to the 1993 Chemical Weapons Convention (CWC) was held in The Hague, Netherlands, from 7–11 October, and was one of the most significant in the history of the Organisation for the Prohibition of Chemical Weapons (OPCW). It was the first such gathering since the July appointment of Rogelio Pfirter as the new Director-General of the OPCW, and it saw states parties take key decisions to put the OPCW back on its feet, administratively and financially. Zero budget growth was abandoned as members voted to increase the budget by 10 percent, while the US signalled its support with a voluntary contribution of US$2 million. For his part, Pfirter promised a 'management review' that will examine the OPCW's operations since its inception in 1997 and seek greater effectiveness and efficiency. *Getting verification right: proposals for enhancing implementation of the Chemical Weapons Convention,* a report released by VERTIC during the conference, was welcomed in many quarters as a valuable contribution to the reform process.

The conference also decided that:

- the Executive Council should extend the deadline for Russia to destroy one percent of its Category 1 chemical weapon (CW) stockpiles and recommend a new deadline for it to destroy 20 percent;
- South Korea could have an extension of its deadline to April 2003 for destroying 20 percent of its CW stockpile; and
- Russia could convert nine former CW production plants to peaceful purposes.

Reflecting growing concern among states parties about the projected significant increase in the verification workload over the next several years, the conference requested that the Director-General submit proposals for more substantial use of monitoring equipment at CW storage and destruction facilities in 2003. It also asked him to consider ideas for optimising verification activities during inspections of CW-related and industrial facilities, including the intensity of inspections and the size of inspection teams.

Meanwhile, another crisis looms in relation to attempts to destroy Russia's vast CW stockpile. US financing for the construction of a destruction plant at Shchuchye may run out because Congress imposed impossible conditions on Russia before funds could be released. The Bush administration has asked for a one-year waiver on the proviso that Russia provides an accurate account of all its CW holdings and grants the US access to storage sites. Michael Moodie, president of the Chemical and Biological Arms Control Institute in Washington, DC, accuses congressional opponents of financial assistance for CW destruction as 'using these criteria as a stick to hit the Russians'.

Contrary to press reports, an expert workshop held in the US capital in May 2002, under the auspices of the Monterey Institute of International Studies, did not recommend that challenge inspections under the CWC be implemented soon 'to prevent the provision from becoming worthless'. The introduction to the workshop report simply mentioned that some government officials and analysts hold that view. In fact, the group took a nuanced stance, concluding that a challenge inspection is 'long overdue', but that 'it will not be easy to find a rationale for requesting a challenge inspection that is both non-trivial and imposes limited political costs on the requesting State Party'. 'If the chief purpose of challenge inspections is to strengthen deterrence', the group noted, 'it may not matter if a particular inspection fails to uncover conclusive evidence'. At the same time, '[r]equesting a challenge inspection without a real foundation could be as damaging to the CWC as no challenge inspections at all'.

Source 'Seventh session of the Conference of the States Parties to the Chemical Weapons Convention concludes', OPCW press release, 65/2002, The Hague, 15 October 2002; Peter Eisler, 'Plan to destroy Russian weapons nears collapse', *USA Today,* 2 October 2002; Jonathan B. Tucker (ed.), 'The Conduct of Challenge Inspections Under the Chemical Weapons Convention, proceedings of an expert workshop held on 29–31 May 2002, in Washington, DC', Monterey Institute of International Studies, Washington DC, 2002; 'CWC: request challenge inspections, experts say', *Global Security Newswire,* 27 September 2002.

Andean peace and security zone

On 17 June 2002 the members of the Andean Community (Bolivia, Colombia, Ecuador, Peru and Venezuela) signed the Lima Commitment, establishing a zone of peace and security in the region. This creates a framework for co-operation in defence policy formulation, including joint action on verifiable arms limitation. The objective is to reduce defence spending and increase funds for economic and social development. Under the agreement, the participants reaffirmed their commitment to the major multilateral arms control and disarmament agree-

ments and set out a programme of action for their implementation, including compliance and verification. To assist this process, an implementation unit is to be set up within the General Secretariat of the Andean Community.

Source 'Letter dated 19 June 2002 from the Permanent Representative of Peru addressed to the Secretary-General of the Conference on Disarmament transmitting the text of the Lima Commitment signed on 17 June 2002 by the Ministers for Foreign Affairs and of Defence of Bolivia, Colombia, Ecuador, Peru and Venezuela establishing the Andean Charter for Peace and Security and for the Limitation and Control of Foreign Defence Spending', Conference on Disarmament document CD/1678, Geneva, 24 June 2002.

Bio-weapons work plan agreed

States parties to the 1972 Biological Weapons Convention (BWC) met in Geneva, Switzerland, from 11–20 November, for the resumed session of the treaty's Fifth Review Conference. The meeting was suspended in December 2001 when states parties were unable to reach agreement on a verification protocol, following a last-minute US proposal to suspend the mandate of the Ad Hoc Group, which had been negotiating the protocol for six years.

The meeting was preceded by extensive consultations by conference chairman Ambassador Tibor Tóth of Hungary on a package of measures to advance the treaty process before the Sixth Review Conference in 2006. After four days of intense discussions, states agreed to an interim programme of work, comprising annual meetings aimed at promoting 'common understanding and effective action' on five issues. A two-week meeting of experts, tasked with preparing a report, will precede each annual meeting. The Sixth Review Conference is to consider the outcome of this intersessional work programme and decide on further action. The issues for discussion are:

- adoption of necessary national measures to implement the prohibitions set forth in the convention, including enactment of penal legislation;
- national mechanisms to establish and maintain security and oversight of pathogenic microorganisms and toxins;
- enhancing international capabilities for responding to, and investigating and mitigating the effects of, alleged use of biological or toxin weapons or suspicious disease outbreaks;
- strengthening and broadening national and international institutional efforts and existing mechanisms for the surveillance, detection, diagnosis and combating of infectious diseases that affect humans, animals and plants; and
- the content, promulgation and adoption of codes of conduct for scientists.

These measures represent middle ground between supporters of legally binding verification measures and those that tacitly backed the US call to terminate the Ad Hoc Group. Yet it is hoped that the interim work programme will regenerate the BWC process by providing an annual focus for implementation review. The Ad Hoc Group may be dormant, but it is not extinct. Despite its earlier opposition to any outcome other than agreement to reconvene in 2006, the US endorsed the measures as representing 'a realistic judgement about what can successfully be achieved'.

Meanwhile, a new civil society initiative to monitor the norm against biological weapons, the BioWeapons Prevention Project (BWPP), was launched in Geneva on 11 November. The BWPP is a global network of organisations that aims to reduce the bio-weapons threat by promoting transparency and accountability in the implementation of legal and political obligations relating to biological weapons. For further information see www.bwpp.org.

Source 'Final document of the Fifth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction', BWC/CONF.V/17; 'Straw welcomes outcome of Biological Weapons Convention Review Conference', UK Foreign and Commonwealth Office, 14 November 2002, www.fco.gov.uk; 'US statement at the Fifth Review Conference of the Biological Weapons Convention', Stephen G. Rademaker, Assistant Secretary of State for Arms Control, 14 November 2002, www. state.gov.

Trilateral Working Group develops verification methods

Russian Atomic Energy Minister Alexander Rumyantsev, US Secretary of Energy Spencer Abraham, and IAEA Director-General Mohamed ElBaradei met in Vienna, Austria, on 16 September to review the status of the Trilateral Initiative and decide its future direction. The initiative was launched by Russia, the US and the IAEA in 1996 to develop a new system to safeguard weapons-grade materials removed from Russian and US military programmes, while ensuring that weapons-related information was protected. The Vienna meeting concluded that the task entrusted to the Trilateral Working Group had been fulfilled. According to the IAEA, '[t]he program has demonstrated practical approaches for IAEA verification of weapon-origin fissile material designated as released from defence programs in classified forms or at certain sensitive facilities'. The work included the examination of technical, legal and financial issues associated with such verification. Progress was also made in developing and testing special verification equipment for plutonium, including that in warhead

pits. It was agreed that, building on the work completed, the technical experts should begin immediate discussions on 'future possible co-operation within the trilateral format', and that they should meet again in September 2003 to review progress.

Source 'US–Russia: experts develop verification methods, *Global Security Newswire,* 17 September 2002, www.nti.org, 'IAEA verification of weapon-origin fissile material in the Russian Federation and the United States', IAEA press release, 2002/13, 46th IAEA General Conference, 16 September 2002, Carah Ong, 'US and Russian plutonium disposition: the Trilateral Initiative', www.nuclearfiles.org.

Cuba ratifies nuclear treaties

In October Cuba unexpectedly announced its ratification of the 1967 Treaty on the Prohibition of Nuclear Weapons in Latin America and the Caribbean, also known as the Treaty of Tlatelolco. Cuba was the last of 33 eligible states to ratify the accord, which it signed in 1995. In November Cuba also ratified the 1968 Nuclear Non-Proliferation Treaty (NPT), leaving India, Israel and Pakistan as the only countries of any significance outside the agreement.

Source IAEA, press release, 2002/14, 17 September 2002; Greg Web, 'Cuba: Havana moves to ratify nuclear treaties', *Global Security Newswire,* 2 October 2002, www.nti.org; 'Cuba: Havana ratifies nuclear nonproliferation treaty', *Global Security Newswire,* 5 November 2002; 'Cuba: Havana ratifies Treaty of Tlatelolco', *Global Security Newswire;* Statement by H.E. Mr Felipe Perez Roque, Minister of Foreign Affairs of the Republic of Cuba, UN General Assembly, 14 September 2002, www.cns.miis.edu.

North Korea's new bomb route

Revelations of a possible North Korean nuclear weapons programme, in violation of its NPT safeguards agreement and the 1994 Agreed Framework with the US, have called into question nonproliferation efforts on the Korean peninsula and highlighted the need for more effective verification. Considerable uncertainty surrounds North Korea's nuclear capabilities and intentions. It may have admitted pursuing a uranium enrichment programme, but it remains unclear how much, if any, fissile material North Korea has accumulated and if, in fact, it already has a small nuclear arsenal.

Other states have responded to North Korea's apparent admission of a continuing nuclear weapons programme by calling on it to live up to its nonproliferation obligations, as well as for more effective verification to ensure that this happens. The IAEA has expressed its 'deep concern' and approached North Korea for clarification of the issue and for permission to resume inspections of nuclear facilities. These are mandated under the Agreed Framework but the North Koreans have never permitted them. The North Koreans have rejected the IAEA's request. It remains to be seen whether or not the Agreed Framework will survive, given the widening gap between the positions of North Korea and the US.

Source IAEA press releases, 2002/16 and 2002/17; Andrea Koppel and John King, 'US: North Korea admits nuke program', CNN, 17 October 2002, www.cnn.com; 'North Korea: United States to scrap 1994 Agreed Framework', *Global Security Newswire,* 21 October 2002, www.nti.org; 'UN deeply concerned by North Korea nuclear admission', *New York Times,* 24 October 2002, www.nytimes.com; 'North Korea: US demands verifiable end to North Korean nuclear program', *Global Security Newswire,* 1 November 2002; 'North Korea: Agreed Framework "hanging by a thread", former US official says', *Global Security Newswire,* 6 November 2002; Anne Marie Pecha, 'North Korea II: Pyongyang never admitted nuclear program, expert says', *Global Security Newswire,* 15 November 2002.

Central Asian Nuclear Weapon-Free Zone

After five years of stalled negotiations, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan agreed a final text for a treaty creating a Central Asian Nuclear Weapon-Free Zone (CANWFZ) at a conference in Samarkand, Uzbekistan, on 27 September. The treaty will prohibit these states from developing, producing or testing nuclear weapons in the zone, or assisting any other country to do so. The agreement also obliges the Central Asian republics to accept enhanced IAEA safeguards on their nuclear material and to meet international recommendations on the security of nuclear faculties. In addition, these nations pledge to redress the local environmental damage caused by the former Soviet Union's nuclear programme. As with other nuclear weapon-free zone treaties, the nuclear weapon states (NWS) recognised by the NPT are invited to offer so-called negative security assurances under a protocol to the treaty.

However, sticking points remain to be resolved before the agreement is adopted. Its ban on the stationing of nuclear weapons in the zone by other states brings it into conflict with existing accords, particularly the 1992 Tashkent Collective Security Treaty, which permits the stationing of nuclear weapons by Russia in Kazakhstan, Kyrgyzstan and Tajikistan. Opinions within the NWS range from that of Russia, which is expected to seek amendment of the treaty text, to that of China, which has openly supported the CANWFZ. It is anticipated that the US will raise objections to the treaty's precedent on issues including transiting and negative security assurances.

As further negotiations with the NWS have been set for December 2002, the treaty signing—which was due to take place at Semipalatinsk, Kazakhstan, a former nuclear weapon test site, on 18 October—has been delayed. However, the Central Asian states are adamant that they will adopt the treaty if agreement with the NWS cannot be reached. Once it has entered into force,

the agreement will create the world's fifth nuclear weapon-free zone: the first to be located entirely in the northern hemisphere and to be negotiated under UN auspices.

Source Christine Kucia, 'Central Asian states negotiate nuclear-weapon-free-zone, *Arms Control Today,* November 2002, www.armscontrol.org; 'Nuclear-free zone for Central Asia', *Washington Post,* 5 October 2002, p. A14; Scott Parrish, 'Central Asian states achieve breakthrough on nuclear weapon-free zone treaty', *Research Story of the Week,* Monterey Institute of International Studies, www.cns.miis.edu.

Kyoto verification finalised

Dubbed the 'COP between COPs', the Eighth Conference of the Parties to the 1992 United Nations Framework Convention on Climate Change (UNFCCC), held in New Delhi, India, from 23 October to 1 November, was never expected to set the world's media alight. It is worth reporting, though, that, after five years of extensive negotiation, parties finally adopted a complete package of guidelines on monitoring, reporting and reviewing implementation, under Articles 5, 7 and 8 of the 1997 Kyoto Protocol.

Substantial progress on these guidelines had been made at COP7, held in Marrakech, Morocco, in November 2001. Due to lack of time, however, a number of points were forwarded to COP8 for completion. These included: guidelines for reporting and reviewing information on emissions allowances and national registries; rules for an expedited review process for reinstating a party's eligibility to take part in the financial mechanisms; and a decision on how parties should report on demonstrable progress in 2005.

Parties also used COP8 to revise the reporting guidelines for national communications by developing countries, which are required under the UNFCCC. Underlying these discussions was the traditional tension over future emissions targets. Developing nations resist the strengthening of reporting obligations, regarding it as the first step towards having to limit their greenhouse gas emissions. This lack of trust between developed and developing countries was also apparent in the negotiation of the Delhi Declaration—the final conference document—which failed to establish a process for negotiating emissions reduction commitments after 2012.

Source 'Climate talks in New Delhi—COP8 summary', Pew Center, 1 November, www.pewclimate.org; *Earth Negotiations Bulletin,* vol.12, no. 209, 4 November, www.iisd.ca.linkages/climate/cop8.

CITES permits monitored ivory trade

Parties to the 1973 Convention on International Trade in Endangered Species (CITES) decided to permit limited and highly regulated sales of ivory at the twelfth meeting of the Conference of the Parties (COP12), held in Santiago, Chile, from 4–15 November. Under the new rules, Botswana, Namibia and South Africa will be able to make one-off sales of 20, 10 and 30 tonnes, respectively, of raw ivory held in existing legal stocks collected from elephants that have died of natural causes or as a result of government regulated animal control programmes. Similar proposals from Zambia and Zimbabwe were rejected by the conference.

Sales will be supervised through a rigorous control system. They cannot take place before 2004 to allow the CITES Secretariat time to verify and register existing stocks and for the collection of baseline data on population and poaching levels. Potential buyers also will have to show that they can effectively regulate their domestic markets. If either the exporting or importing country is found to be in non-compliance with these controls, or if there is evidence of an upsurge in poaching, the sales may be suspended.

Since the 1989 ban on all ivory sales, parties have debated whether a resumption of legal and managed sales would lead to an increase in poaching and illegal trade in elephant products. To inform the debate, CITES established two long-term monitoring initiatives. The first is the Elephant Trade Information System (ETIS), which was set up in 1997 and operates under the auspices of traffic (Trade Records Analysis of Fauna and Flora in Commerce), a wildlife trade network. It uses a broad range of inputs—including information on law enforcement efforts, domestic markets, economic variables and corruption indices—to track global and regional trends in illicit ivory trade. The first ETIS report was considered by COP12, where parties recognised ETIS as a powerful decision-making tool, providing an objective basis for assessing the impact of CITES decisions.

The second monitoring initiative is the project for Monitoring Illegal Killing of Elephants (MIKE). Administered by the Secretariat, MIKE aims to identify the main factors driving elephant poaching and to assess the influence of CITES decisions on modifying trends. Population surveys will be conducted at least once every two years at 45 sites in Africa and 15 in Asia and with a view to correlating them with local law enforcement provisions. Both initiatives will provide information on the ivory sales sanctioned in Botswana, Namibia and South Africa.

Source *Earth Negotiations Bulletin,* vol. 21, no. 30, 18 November 2002, www.iisd.ca/cites/cop12; 'CITES sets strict conditions for any possible future ivory sales', CITES press release, 12 November 2002, www.cites.org. For further information see Rosalind Reeve, 'Verification mechanisms in CITES', in Trevor Findlay and Oliver Meier (eds), *Verification Yearbook 2001,* London, VERTIC, 2001.

Science & Technology Scan

New method to detect anthrax

Scientists from Rockefeller University, New York, have developed an innovative way to detect (and kill) the bacteria that cause anthrax. The research team has isolated a bacteriaphage called PlyG lysin and used it in a simple handheld device to detect the presence of Bacillus anthracis. While existing anthrax tests often use similar techniques, these require specialised laboratory facilities to culture samples and can take several days to provide results. PlyG acts as the active substance in the new device, breaking down the bacteria cells. A scintillating substance then emits a flash of light when exposed to ATP—a chemical created as the bacteria cells die. A light meter within the unit converts the flashes into an electronic signal to indicate the presence of anthrax. The device is sensitive enough to detect 100 spores in an hour or 2,500 spores in approximately 10 minutes. However, this method is not sophisticated enough to differentiate between virulent and non-virulent strains, making additional laboratory tests necessary for full identification.

The promise of a rapid, reliable test for anthrax that can be carried out easily in the field is attractive in the context of biological warfare fears. Following recent anthrax scares in the US, the research project has been given 'fast track' status, in the hope that the test and a treatment based on it will be available within three years. The Rockefeller team is also investigating the use of virus lysins to develop detection and treatment techniques for cholera and plague.

Source 'Virus deals anthrax a killer blow', *Nature,* no. 418, 22 August 2002, pp. 825–826, 884–889; 'Enzyme "destroys" anthrax spores', BBC News, 21 August 2002, www.bbc.co.uk; M.J. Rosovitz and Stephen H. Leppla, 'Anthrax 1: researchers discover enzyme to destroy, detect cells', *Global Security Newswire,* 22 August 2002, www.nti.org; John Travis, 'Anthrax stopper: viral enzyme detects, kills bacterium', *Science News Online,* vol. 162, no. 8, 24 August 2002, www.sciencenews.org.

Stats to pinpoint underground nuclear tests

Julian Lee, a doctoral student at the School of Earth Sciences, Australian National University, has developed an innovative method for determining the location and depth of underground explosions. Current techniques rely on timing how long tremors take to reach monitoring stations around the world, which can be grossly inaccurate where there is inadequate knowledge of the terrain they are passing through. Consequently, it can be difficult to differentiate between weak underground tremors, nuclear test explosions and small earthquakes. Lee's method uses statistical algorithms to compare the travel times of the tremors with a database of earthquake information, making it possible to map the event epicentre correctly. Since test explosions occur nearer the surface, knowing the event's depth with greater accuracy is key to distinguishing them from earthquakes.

Under the 1996 Comprehensive Nuclear Test Ban Treaty (CTBT), inspectors may be required to visit sites of suspected explosions. By differentiating more precisely between natural and suspicious events, the new method will help to minimise unnecessary inspections. Furthermore, when a visit is considered necessary, the technique will help inspectors identify the location with greater confidence. Currently, they are expected to identify which 1,000 square kilometre area (or circle with a radius of 18 kilometres) they intend to visit before their departure.

Source Julian Lee, 'New method to detect nuclear tests', *ANU Reporter,* vol. 33, no. 11, 2 August 2002.

Tiny battery to provide power for 50 years

Following news that the University of Wisconsin had made a miniature nuclear battery (see *Trust & Verify* no. 101), researchers at Cornell University, New York, recently unveiled their own prototype. Like the Wisconsin device, theirs is powered by nickel-63, a radioactive substance. However, unlike its counterpart, it directly converts energy from the radioactive decay of the material into motion, which can power a mechanical device or generate electricity.

The prototype, which is only two centimetres long, consists of a thin copper strip cantilevered above a film of nickel-63. As the isotope decays it emits negatively charged beta particles, which collect on the copper strip and leave the nickel itself positively charged. The electrostatic build-up eventually causes the copper to bend and touch the nickel strip, allowing a current to flow between them and equalise the charge. The copper rod then springs back and the process repeats itself. Researchers believe that the device could provide uninterrupted power over 50 years or more for a range of isolated or inaccessible sensors and monitoring equipment. One potential application is as a power source for sensors monitoring the condition of missiles sealed in storage containers.

Source Will Knight, 'Radioactive battery provides decades of power', *New Scientist,* 22 October 2002, www.newscientist.com; 'Tiny battery developed at Cornell could run for decades unattended, powering sensors or machines', *Cornell News,* 16 October 2002, www.news.cornell.edu.

VERTIC | News & Events

Verification Yearbook launch

VERTIC's *Verification Yearbook 2002* is to be launched on 13 December. It is the third yearbook since the series was re-launched in 2000 and the tenth that VERTIC has produced. This year's edition contains 14 chapters, including, for the first time, one on electoral monitoring, and a foreword by Joke Waller-Hunter, Executive Secretary of the UNFCCC Secretariat. The book may be ordered by filling out the form enclosed with this edition of *Trust & Verify* or the one available at www.vertic.org. Alternatively call or e-mail VERTIC direct.

On-site inspection report published

VERTIC has published a comprehensive report on 'On-site inspections in arms control and disarmament verification' as number four in its Verification Matters series. John Hart, formerly VERTIC's On-Site Inspection (OSI) Researcher, analyses OSIs in theory and practice in regard to the role they play in arms control and disarmament regimes. He assesses current implementation of OSI provisions in selected arms control and disarmament verification regimes and describes major similarities and differences. The future nature and role of OSIs, given the changing international security environment, are also considered.

The report, which was informed by both research and a VERTIC workshop involving OSI practitioners (held in London in March 2001), should be useful to those involved in planning and implementing OSIs, as well as being of interest to the wider arms control and disarmament community. The report may be ordered at www.vertic.org or by calling or e-mailing VERTIC direct.

Staff news

MOLLY ANDERSON attended a meeting at the Department of Environment, Food and Rural Affairs on 11 October, organised by UK environmental non-governmental organisations (NGOs) to discuss preparations for COP8 (to the UNFCCC). Following this she attended COP8, which took place in New Delhi, India, from 23 October to 1 November, working with the Climate Action Network on issues related to Articles 5, 7 and 8. On her return she attended a COP8 debriefing meeting on 14 November and a two-day conference entitled 'Climate policy for the longer term: from here to where?' on 21–22 November, both organised by the Royal Institute of International Affairs (RIIA) in London. Molly is continuing to work on funding proposals for the environment programme.

KENNETH BOUTIN has been researching verification aspects of nuclear arms control agreements and the verification of controls on technology transfers. In November he visited the IAEA for discussions with officials on progress in adopting additional safeguards and developing integrated safeguards, and the Comprehensive Nuclear Test Ban Treaty Organisation (CTBTO) to discuss development of its monitoring system plus other CTBT issues. Kenneth represented VERTIC at the Carnegie Non-Proliferation Project Conference in Washington, DC, from 14–15 November. He also helped to edit several contributions to the *Verification Yearbook 2002*.

TREVOR FINDLAY attended a seminar at the Centre for Defence Studies, King's College London, on 2 October on the UK's co-operative threat reduction activities. On 4 October he gave 10 interviews for BBC regional radio on the proposed new inspection regime for Iraq. He attended the Conference of States Parties to the CWC in The Hague on 9 October to promote VERTIC's report, *Getting Verification Right,* and on 10 October a seminar by David Kelly on the trilateral biological weapons initiative at the Foreign and Commonwealth Office (FCO). He gave background briefings on Iraqi inspections to Channel 4 television, *USA Today* and the Canadian Broadcasting Corporation and was interviewed by Radio France Europe. On 23 October he participated in an FCO meeting at Lancaster House on the UK's Green Paper on biological weapons control. Following the meeting he submitted VERTIC's views in writing to the House of Commons' Foreign Affairs Committee hearings on the Green Paper. On 22 November he met with Juliet Prager of the Joseph Rowntree Charitable Trust and on 27 November met with a fundraising advisor. During the period he completed editing of the *Verification Yearbook 2002*.

BEN HANDLEY continued to handle VERTIC's administration. He began preparing for the annual audit and continued to upgrade the centre's contacts database.

KRISTINA HINDS completed her research on the Congo monitoring issue and ended her internship in early October. VERTIC wishes her well in her future studies and career.

NICOLA HORSBURGH joined VERTIC in November for a two-month internship. A fluent Spanish speaker, Nicola is assisting with the BWC National Implementation Legislation project by following up project questionnaires and researching legisla-

tion adopted in Spanish-speaking countries. She is also studying for a Masters degree in international relations at the London School of Economics and Political Science.

JOHN RUSSELL conducted research on verification and monitoring in the Middle East as part of VERTIC's participation in a project with the Israel–Palestine Centre for Research and Information (IPCRI). In addition he promoted and distributed recent VERTIC publications, and assisted with final preparations for the publication and launch of the *Verification Yearbook 2002*. John attended a meeting led by Dan Meridor, Israeli Minister without Portfolio, at the International Institute for Strategic Studies on 1 October and on 16 October, along with Kenneth Boutin, an All Party Working Group meeting presentation by Gary Samore and Wyn Bowen on Iraq. He also attended, along with Angela Woodward, a Pugwash meeting on the Future of Arms Control at the Royal Society on 14 November.

ANGELA WOODWARD participated in an International Alert workshop on its Small Arms and Light Weapons Implementation and Capacity-Building project in London on 11 October. She attended a lecture by Sir Franklin Berman KCMG, QC, on the International Criminal Court at Chatham House on 5 November. On 9–10 November she participated in the 18th Workshop of the Pugwash Study Group on the Implementation of the Chemical and Biological Weapons Conventions in Geneva. Angela gave a presentation on VERTIC's BWC National Implementation Measures project at the launch of the BWPP in Geneva on 11 November and represented VERTIC at the resumed session of the Fifth BWC Review Conference on 11 and 12 November in Geneva. On 21 November, she toured the satellite control centre of the International Maritime Satellite Organisation in London. Angela attended the All Party Parliamentary Landmine Eradication Group meeting, held at the House of Commons, on Explosive Remnants of War: New International Law to Protect Civilians on 25 November, and on 9 December she participated in the Harvard–Sussex Program meeting on the Fifth BWC Review Conference and the 'New Process', at the University of Sussex. She also continued her research on the BWC National Implementation Measures project and finalised the *Guide to fact-finding missions under the Ottawa Convention*.

VERTIC

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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