

UNMOVIC: progress, but to what end?

Since 27 November 2002, world attention has been focused firmly on the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC) and its Executive Chairman, Hans Blix. With the resumption of weapon inspections in Iraq by UNMOVIC and the International Atomic Energy Agency (IAEA) after a four-year interruption, came the prospect of successfully verifying Iraqi compliance with relevant United Nations (UN) Security Council resolutions. However, UNMOVIC's efforts were overtaken by events. Its mandate effectively ended when the US-led 'coalition of the willing' declared the imminent commencement of offensive military operations. All UNMOVIC personnel were withdrawn from Iraq on 18 March 2003.

Inspections were still evolving when they were abruptly cut short. The record reveals that, over the past four months, there was a steady increase in the intensity of inspections and an expansion of related activities, not to mention gradual, if grudging, improvement in Iraqi co-operation. The number of inspections rose from only 17 per week in November, to over 70 per week by the end of February. By 17 March, more than 800 inspections had occurred, comprising 235 nuclear, 163 missile, 164 biological, 119 chemical and 121 multidisciplinary inspections. Between them, UNMOVIC and the IAEA checked nearly 500 sites, 65 of which had not been inspected by UNMOVIC's predecessor, the United Nations Special Commission (UNSCOM).

The first phase of inspections focused on confirming the picture of Iraq's programmes developed prior to UNSCOM's eviction in 1998. This was followed by an investigative phase, which sought to verify Iraq's declaration of 7 December 2002. The latter saw the introduction of surveillance aircraft. Although Iraq raised some initial objections, a US-supplied U-2 plane carried out the first mission on 17 February; a French-supplied *Mirage* plane conducted its first mission on 26 February. The two aircraft procured digital imagery that could be delivered to New York within hours. UNMOVIC intended to supplement these sources with Russian surveillance planes with a night-vision capability and German-supplied unmanned aerial vehicles (UAVs).

Another key development was the eventual co-operation of Iraqi scientists in allowing themselves to be interviewed under conditions specified by inspectors—that is, without the presence of Iraqi minders or tape recorders. After 6 February, at least 26 Iraqi scientists were interviewed in this way by UNMOVIC and the IAEA. The next step would have been to conduct interviews outside of Iraq, possibly in Cyprus. An Arab state was also approached about hosting inspectors for this task.

In this issue . . .

Ben Mines looks at the successes of both the IAEA and UNMOVIC in Iraq since November 2002, while Kenneth Boutin uses the Iraqi case to highlight the factors that can hinder the effectiveness of verification. 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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Missile destruction milestone

Baghdad's declaration of 7 December revealed that the country had developed and produced two types of surface-to-surface missile. Declared data and missile tests showed that the *Al-Samoud 2* missile is capable of surpassing the 150 kilometre-range limit imposed by Security Council resolution 687 of 1991. Iraq had started to comply with UNMOVIC's request that these missiles be destroyed. By 17 March, 72 of the 120 missiles had been destroyed, as well as 47 warheads, three launchers, five engines, and two engine casting chambers. Clarification was still being sought on the specifications of the second type of missile, the *Al-Fatah*, when UNMOVIC ceased its activities.

Meanwhile, inspectors supervised the destruction of ten 155mm artillery shells and plastic containers of mustard agent at Al-Muthanna. These munitions had been scheduled for destruction in 1998, but UNSCOM pulled out of Iraq before the work could be carried out. Biological teams were also verifying the unilateral destruction of R-400 bombs, containing biological agents, at Azziziyah, a declared destruction facility. Excavation of the site revealed two complete munitions—one with liquid contents—which still had to be investigated. The IAEA also probed Iraqi attempts to purchase large quantities of high-strength aluminium tubes. Despite claims that they were intended for centrifuges for the enrichment of uranium, experts reported that there was no evidence that the tubes were meant for anything other than their declared use in rocket production.

Inspections end but questions remain

The abrupt termination of inspections leaves issues unresolved. Blix's quarterly report to the UN Security Council on 7 March identified at least 100 unanswered disarmament questions, many relating to uncertainty in quantifying the amount of anthrax and vx agents that Iraq had declared destroyed. This document also included reference to a UAV discovered by inspectors but not declared by Iraq in its 7 December dossier. Iraq's UAVs are subject to the same limitations as its missiles. Security Council resolution 1441 of 2002 also demanded, though, that Baghdad declare all such systems, regardless of their range. US Secretary of State Colin Powell stated that the US had observed a UAV conduct a 500km non-stop test flight and noted that it had the potential to carry dispensers for chemical or biological weapons.

While the situation as of late March 2003 remains unclear, it seems unlikely that there will be further inspections in Iraq. UNMOVIC was not granted the time to undertake properly the complex verification required in Iraq and did not receive the support that would have greatly facilitated its work. Nonetheless, UNMOVIC accomplished much in its short history, not least in terms of providing potentially valuable lessons that may inform future verification regimes.

Ben Mines

VERTIC Intern

Verification and the CWC

The First Review Conference of the 1993 Chemical Weapons Convention (CWC) will be held from 28 April to 9 May 2003 in The Hague, Netherlands. The number of states parties will reach 151 with the formal accession of Andorra, which deposited its instrument of accession on 29 March.

Extensive verification measures have been provided for under the CWC. The Organisation for the Prohibition of Chemical Weapons (OPCW), which is responsible for implementing the provisions of the CWC, verifies that states parties meet their obligations under the treaty. Most states parties have submitted their declarations of chemical weapons and related facilities, and the OPCW is verifying the dismantling of the chemical weapons capabilities of a number of states parties. In 2001, it verified the destruction of 957 tonnes of chemical weapons agent and the destruction or conversion to non-military use of 27 chemical weapons production facilities.

The OPCW has a chemical plant inspection programme to verify that states parties are not producing chemical agents. Shortfalls in the funding contributions of states parties have meant that the OPCW was not able to conduct as many inspections as it had planned. The voluntary contribution of US\$2 million made by the US in December 2002 should help to address this problem, however. This contribution was earmarked in part to fund additional inspections and information technology for verification planning, analysis and reporting.

Source OPCW website, www.opcw.org; Kerry Boyd, 'OPCW Annual Report Cites Progress, Problems', *Arms Control Today*, January/February 2003, www.armscontrol.org; 'OPCW receives US voluntary contribution', OPCW News Release, 3 December 2002.

Limits of verification: process, politics and potential

The four-month inspection saga may have ended, but the question of what verification could have achieved in this case remains relevant to the broader question of verification's potential. The experience of UNMOVIC and the IAEA in Iraq illustrates some of the factors that can restrict the effectiveness of verification. Verification is essential to arms control and disarmament, but its potential can be limited by political considerations and the structure of verification processes.

Fundamental is the objective of verification. Verification is geared towards ensuring that parties to a particular agreement meet their obligations. If commitments are vague or impractical, verification stands little chance of success. Similarly, verification measures that are poorly defined or inadequately implemented can undermine verification's potential. Structural problems with verification processes often result from lack of political will among states parties or from the signatories' inability to get to grips with issues of concern. Verification cannot compensate for weak agreements that fail to address key problems.

Debate over verification processes is also fuelled by differing views on what verification should be able to accomplish. Many policymakers believe that verification needs to be able to provide absolute or at least a very high level of assurance that proscribed activities are not being undertaken. The degree of assurance desired by these policymakers is difficult to attain, however, requiring extremely intrusive verification measures. Many practitioners, by contrast, set their sights on more realistic goals. They frequently focus on verification's capacity to provide a reasonable level of assurance, while noting its role in deterring non-compliance with treaty obligations.

The political environment is another critical factor. Verification agreements can be damaged by their misuse in the pursuit of self-serving political agendas. One way in which this can happen is through the abuse of verification mechanisms to level false or frivolous allegations of non-compliance against

other parties. This undermines the credibility of verification processes and diverts important resources from their intended objective. Similarly, deliberately obstructing the functioning of verification mechanisms erodes confidence in them, encouraging other parties to resort to more traditional, coercive policy instruments. 'Coercive verification' involves the imposition of a highly intrusive verification regime, backed by the threat of sanctions, including the use of force. It may be necessary in some cases, but it can be counter-productive through discouraging co-operation.

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The effectiveness of verification depends on parties' willingness to engage each other fairly, using available verification mechanisms as they were intended. A positive approach to verification will be reflected in avoiding the destructive practices mentioned above, and in parties providing sufficient support and time for verification to accomplish its task.

Iraq's disarmament obligations following its defeat in the 1990–91 Gulf War were clearly specified in a series of UN Security Council resolutions, beginning with resolution 687, and the mechanisms established for verifying its compliance were comprehensive. Provision was made for Iraqi declarations of its banned activities, weapons and materials, and for their verification by extensive inspections by the IAEA, UNSCOM and its successor UNMOVIC. Despite their valiant efforts, though, they were forced to operate in a political environment that was not conducive to success.

Prospects for verification in Iraq were constrained from the outset by lack of support for this process. Iraq was intent on retaining as much of its capabilities for developing weapons of mass destruction and delivery systems as possible, as demonstrated by its incomplete and misleading declarations, as well as by its attempts to hide armaments, materials and documents from inspectors. Its efforts were designed to minimise the effectiveness of verification; at no point did it offer the

level of proactive co-operation expected of it. In fact, such co-operation as did occur was undoubtedly prompted by the threat of military force by the US and other states.

For its part, the US failed to provide UNMOVIC with the backing that would have greatly facilitated its task. Information provided by the US to the IAEA and UNMOVIC over the past four months was slow in coming and did little to assist verification. The IAEA and UNMOVIC were unable to validate any of the allegations made by Washington, and some of the information, such as that regarding Iraqi attempts to acquire uranium from Niger, is now known to have been false. In addition, the US was not prepared to grant inspectors the time necessary to verify the broad range of activities of concern in a country the size of Iraq. Blix stated on 20 March his view that the US was 'doubtful from the beginning'. This is borne out by statements made by Powell and other senior administration officials at the UN and elsewhere since November.

Even if the process of verifying Iraqi compliance with its disarmament obligations had been allowed to run its course, it is unlikely that it would have produced results that would have been considered satisfactory by the US, which was pursuing its own objective of 'regime change'. The level of assurance required by the US was unattainable. Meanwhile, the lengths to which Iraq went to avoid disarming meant that any verification regime would have faced a very difficult task.

Despite absence of full, active and timely support from Iraq and the US, efforts by the IAEA, UNSCOM and UNMOVIC to verify Iraqi compliance with its disarmament obligations were successful in their own terms. The renewal of conflict in Iraq does not detract from the successes of the verification efforts of the IAEA and UNMOVIC. Their professional approach and effective use of resources accomplished much in the time that was available to them.

Future verification requirements for Iraq remain unclear. Yet, the experience that the international community has gained in this instance is not necessarily wasted. Efforts to verify Iraqi compliance with disarmament obligations pertaining to its advanced nuclear, biological and chemical weapons programmes and related delivery systems have provided lessons that should prove useful in future. It is clear from the Iraqi case how much verification can achieve, and how critical it is to secure the necessary political support and to provide for effective and timely verification tools.

The CANWFZ treaty and verification

A treaty establishing a Central Asian Nuclear Weapon-Free Zone (CANWFZ) is expected to be signed later this year. Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan first need to consider, though, some of the nuclear weapon states' concerns regarding the accord's provisions on the transit of nuclear weapons, its relationship with other regional agreements, and the possible extension of the zone. Verification of the CANWFZ will largely rest on the requirement that signatories conclude comprehensive safeguards agreements with the IAEA, if they have not already done so, within 18 months of entry into force. The agreement will have its own compliance mechanism, however. Regular annual meetings will be held and extraordinary meetings may be convened at the request of any party 'to review compliance or other questions related to the implementation of this treaty'.

Source Draft text of the provisional Treaty of Samarkand; Mike Nartker, 'International response: Iraq crisis derails Central Asian treaty talks', *Global Security Newswire*, 12 March 2003, www.nti.org.

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Bush releases disarmament funds

US President George W. Bush signed a special order on 10 January 2003 releasing around US\$450 million in Cooperative Threat Reduction programme funding which will be used to dismantle Russian weapons of mass destruction. The funding had been withheld because the Bush administration had refused to certify that Russia was in compliance with existing arms control commitments (see *Trust and Verify*, no. 104). Congress gave the president authority to waive the certification requirements in defence bills passed in late 2002. The authority is valid for the next three years and ends a year-long hold on spending. Some of the released funds will be used to assist Russia in constructing a chemical weapons disposal facility near the city of Shchuchye. The plant will eliminate some two million chemical shells and warheads. While the transfer of new funds means that the destruction of Russia's nuclear, biological and chemical weapons stockpile can continue, US refusal to certify that Russia is in compliance with its arms control and disarmament commitments continues to affect nonproliferation efforts adversely.

Source 'US response: Bush releases frozen Schuchye funding', *Global Security Newswire*, 14 January 2003, www.nti.org; 'US response: releases frozen cooperative threat reduction funds', *Global Security Newswire*, 15 January 2003; Peter Eisler, 'Bush frees cash to secure Soviet arms', *USA Today*, 14 January 2003, www.usatoday.com.

US Senate approves SORT

On 6 March 2003, the US Senate unanimously approved the Strategic Offensive Reductions Treaty (SORT) (see *Trust & Verify*, no. 103). The Moscow Treaty, as it is also known, will reduce the number of American and Russian long-range nuclear warheads by two-thirds by 2012. The debate that preceded the vote was dominated by what was not in the agreement rather than by what is. While Democrats supported the treaty, they criticised the absence of any verification requirements, enforcement provisions, mechanisms for weapons detection, and timetables for interim deadlines, as well as the fact that the accord does not require the destruction of the weapons themselves.

A modest gesture toward verification resulted from the Senate Foreign Relations Committee's review of the treaty. It passed a resolution on 5 February to approve the agreement subject to two minor conditions. The first requires an annual report by

the US administration on the Russia-US Cooperative Threat Reduction programme, detailing the amount of assistance that Russia will need to meet its obligations under the Moscow Treaty. The other requires a yearly update on the status of treaty implementation by Russia and the US, including strategic force levels, planned annual cuts, and any verification and transparency measures that have been or might be employed. The Senate approved both conditions, which will increase transparency and accountability under the treaty.

Although there were hopes that the Russian and US legislatures would take up the agreement simultaneously, the Duma has indefinitely postponed considering ratification in protest against US military action against Iraq.

Source David Ruppe, 'US-Russia 1: Senate consideration of Moscow Treaty begins', *Global Security Newswire*, 6 March 2003, www.nti.org; David Ruppe, 'US-Russia: Senate committee recommends approval of Moscow Treaty', *Global Security Newswire*, 5 February 2003; 'Media advisory, Senate approves flawed nuclear treaty', *Arms Control Association*, 7 March 2003, www.armscontrol.org; Senator Richard G. Lugar, Chairman, Committee on Foreign Relations, 5 March 2003, <http://Lugar.senate.gov/030503a.html>; 'Vote on US-Russia nuke treaty delayed', *Guardian Unlimited*, 18 March 2003, www.guardian.co.uk.

US considers converting ICBMs to conventional role

The US is considering converting some of its nuclear-armed inter-continental ballistic missiles (ICBMs) into non-nuclear delivery systems. Planning is still in its early stages. The US air force will begin formally exploring the idea of converting *Minuteman III* missiles later this year in a two-year review the military has called an 'analysis of alternatives'. An array of conventional warheads, including some designed to act as 'bunker busters', could potentially be deployed.

Arms control experts have raised a number of concerns regarding the plan. There is no guarantee that missiles converted to a conventional role could not be converted back to a nuclear role. There is also the danger that other countries will attempt to emulate the US. The risk of accidental nuclear war could increase, as other countries would have no means of distinguishing the launch of conventionally-armed ICBMs from nuclear-armed ICBMs.

This programme presents particular difficulties from a verification perspective. The coexistence of nuclear- and conventionally-armed ICBMs for the first time would complicate verification of existing arms control agreements. US officials believe that any conventionally-armed ICBMs would still have to be counted under existing agreements, such as the 1991 Strategic Arms Reduction Treaty (START).

Source Eric Schmitt, 'US considers conventional warheads on nuclear missiles', *New York Times*, 24 February 2003, www.nytimes.com; 'United States: Pentagon considering converting ICBMs to conventional warheads', *Global Security Newswire*, 24 February 2003, www.nti.org.

US nuclear weapons and the CTBT

The United States' revived interest in nuclear testing is threatening to undermine the global non-testing norm. It is driven by the requirement to strike hardened underground facilities housing weapons of mass destruction or other high-value targets, while minimising collateral damage. While the US could field a 'bunker-busting' nuclear device without violating the current ban on nuclear testing by modifying an existing design, testing would be needed to validate a new generation of weapons.

The administration of US President George W. Bush is regarded as sympathetic to a resumption of nuclear testing, and to the qualitative enhancement of the country's nuclear arsenal, notwithstanding the US testing moratorium. Officials have questioned the continued viability of the US nuclear arsenal without further testing. A major conference on the question of nuclear weapons development and testing is expected to be held later this year. In a related development, the National Nuclear Security Administration (NNSA) has announced its intention to shorten the time needed to conduct a nuclear test from two-to-three years to 18 months.

Source Steve Tetreault, 'Resumption of nuclear testing on Bush agenda', *Las Vegas Review-Journal*, 21 February 2003; 'United States: Pentagon planning nuclear weapons meeting', *Global Security Newswire*, 19 February 2003, www.nti.org; David Hambling, 'Deep impact', *New Scientist*, 8 March 2003, pp. 38-41.

US bio-terrorism monitoring

At the end of January 2003 the US started deploying a national system of environmental monitors to detect the release into the air of deadly biological pathogens, such as anthrax and smallpox, within 24 hours. Under this system, some 3,000 existing air quality monitoring stations run by the Environmental Protection Agency (EPA) are being adapted and upgraded so that they can register the presence of unusual quantities of a wide range

of pathogens. These stations are being fitted with filters to detect biological agents. The new system, known as Bio-Watch, is designed to reduce the response time in the event of an attack, thereby saving lives. If a monitoring station detects a suspicious substance, samples will be transferred for analysis to one of 120 laboratories across the country associated with the Federal Centers for Disease Control and Prevention. The results will be available within 24 hours or, in some cases, perhaps even 12 hours. The US administration is also working to develop reliable instant detectors. While some have been distributed and others are being tested, they are providing too many 'false positives'. Some experts have questioned how effective the EPA system will be, arguing that detecting specific bacteria and viruses is very difficult and that the new system will only identify large releases or ones in the immediate vicinity of a detector. The removal and checking of the filters is also likely to be time consuming and costly.

Source 'US response I: officials plan national pathogen detection system', *Global Security Newswire*, 22 January 2003, www.nti.org; Judith Miller, 'US is deploying a monitor system for germ attacks', *New York Times*, 22 January 2003, www.nytimes.com; Maggie Fox, 'Experts question US germ detection rollout', *Reuters*, 22 January 2003, www.reuters.com.

NGO Shadow Report on nuclear disarmament promotes transparency

The non-governmental organisation (NGO), Reaching Critical Will, is producing an 'NGO Shadow Report' to be presented at the 1968 Nuclear Nonproliferation Treaty (NPT) Preparatory Committee meeting in Geneva, Switzerland, from 28 April to 9 March 2003. The report is designed to act as a model for a universal reporting mechanism for the NPT, helping to strengthen the treaty and to encourage states to meet their commitments. It is based on publicly available information and is presented using standard categories and agreed measurements. The Shadow Report catalogues 44 countries that have been identified by the IAEA as having nuclear power and research reactors. It lists the number and location of nuclear weapon holdings and operational planning details, activities undertaken in accordance with Article VI of the NPT, stocks of fissile material, the transfer, acquisition and research and development of equipment, materials and information on nuclear science, the number of nuclear power plants, national policies on the universality of the NPT, and positions taken in international fora. Parties to the 2000 NPT Review Conference agreed by consensus to make this information available as part of the 13-point action plan of practical steps for the systematic and progressive disarmament of the world's nuclear weapons.

Source Reaching Critical Will, 'NGO Shadow Report on Nuclear Disarmament', www.reachingcriticalwill.org.

Extending Wassenaar

Members of the 1995 Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies agreed additional voluntary measures aimed at improving export practices among the 33 member states at a meeting in Vienna, Austria, on 11–12 December 2002. The measures establish 'best practice' guidelines for assessing specific sales based on criteria including the importing state's compliance record with arms control and nonproliferation agreements, its legitimate need for the weapons, and its adherence to human rights norms. In addition, exported weapons should be marked—to facilitate tracing—and the original exporting state should be notified of any re-export. Russia, however, blocked agreement on extending the annual information exchange—currently required for dual-use goods and technologies and seven categories of conventional weapons—to include small arms and light weapon exports. Russia also blocked a proposed 'catch-all' provision requiring government review of exports not otherwise covered by Wassenaar, notably of sales to countries under a UN arms embargo.

Source 'Wassenaar members adopt small arms initiative', *Arms Control Today*, January/February 2003, p. 20; 'Public Statement, 2002 Plenary of the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies', www.wassenaar.org.

Global Witness logging out of Cambodia?

The Cambodian government has announced that it will not be renewing a contract appointing the UK-based NGO, Global Witness, as independent monitor of its Forestry Crime Monitoring Project. This follows a recent report by the organisation that claims that the Cambodian government is supporting illegal logging activities and ignoring systematic violence against activists. In response, Cambodian Attorney-General Kao Bun Hong has stated that he will be filing a lawsuit against Global Witness' Country Director, Eva Galabru, claiming that she is responsible for spreading 'disinformation'. On 16 February 2003, the World Bank decided to freeze US\$20m of aid for the project and is threatening to withdraw completely unless the government maintains the independent monitoring of its forestry management programme.

The Forestry Crime Monitoring Unit (FCMU) was established in 1999 after a World Bank Consultative Group meeting on illegal logging in Cambodia. It consists of two governmental departments—the Forest Crime Monitoring Office (FCMO)

and the Department of Inspection—and an independent monitoring unit. Global Witness is currently contracted to monitor independently the activities of the government departments. As well as on-site inspections and analysis of satellite imagery, it should have access to information from all provincial and district offices in Cambodia.

According to Global Witness, the FCMO has failed to impose penalties against companies taking part in illegal logging activities. Furthermore, it claims that the FCMO and the Department of Inspection have not fully co-operated with it, preventing access to data necessary to monitor the project. Unfortunately, illegal logging in Cambodia continues to be very profitable, making it doubtful that even the potential loss of World Bank aid will prompt more diligent efforts by the government to protect its forests.

Source 'Cambodia ditches logging watchdog', BBC News, 29 January 2003, www.bbc.co.uk; Cambodia Forest Crime Monitoring project website, www.forestcrime.com; Global Witness website, www.globalwitness.org/projects/cambodia; Alan Sipress, 'Illegal logging rife in Cambodia', *Washington Post*, 16 February 2003; Van Roeun and Matt McKinney, 'Gov't Global Witness official will be sued', *Cambodia Daily*, 15 January 2003, <http://cambodia.ahrchk.net>.

Iran: nuclear transparency and safeguards

Recent nuclear developments in Iran have raised proliferation concerns and highlighted weaknesses in the nuclear nonproliferation regime. Concern has focused on the uranium enrichment plant being built at Natanz and the heavy water plant near Arak, but these are only part of a very ambitious programme to develop a completely autonomous nuclear fuel cycle, encompassing the mining of uranium ore to the fabrication of nuclear fuel. This programme includes the indigenous production of critical components, such as centrifuges for uranium enrichment. Lack of transparency regarding Iran's nuclear programme has heightened concern that it is intended to support the development of a nuclear weapon capability.

This case has highlighted a number of shortcomings in the existing nuclear nonproliferation regime. While Iran is an NPT signatory and has negotiated the requisite safeguards agreement with the IAEA, the Natanz and Arak facilities were not under safeguards and had not in fact been declared to the IAEA. Their existence was only revealed by an Iranian opposition group last year. Iran's new nuclear facilities fall into the gap between traditional full-scope and strengthened nuclear safeguards. According to the former, these facilities do not have to be declared until six months prior to the introduction of nuclear material—it is unclear if the Natanz

plant is operational or if it even has been tested. Iran has not signed an Additional Protocol to its safeguards agreement, which would enable the IAEA to conduct inspections of undeclared nuclear facilities, and it has not complied with the IAEA's 1992 request that states provide information on new facilities as soon as construction decisions are taken or authorisation granted. The impressive progress made by Iran's nuclear industry may have been supported by technology transfers from non-traditional nuclear suppliers, underscoring another gap in the global non-proliferation regime.

Iran initially refused requests to consider negotiating an Additional Protocol agreement, but the head of its Atomic Energy Organisation, Gholam-Reza Aqazadeh, has now indicated that Iran has 'accepted' this request. In February, it allowed IAEA Director General Mohamed ElBaradei to conduct a 'guest inspection' of a number of its declared and undeclared nuclear facilities, including the Natanz plant, and has agreed to provide advance notice of any new nuclear facilities.

Source 'Iran: Tehran rejects enhanced nuclear safeguards', *Global Security Newswire*, 24 February 2003, www.nti.org; 'IAEA to visit two "secret" nuclear sites in Iran', *Arms Control Today*, vol. 33, no. 1 (January/February 2003), p. 23; Andrew Koch, 'Iran's nuclear capability probed', *Jane's Defence Weekly*, 5 March 2003, p. 6; Charles Digges, 'IAEA visit to Iran reveals uranium enrichment facility near Nantanz', 24 February 2003, www.bellona.no.

Peace Missions Monitor

UNIKOM withdraws from Iraq

One little-noticed consequence of the US decision to attack Iraq has been the withdrawal of the United Nations Iraq–Kuwait Observer Mission (UNIKOM) from the Iraqi side of the Iraq–Kuwait border. The mission, comprising 1,100 troops and 230 support staff, has been monitoring the 15-kilometre-wide demilitarised zone between the two countries that was established at the end of the Gulf War in 1991. The zone has been off-limits to all but UN observers and lightly armed Iraqi and Kuwaiti guards (on their respective side of the border).

Sri Lankan ceasefire violation stumps monitors

The Sri Lanka Monitoring Mission (SLMM), which is monitoring the truce between the Sri Lankan government and the Liberation Tigers of Tamil Eelam (LTTE), has been unable to verify details of the most serious violation since the ceasefire agreement was signed in February 2002. On 10 March 2003, the Sri Lankan navy fired upon and sank a rebel boat in international waters 220 kilometres from the capital Colombo, resulting in 11 Tamil Tigers being killed and four navy personnel being wounded. An SLMM spokesperson was unable to verify the government's claim that the vessel had 'war-like material' onboard, rather than diesel fuel, as the rebels contend. The SLMM is investigating why the navy did not request an international monitor to accompany them when they first received information about the ship's movements. The incident threatened to complicate a new round of peace talks between the two sides beginning in Hakone, Japan, on 18 March.

Effectiveness of Sinai mission in doubt

Both Egypt and Israel have expressed concern about the future effectiveness of the Multinational Force and Observers (MFO), which has been monitoring compliance with the 1979 Sinai peace agreement between the two countries for the past 23 years. As part of a rationalisation of its deployments worldwide, the US has decided to reduce its troop commitment to the MFO by 43 per cent, from the current battalion strength of 865. Ten other countries provide troops and support personnel to the force, which, in October 2002, numbered 1,831. Egypt and Israel reluctantly agreed to the cuts in November 2002 after constant prodding by the US. Consideration is being given to hiring private contractors for services traditionally performed by the US army, such as fixed-wing aviation, ground transportation, logistics and other support.

International monitors for Sudan truce

International observers from Italy, Norway, the UK and the US are expected to monitor compliance with the agreement between the Sudanese government and the Sudan People's Liberation Army (SPLA) signed in February 2003. The new accord is designed to strengthen the ceasefire that the two sides signed in 2002 and is supposed to last while peace talks continue in Kenya. A committee comprising representatives of the participating countries will investigate any alleged infringements and rule on any complaints.

Source 'UN border monitors withdrawn', BBC News, 23 March 2003, www.bbc.co.uk; 'Sri Lanka navy "hits rebel boat"', BBC News, 10 March 2003; 'Clash tests Tigers' patience', BBC News, 11 March 2003; 'Sri Lanka talks focus on tension', BBC News 18 March 2003; 'Drawdown imperils MFO mission', *Defense News*, 17 February 2003, p. 20; 'Sudan rivals strengthen truce', BBC News, 4 February 2003.



Sensory flocks

US forces in Iraq are using flocks of birds to provide early warning of chemical weapon attacks. They will be placed in cages on top of military vehicles. US military planners are embracing this solution due to worries that pollution from destroyed oil wells may impede the operation of more hi-tech alternatives. The strategy, originally nicknamed 'Operation Kuwait Field Chicken' ('KFC'), utilises the birds' high sensitivity to chemical munitions. However, the death of 41 of the 43 chickens originally deployed to the Gulf within a week of arrival has meant that pigeons are now being enlisted instead.

Martin Furmanski, a pathologist and medical historian, has also suggested that a flock of sheep could be an effective and cost efficient means of detecting an open air anthrax attack in a strategic location. He argues that sheep are highly sensitive to inhaled anthrax and would die several days before humans begin to show signs of infection. Furthermore, infected sheep show anthrax bacilli in their blood stream, making quick and easy diagnosis possible using a simple microscopic examination of blood samples.

Source 'Chickens of war', *Daily Mail*, 21 February 2003, www.dailymail.co.uk; Verity Murphy, 'Let slip the sea lions of war', *BBC News World Edition*, 11 March 2003, www.news.bbc.co.uk; Sean Maguire, 'us marines enlist pigeons to battle Iraqi gas' *Reuters*, 14 March 2003, www.reuters.com; private communication with Martin Furmanski.

Pentagon commercial satellite contracts to aid nonproliferation

Nonproliferation efforts received a significant boost on 16 January 2003 when the US National Imagery and Mapping Agency awarded multi-year contracts (worth up to US\$500m each) to Space Imaging Corporation and DigitalGlobe Inc. to supply commercial satellite images to supplement those from US spy satellites. The move follows a 2002 announcement by the Director of the Central Intelligence Agency, George Tenet, that the intelligence community should begin increasing its reliance on high-resolution satellite imagery from private companies. Since all images purchased by the government or private clients are kept in public archives, this trend is expected to increase transparency in the wider nonproliferation community. Specifically, greater access to high-resolution space imagery will assist the work of international arms inspectors, enhance efforts to pursue treaty violators, and improve the ability of

governments, international organisations and NGOs to monitor these activities.

Source Bryan Bender, 'us response II: Pentagon gives major contracts to commercial satellite firms', *Global Security Newswire*, 17 January 2003, www.nti.org.

DNA bar coding to identify GMOs

The UK government is considering making biotech companies integrate deoxyribonucleic acid (DNA) bar codes into their products to identify uniquely genetically modified organisms (GMOs). This technology would make it easier to regulate genetically modified foods and to determine whether other foodstuffs have been contaminated with GMO material. The labelling of GMOs will be important for fulfilling government commitments on customer choice and building confidence in food safety. More generally, the movement of GMOs will be internationally regulated under the 2000 Cartagena Protocol on Biosafety to the 1992 Convention on Biodiversity when it enters into force.

Although the UK Department for Environment, Food, and Rural Affairs (DEFRA) is exploring ways to track GMOs effectively, it has not yet committed itself to any one method or technology. However, DEFRA's chief scientific advisor told *New Scientist* that: 'Any developments which would help in the process of detecting and identifying GMOs would be welcomed'. A recent European Union (EU) directive already requires that biotech companies supply detailed information on each of their GM products and how to identify them. It also gives member states the power to make the encoding of unique identifiers into GMOs compulsory.

The bar coding technique involves incorporating a unique string of acids into the DNA of each organism, which can be read using a simple DNA test. The bar code could provide detailed information on the product, such as where it was made and how it has been modified.

The tracking of GM goods is currently very difficult and companies are resistant to revealing more information about their products, claiming that it leaves their patents open to imitation by competitors. Instituting a system of DNA bar coding could overcome these difficulties by helping to identify the origin of products, yet protecting trade secrets.

Source Duncan Graham-Rowe, 'Britain wants genetically modified food to have DNA bar codes', *New Scientist*, 15 February 2003, vol. 177, p. 5.

Guide to fact-finding missions under the Ottawa Convention published

VERTIC published a *Guide to fact-finding missions under the Ottawa Convention* to assist states parties to the 1997 Landmine Ban Treaty in their advance planning and preparations for receiving a fact-finding mission should one be authorised under Article 8 of the convention. Prepared by VERTIC Legal Researcher Angela Woodward, it is the culmination of a project funded by the Diana, Princess of Wales Memorial Fund. The guide will be distributed widely to governments, researchers and NGOs involved in landmine issues. Free copies can be obtained from VERTIC.

New grants

The John D. and Catherine T. MacArthur Foundation has announced that it is to give VERTIC a grant of US\$500,000 over the next three years. The funds will be used for VERTIC's networking, media and publication activities, including the *Verification Yearbook* and an electronic version of the *Verification Organisation's Directory*. VERTIC is extremely grateful for this generous support from one of the leading US foundations.

Along with three other London-based NGOs—the British American Security Information Council (BASIC), Saferworld and the International Security Information Service (ISIS)—VERTIC has been awarded £21,000 by the Network for Social Change (NSC) for a project on 'Enhancing multilateralism'. The project aims to produce a series of electronic briefings examining ways in which the gap between Europe and the US on key international issues might be bridged. A project planning meeting will be held shortly.

New network member

VERTIC is pleased to announce that Dr Edward Ifft has joined its International Verification Consultants Network. Dr Ifft was formerly a senior US Department of State arms control negotiator and Senior Advisor to the Defense Threat Reduction Agency. He has a PhD in Physics.

Interns

Alex Wood, who was compiling a record of UNMOVIC inspections in Iraq and researching the verification provisions of the CANWFZ, left VERTIC in February. VERTIC wishes him well in his future career. He was replaced by Ben Mines, who will be

continuing the UNMOVIC inspection project. Ben has just been awarded a PhD in Biological Sciences by Cambridge University. He was previously an intern at the United Nations Secretariat in New York.

Staff news

MOLLY ANDERSON delivered a presentation on the linkages between verifying international, regional and domestic trading regimes at a workshop in Budapest, Hungary, from 7–9 April. It was organised by the Concerted Action on Trade in Emissions Permits (CATEP) network, which includes the Foundation for International Environment Law and Development (FIELD), the United Nations Environment Programme (UNEP) and the Central European University. On 17 February, Molly attended a publication launch by the Carbon Disclosure Project, and later that day, along with Angela Woodward and John Russell, attended a seminar on monitoring the illegal trade in diamonds at the Royal Institute of International Affairs (RIIA). On 18 February she attended a social event for those working on climate change issues in the UK. Molly is continuing to work on funding proposals for VERTIC's Environment Programme and on a VERTIC briefing paper on the International Standards Organisation and its development of greenhouse gas accounting standards.

KENNETH BOUTIN attended a policy address on Iraq by Jack Straw, the UK Secretary of State for Foreign and Commonwealth Affairs, at the International Institute for Strategic Studies (IISS) on 11 February, and a seminar on 'Science and technology for national security—the next 50 years' by Dr Eileen Vergino, Deputy Director of the Centre for Global Security Research at the Lawrence Livermore National Laboratory, at the IISS on 13 February. Along with Trevor Findlay, he attended a seminar on 'Combating the biological challenge: the need to engage the private biotechnology industry' by Dr Michael Moodie, President of the Chemical and Biological Arms Control Institute, at the IISS on 18 February. On 25 February he met with David Isenberg, Senior Analyst at BASIC, to discuss research agendas. On 27 February he attended a Harvard Sussex Programme seminar on 'Biological weapons and Anglo-American-Canadian cooperation 1940–2003: the Canadian perspective'

by Dr Don Avery of the University of Western Ontario, at the Science Policy Research Unit, University of Sussex.

TREVOR FINDLAY, along with Kenneth Boutin and Angela Woodward, met with Robert McDougall and Christopher Grout of the Canadian Department of Foreign Affairs and International Trade, on 29 January to discuss possible future cooperation. He was a commentator for BBC World on 5 February on US Secretary of State Colin Powell's address on Iraq to the UN Security Council. On 6 February he met in London with Dr Mordechai Melamud, Chief of the Operations and Training Section of the Comprehensive Nuclear Test Ban Treaty (CTBT) Organization's Preparatory Commission. Later that day he met with Colette Taquet, Minister/Counsellor at the Belgian Embassy in London to discuss inspections in Iraq. On 19 February he met with Michael Rebehn, editor of *Open Democracy*, to discuss his article on arms control inspections. As Chair of the Recruitment Committee for the Directorship of the Biological Weapons Prevention Project (BWPP), he participated in candidate interviews in Geneva on 21 February. The following week he attended a seminar on 'New approaches to nuclear verification and nuclear security' at the IAEA in Vienna, where he was a commentator on a paper presented on 25 February on the Additional Protocol. He gave an interview that day to the us-based National Public Radio, which was broadcast several days later. On 13 March, Trevor attended a seminar on 'Raising funds from America' organised by Action Planning consultants. He was interviewed by seven BBC regional radio stations on 17 March on IAEA and UNMOVIC inspections in Iraq.

BEN HANDLEY continues to manage VERTIC's administration. He prepared budgets for various funding applications and reports to funders. On 26 February he attended a second course on the use of Macromedia Dreamweaver. Ben has assumed responsibility for, and has been updating, VERTIC's database of contacts.

MARITA KIVILAHTI attended a conference entitled 'From Johannesburg to a sustainable development strategy for the UK', organised by the United Nations Environment and Development-United Kingdom (UNED-UK) Committee on 19 February at the Brunei Gallery of the School of Oriental and African Studies (SOAS). On 3 and 4 March she participated in a meeting on 'Biodiversity after Johannesburg' at the Zoological Society of London. The meeting was organised by Equator Initiative, the Royal Society for the Protection of Birds, The Nature Con-

Verification Quotes

'We are not watching the breaking of toothpicks, lethal weapons are being destroyed.'

Chief UN weapons inspector Hans Blix, speaking on the destruction of Iraqi *Al-Samoud II* missiles, 'Blix: inspectors "need months"', BBC News, 7 March 2003, www.bbc.co.uk.

'But anybody who understands inspections understands that it takes time.'

Interview with IAEA Director General Mohammed El Baradei, *Time*, 20 January 2003, p. 31

'We can easily put together a regime of inspection and verification should one be needed, if they really are determined to come forward and tell us what they are doing and that they are going to stop.'

US Secretary of State Colin Powell, quoted in *Global Security Newswire*, 3 December 2002, www.nti.org.

'You don't need to be an expert in chemical or biological weapons . . . You just need to be able to spot deviations from the norm.'

UNMOVIC official Nikita Smidovich, quoted in Romesh Ratnesar and Andrew Purvis, 'To Catch a Cheat', *Time*, 25 November 2002, p. 39.

'We want the nuclear program to be dismantled in a verifiable manner. We hope China and South Korea will play a constructive role toward that end.'

Japanese Prime Minister Junichiro Koizumi speaking on the North Korean nuclear weapons development programme, quoted in *The Japan Times*, 5 November 2002, www.japantimes.co.jp.

'Our position remains that photographs showing new construction are of great interest to us. However, it is only through inspections that we will be able to draw authoritative conclusions as to whether Iraq is complying with its nuclear-related obligations.'

IAEA spokesman Mark Gwozdecky, quoted in 'Nuke Agency Seeks Tough Resolution', *The Washington Times*, 9 October 2002, www.washtimes.com.

servancy, the United Nations Development Programme (UNDP), UNEP's World Conservation Monitoring Centre and the UK Department for International Development (DFID). Marita continued her research on a pamphlet to promote the verification of multilateral environmental agreements.

JOHN RUSSELL continued to conduct research on verification and monitoring in the Middle East, as part of VERTIC's involvement in the Israel-Palestine Center for Research and Information (IPCRI) Verification Working Group. He attended the second IPCRI workshop in Antalya, Turkey, from 6-9 March, along with Trevor Findlay and Kenneth Boutin, and prepared a matrix of third party involvement in peace operations that was presented to the group. He has also been carrying out research on the IAEA Strengthened Safeguards system. In addition he has

continued to promote and distribute the *Verification Yearbook 2002*. On 17 February, he attended a seminar at the RIIA (with Molly Anderson and Angela Woodward) on monitoring the illegal trade in diamonds, at which he met with Corinna Gillfillan of Global Witness to talk about possible future cooperation.

ANGELA WOODWARD participated in a Landmine Action meeting on 22 January on Explosive Remnants of War (ERW). She launched the *Guide to fact-finding missions under the Ottawa Convention* at the informal dialogue on compliance matters between parties to the convention in Geneva on 31 January. On 4 and 5 February, she observed the UK trial fact-finding mission exercise for the Ottawa Convention, entitled Operation Partlett, at RAF Wittering, Cambridgeshire. Angela represented VERTIC at the Ottawa Convention Intersessional Standing Committee meetings on 7 February in Geneva, and, on 26

February, she attended a Commonwealth International Humanitarian Law conference organised by the British Red Cross and the UK Foreign and Commonwealth Office (FCO). Along with Ben Mines, she attended the launch of the ERW campaign, 'Clear Up!', at the Imperial War Museum in London on 28 February. On 5 March, Angela participated in a planning meeting of the Science and Society Trust for a biological weapons-related event at a British Association meeting to be held in September 2003. On 7 March she represented VERTIC at the Mountbatten Center for International Studies (MCIS)/FCO Nuclear Nonproliferation Study Group meeting at the Atomic Weapons Establishment (AWE), Aldermaston. Angela gave presentations on the 1972 Biological Weapons Convention (BWC) and the BWPP at a Canadian Red Cross workshop on International Humanitarian Law and Disarmament on 17 and 18 March.



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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