

VERTIC Back From Virtuality

After two and a half months as a virtual organisation VERTIC has finally completed its planned move from Carrara House at the Embankment to Baird House in Farringdon. Telephone, fax and email connections have all been restored and details are to be found on the masthead of this *Trust & Verify*. We apologise for any inconvenience caused, particularly to those seeking our publications. VERTIC is indebted to the Joseph Rowntree Charitable Trust for providing generous financial assistance for the move.

As promised, this issue of *Trust & Verify* is a bumper one to compensate for the absence of the January and March issues. From now on *Trust & Verify* will appear, as usual, at two-month intervals, beginning with an issue in May, followed by July, September and November. Should you wish to receive *Trust & Verify* electronically please fill in the form at the back of the publications insert in this edition. *Trust & Verify* is also available at VERTIC's website.

Climate Change

Quiet Progress in Compliance Mechanisms

Though many commentators have alleged that the Fourth Conference of the Parties to the Framework Convention on Climate Change (COP4) was a wasted opportunity for progress, some significant advances were made in elaborating the verification and non-compliance aspects of the 1992 Convention and its 1997 Kyoto Protocol.

Much of the limelight at COP4, held in Buenos Aires in November 1998, was stolen by the US and Argentina, which were determined to force discussion on the commitments of developing countries. The US has insisted that it would not sign the Kyoto Protocol without 'meaningful participation' from developing countries, while they, in turn, have insisted that the developed countries should take the lead in reducing greenhouse gas emissions. Argentina took advantage of hosting the conference to break ranks with most of the rest of the Group of 77 developing states (G77) in attempting to place an item on the subject on the provisional agenda. After much heated discussion the item was removed, but not before it had diverted attention from more pressing issues, such as work on elaborating the Kyoto Mechanisms. Maximum dramatic impact was obtained in the second week of the conference when Argentine President Carlos Menem announced that Argentina would make voluntary binding commitments to abate its greenhouse gas emissions. Within twenty-four hours US President Bill Clinton had signed the Protocol at UN headquarters in New York.

Away from such high-level drama, some significant progress was made at Buenos Aires on verification aspects of the Convention. First, the Conference approved almost all of the text prepared by the Ad Hoc Group on Article 13 of the Convention, concerning the multilateral consultative process that will be instituted to deal with implementation questions. The process will provide advice and assistance on implementation to states parties, rather than instituting a strict compliance regime. A consultative approach is sensible in the case of the Climate Change Convention given that there are still too many uncertainties associated with measurement methodologies to make an accurate assessment of non-compliance. However, this 'soft' approach in the Convention is likely to be partnered by a strict non-compliance system in the Kyoto Protocol. Article 18 of the Protocol calls for the establishment of processes and mechanisms for addressing cases of non-compliance, including an 'indicative list of consequences taking into account the cause, type, degree and frequency of non-compliance'.

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A Kyoto Flexibility Mechanisms Primer

Parties agreed to the following mechanisms to provide developed countries with the flexibility to meet their emissions reduction or limitation targets.

Emissions Trading (Article 17) will take place only between countries who have agreed to limit their greenhouse gas emissions. Those parties that have exceeded their Kyoto commitments will be able to sell their surplus emissions allowances to parties having problems keeping their commitments.

Joint Implementation (Article 6) will involve projects by developed country parties to reduce emissions (or enhance removals by sinks) of greenhouse gases by other developed country parties. The donor party is able to acquire emission reduction units from the host.

The Clean Development Mechanism (CDM) (Article 12) aims to assist developing countries to achieve sustainable development, and to assist developed countries in meeting their Kyoto commitments. The developed country gains certified emission reductions by implementing projects in the developing country which are shown to contribute to the mitigation of climate change.

As yet little thought has been given by the COP as to how the compliance system might work, at what point automatic 'consequences' might be appropriate and what kinds of consequences should be contemplated.

Article 18 is not the only article of the Protocol that requires work from a verification perspective. The roles of Articles 5 and 7 on national inventories of greenhouse gases and Article 8 on review processes also need to be considered. In addition, each of the articles outlining the Kyoto Mechanisms refers to the need for parties to define the modalities and procedures for reporting on and verifying project activities, in order to ensure transparency, efficiency and accountability. Since the mechanisms are based on transfer of emissions from one country to another, reliable estimation and reporting of greenhouse gas inventories has become even more important than previously. Unless the transfer of emissions can be accurately monitored and verified, the mechanisms are unlikely to work, putting the Protocol in jeopardy.

All of these issues are covered in the Buenos Aires Plan of Action, agreed by COP4. The Plan of Action enumerates all issues that need to be resolved to strengthen implementation of the Convention and prepare for entry into force of the Protocol. It also sets up working groups and ad hoc workshops and gives deadlines for making decisions about everything from the financial mechanism to reporting requirements. With regard to verification, the Plan establishes a working group on procedures and mechanisms related to compliance. The group is mandated to identify compliance-related

elements in the Protocol, identify any gaps in the system, develop procedures by which compliance questions should be addressed and ensure that coherent approaches to developing a comprehensive compliance system are followed. The working group is asked to report to COP5 in Bonn in November 1999, with a view to adopting decisions at COP6 in 2000 (possibly to be held in Jordan).

The focus of the Plan is on elaborating the principles of the Kyoto mechanisms, in particular the CDM. Work is needed on three Kyoto flexibility mechanisms to define the rules and procedures of operation, and to set up the necessary supporting institutions. A fourth mechanism, burden sharing 'bubbles' for commitments by groups of states, for example between the member states of the European Union, has already been implemented.

One important issue to be resolved is the extent to which the mechanisms should be used by countries to reach their targets. Sceptics are concerned that the mechanisms will be used by developed countries to avoid domestic action. This concern takes on added force given that some countries (notably those that comprised the former Soviet Union) have no reduction targets, even though their emissions have fallen dramatically since the baseline year. This situation has created 'spare' emissions reductions, also known as 'hot air'. If OECD parties meet their commitments by trading this hot air, real reduction in emissions may not take place. For this reason the issue of 'additionality' (the extent to which use of the

Parties to the Kyoto Protocol, April 1999

Antigua & Barbuda
Bahamas
El Salvador
Fiji
Maldives
Panama
Trinidad & Tobago
Tuvalu

mechanisms should be additional to domestic actions) features heavily in the Buenos Aires Plan of Action.

One of the first workshops proposed under the Plan, the Technical Workshop on Mechanisms, was held from 9-15 April in Bonn, Germany. Core topics were methodologies for establishing baselines for the joint implementation and CDM projects, 'additionality' and verification and reporting in relation to the CDM. The next major climate change meeting is that of the Subsidiary Bodies to the Convention/Protocol, to be held in Bonn in June. VERTIC will be monitoring all these activities and contributing wherever it can.

Meanwhile, ratification of the Kyoto Protocol has begun. One year after it was opened for signature at UN headquarters in New York on 16 March 1998, 84 countries had signed. As provided for in Article 24, the Protocol was closed for signature on 15 March 1999 and opened for ratification the

following day. (Non-signatory states may still accede to the treaty.) So far eight signatories have ratified—all small island or low-lying states.

It should come as no surprise that these states are the first to ratify, having fought the hardest for a strong FCCC regime and Kyoto Protocol. The latest climate model from the UK Meteorological Office predicts a sea-level rise of up to 42 centimetres in some areas of the globe by the 2050s due to rises in greenhouse gases from human activity. Small island regions of the Caribbean, the Indian Ocean and the Pacific Ocean are particularly vulnerable. It may already be too late for some of the smallest Pacific islands. According to a report by the South Pacific Regional Environment Program, several small islets near Kiribati have disappeared and farmers on other low-lying atolls have had to radically change the way they grow crops because rising salt water is seeping into the soil.

Clare Tenner

For further information on VERTIC's work on the Climate Change Convention see VERTIC's website or contact Clare Tenner. Tel: 0171 440 6967 or email clare@vertic.demon.co.uk.

The Kosovo Verification Mission Withdrawn but not Disgraced

As NATO bombs fall on the Federal Republic of Yugoslavia and refugees rush for Kosovo's borders, VERTIC's attention focuses on the apparently failed Kosovo Verification Mission (KVM). The mission was inserted into and removed from the province of Kosovo under the auspices of the Organisation for Security and Co-operation in Europe (OSCE). What was the plight of this short-lived and maligned verification regime? Is it an example of institutional failure or of evolutionary success?

The Kosovo Verification Mission (KVM) was mandated by UN Security Council Resolution 1199 of 23 September 1998, which demanded that the Federal Republic of Yugoslavia (FRY) 'enable effective and continuous monitoring in Kosovo'. A monitoring mission was to be allowed unlimited access to all regions of Kosovo. While the resolution mentions a 'European Community Monitoring Mission', it was clear that the OSCE

was the best organisation to undertake the task due to its breadth of membership and non-military nature.

The agreement by the OSCE member states establishing the KVM charged it with verifying compliance with the cease-fire obligations set forth in Security Council Resolution 1199 and reporting jointly to the OSCE and the Council. The mandate also called for the verifiers, of which there would be 2000, to 'supervise elections in Kosovo'. This was quickly overlooked and has since been forgotten.

Paradoxically, since the mission itself was unarmed, the KVM required the protection of the parties that it was attempting to monitor, including the security forces of the FRY. While personnel for the mission eventually came from many OSCE countries, the larger European states and the United States supplied the majority. An American,

former Ambassador William Walker, was appointed head.

One of the elements of the scheme which raised considerable objections from the FRY was the deployment of an armed NATO 'extraction force' into neighbouring Macedonia to remove the verifiers, by force if necessary, should widespread fighting or other hostilities endanger them. Never before in the history of verification have monitors been supported in such a way by a dedicated outside international military force. The extraction force began to deploy in December and comprised about 1500 soldiers. This force, according to NATO, did not absolve the FRY of its 'primary responsibility for the safety and security of the OSCE verifiers in Kosovo....' Serbian President Slobodan Milosevic was quoted in a December 1998 interview as saying, 'If [the extraction force] come into our territory, we will consider it as an act of aggression.'

Once deployed, the KVM experienced a diverse set of problems. The first was an initial lack of monitors due to reticence on the part of OSCE member countries to provide them. Although the OSCE deployed monitors as soon as they became available, only several dozen monitors were initially deployed and only 600 had entered Kosovo by Christmas 1998. Some had already been present as members of the Kosovo Diplomatic Observers Mission (KDOM) which preceded the KVM's presence in Kosovo. The lack of monitors prevented the mission from fulfilling its verification role as envisaged. Despite numerous pledges the number never exceeded 1380, a figure reached only in the waning days of the mission. This disheartening outcome reveals yet again the lack of a standing capability on the part of the OSCE for such missions and the casual approach by many of its members to the organisation's responsibilities. While it is unlikely that a larger KVM would have materially affected the drift towards renewed hostilities, it certainly sent the wrong signal to President Milosevic about the seriousness with which OSCE members viewed both the monitoring mission and the unfolding situation in Kosovo.

The monitors also suffered from local hostility, reportedly from both Serbs and ethnic Albanians, although the greatest hostility to the mission came from Serbs. Manifestations included obstruction of access, damaging of equipment, rock throwing, assault and the threatening of monitors with force. In some cases civilians were responsible, in other

cases the Serb military and police forces. The KVM lodged several formal protests but received no official response.

In addition to harassment at the local level, the mission was constrained by the government of the FRY, which mounted a large anti-KVM propaganda campaign throughout the mission's five months of operation. Serbian media accused the mission of spreading lies and working with Kosovo Liberation Army (KLA) 'terrorists' to stage atrocities which were then blamed on Serbs. The main target of the Serb media's wrath was William Walker. He was accused of working with the KLA and lying about alleged Serbian massacres, including the much-publicised killings in Recak. In that instance, forty-five ethnic Albanians wearing civilian clothing were killed at close range, according to a Finnish investigation team's report. On 19 January Walker was ordered to leave the FRY within forty-eight hours. Although the order was eventually frozen as a result of diplomatic

pressure from the six-nation Contact Group on the Former Yugoslavia (USA, UK, France, Italy, Germany, and Russia), the Serb government remained uncooperative.

The KVM was also hampered from the beginning by the proximity of armed conflict, and total disregard by both sides of the cease-fire. Monitors were often caught in gunfights, shelling or troop movements. It is clear, however, that both the FRY and KLA realised that any KVM casualties attributed to their side

would result in loss of international sympathy. During the entire mission only one monitor and his interpreter were injured by gunfire. Neither warring side claimed responsibility for this incident.

In part because of the difficulties it faced, the KVM's role evolved from monitoring a cease-fire to quasi-peacekeeping in an ongoing conflict. This was possible for several reasons. First, the KVM had established formal and informal ties with both sides in the struggle, allowing it to negotiate between the FRY and the KLA. Second, because of the international ramifications if any of the monitors were harmed, they were able to defuse some violent conflicts by their mere presence. This is exemplified by numerous stories of the KVM's bright orange Land Rovers inserting themselves between the warring sides to bring about a temporary end to conflict. A third reason for the KVM's ability to transform itself lies in the fact that

National Participation in KVM

(as of 5 February, 1999)

US	164
Germany	111
UK	110
Italy	96
France	88
Russia	85
Norway	61
Sweden	55
Denmark	40
Others (29 countries)	415
Total	1125

the monitors were unarmed. Because they threatened neither side, they were sometimes able to negotiate between the two. Finally, having insufficient numbers to carry out pervasive verification, the KVM focused on areas where conflict was intense and continuing. Hence they were prepared to move quickly from one local outbreak of armed conflict to another.

The KVM's success or failure must be measured in terms of their response to the transforming and unanticipated situation in Kosovo. Due to the rapid deterioration of the cease-fire the KVM was unable to fulfil its original mandate, including comprehensively monitoring the situation and supervising elections. However, while not part of its original mission, the KVM was able to lessen the violence in a number of situations and prevent ethnic Albanians being driven from their homes. It was, as originally envisaged, able to act as an impartial source of information on events (particularly important due to the propaganda war waged by both sides) and, due to its international

stature, was able to heighten awareness of the continuing conflict and the need for action to bring about a peaceful settlement.

The entire KVM was withdrawn to Macedonia safely before NATO air strikes began, relieving fears that they might be used as human shields to prevent such strikes. Currently many of the verifiers are languishing in Macedonia, assisting in recording accounts of human rights violations perpetrated against Albanian refugees and awaiting further instructions. If and when a multilaterally guaranteed peace returns to Kosovo, a verification regime will have to be reconstituted to verify its implementation. This role, however, is likely to be taken by an armed peacekeeping or peace enforcement mission with many other roles to fulfil, rather than an unarmed dedicated verification mission like the KVM.

Christopher Moore

Northern Ireland

Verified Decommissioning Still Frustrated

The first verified decommissioning of weapons in Northern Ireland took place on 18 December 1998 under the auspices of the International Commission on Decommissioning. The Loyalist Volunteer Force (LVF) transferred to the Commission four sub-machine guns, two semi-automatic pistols, one functioning and one non-functioning rifle, a sawn-off shotgun, 373 rounds of ammunition, two pipe bombs and five detonators. Two Commission members, the American Donald Johnson and the Finnish Brigadier General Tauno Nieminen, supervised the process as the weapons were sawn into tiny pieces at a factory in Portadown and disposed of.

The Commission followed the stipulations agreed in the 1996 Mitchell Accords: the weapons were not tested for forensic evidence and members of the LVF who decommissioned the weapons were granted immunity from prosecution. While this instance of decommissioning may seem laughably minuscule, General John de Chastelain, Canadian head of the Decommissioning Commission, saw the first verified decommissioning of weapons as a

necessary preliminary step. He called it 'modest but significant'.

The most pressing concern, which predates even the Good Friday Agreement, remains the decommissioning of weapons by Republican and larger Loyalist paramilitary organisations, the best armed of which is the Irish Republican Army (IRA). David Trimble, leader of the Ulster Unionist Party (UUP) and First Executive of Northern Ireland, and Gerry Adams, leader of Sinn Féin, the IRA's political wing, remain deadlocked over whether the new Northern Ireland Executive (effectively the new government of Northern Ireland) can be convened prior to verified decommissioning by the IRA. Although an unnamed source believes the IRA has begun secretly alerting authorities to the locations of weapons as an act of good faith, hard-liners in the UUP demand public and verifiable actions by the IRA before they will assent to Sinn Féin joining the Executive. Thus verification is pivotal to resolving the current deadlock.

Adams and Martin McGuinness, Sinn Féin's chief negotiator, argue that the demand for prior decommissioning goes beyond the terms of the Good Friday Agreement, which provides that decommissioning be completed by 22 May 2000, and that signatories are only obliged to 'use any influence they may have' towards accomplishing this goal. Adams and McGuinness insist they are doing all they can but that IRA decommissioning is beyond their power to deliver. They point out that pressuring the IRA to decommission might create a dangerous split in the organisation.

Many in the IRA view decommissioning as a form of surrender never to be countenanced, while others in the IRA heartland along the Irish border demand a complete withdrawal of British forces before 'other issues' can be considered. Still others undoubtedly wish to retain weapons as a form of guarantee if the peace process fails to go the IRA's way. The declared determination of the Loyalist Ulster Volunteer Force (UVF) to keep its weapons regardless of any action taken by the IRA makes the issue even more problematic.

The two sides have met often over the past few months in discussions over this highly contentious issue. British Prime Minister Tony Blair, Irish Prime Minister Bertie Ahern, Northern Ireland Secretary Mo Mowlam, General de Chastelain, and even President Clinton have attempted to motivate the two sides to agree on a reasonable compromise. The most concrete result thus far has been the Hillsborough Declaration, released by the British and Irish governments on 1 April, the anniversary

of the Good Friday Agreement. This called for paramilitary groups to put their weapons 'beyond use' as an 'act of reconciliation', in exchange for Britain's transfer of power to the Northern Ireland Executive. Gerry Adams rejected it, calling it a revision of the Good Friday Agreement.

Unfortunately, opposition to a lasting peace and verified decommissioning persist in the major parties in Northern Ireland. Not only is Trimble losing support within his party, but the IRA is also experiencing problems with unity. *The Guardian* reported on 4 February 1999 that Continuity IRA, a group of hard-liners opposed to the Good Friday Agreement, is recruiting members for a 'new military campaign' and suggests it will start 'sooner rather than later.' This development is especially ominous considering that the former quartermaster general of the IRA, who has perhaps the best knowledge of the IRA's extensive weapons stockpiles, is a member of this potentially dangerous splinter group. In early April two used IRA shoulder-fired anti-aircraft rocket launchers were found in a field. There are rumours that new weapons purchases are being made.

Unless discussions in the coming weeks can lead to a breakthrough, the future of the Good Friday Agreement is uncertain and the verified decommissioning of weapons by all parties by 22 May 2000 increasingly unlikely.

Joshua Gabriel

Wilton Park Conference Report The Verification Revolution

In co-operation with the Wilton Park Executive Agency of the Foreign and Commonwealth Office, VERTIC held a conference on 'The Verification Revolution: Human and Technical Dimensions' at Wilton Park, West Sussex, from 5-7 March. The conference examined the question of whether a revolution has occurred in the verification of arms control and disarmament agreements in the last decade or so.

The Executive Chairman of the UN Special Commission on Iraq, Richard Butler, delivered the keynote address. He set out the characteristics, based on UNSCOM's experience, that international verification organisations need in order to be effective. They included:

- independence in conducting and financing their operations
- access to a significant database which includes information provided by states
- the power to conduct no-notice on-site inspections, and
- support from the international community in cases where non-compliance is proved and enforcement action is required.

The rest of the conference was divided into the two broad dimensions of verification: the human and technological. Jill Cooley, Director of the Division of Concepts and Planning at the International Atomic Energy Agency (IAEA) in Vienna, and Tibor Toth, Chairman of the Working Group

charged with negotiating a verification protocol for the Biological Weapons Convention (BWC), discussed changing philosophies of verification. Ms Cooley outlined the significant changes made in IAEA safeguards since Iraq was discovered in the early 1990s to have had an illicit nuclear weapons programme. Discussion of the BWC negotiations indicated apprehension that the pathbreaking verification provisions of the Chemical Weapons Convention (CWC) would not be replicated in the BW protocol, representing something of a 'counter-revolution' in verification.

On the question of the organisation of multilateral disarmament bodies, John Gee, Deputy Director of the Organisation for the Prohibition of Chemical Weapons (OPCW) in the Hague, and Carlos Hernandez, Chief of Public Information for the Comprehensive Nuclear-Test-Ban Treaty Organisation Preparatory Commission in Vienna, gave accounts of progress in establishing their respective organisations. In the case of the OPCW it was noted that the scale of the agency's verification tasks with respect to destruction of chemical weapon stockpiles had been unexpectedly increased by the fact that Russian stockpiles now needed to be included (in the absence of a workable US/Russian bilateral arrangement). Moreover, two states additional to those expected (one of which was India and the other known only to the OPCW) had admitted having chemical weapons. In the case of the CTBTO, it is still in provisional mode pending the problematic entry-into-force of the test ban treaty. Of the 44 states required to ratify it before it enters into force, three have not yet signed: India, Pakistan and North Korea.

One of the most entertaining sessions of the conference was that relating to the human experiences of on-site inspectors. Scott Ritter,

former spokesperson for UNSCOM, recounted the frustrations of verification in the face of deliberate obstruction, prevarication and hostility by Iraq and the strategies employed to counter such obstacles. Roy Giles recounted rather different experiences in inspecting Warsaw Pact military sites under the Conventional Forces in Europe (CFE) treaty, emphasising that there was no substitute for the 'eyeball to eyeball' contact that human inspectors could bring to verification. During discussions it was noted that the rapport that quickly builds between the verifier and the verified needs to be leavened with an acute awareness of the possibilities for deception.

On the third day of the meeting attention turned to the technological dimensions of verification, with a presentation by Bhupendra Jasani of King's College, London, on developments in remote sensing, particularly the growing potential of commercial satellites to contribute to verification. Sally Mullen, Chief of the Intelligence, Technology and Analysis Division of the US Arms Control and Disarmament Agency (ACDA) addressed other new and improved technologies. Such developments include remote sensors; sophisticated real-time communications; improved portability and mobile power sources for equipment; more sophisticated analysis techniques, including computer modelling; and virtuality techniques for training purposes.

As to the question of whether there has been a verification revolution or not, there was general recognition that progress in the field, while not linear or inevitable, has been impressive and holds much potential for the future.

Trevor Findlay

A more detailed report on the proceedings by Wilton Park Deputy Director Richard Latter may be obtained from Wilton Park, Wiston House, Steyning, West Sussex, BN44 3DZ, tel. +44 (0) 1903 815020; fax +44 (0) 1903 814445; email: richard.latter@wiltonpark.org.uk; website: www.wiltonpark.org.uk



Verification Watch

On-Site Inspection of North Korean Underground Site Agreed

An agreement permitting the United States to conduct an on-site inspection of a suspected underground nuclear weapons site at Kumch'ang-

ri in North Korea was reached at the conclusion of bilateral talks on 15 March. The Democratic Peoples' Republic of Korea (DPRK) promised to extend an invitation to a US delegation to inspect the site in May 1999 and permit an additional visit

or visits afterwards. In return the US will provide an additional 500,000 metric tonnes of food and a pilot agricultural program. Details of the agreement remain unclear. One is the number of additional visits the North Koreans will allow the US to make. Some reports specify two, while others suggest regular access as required.

The US has been concerned for some time that Kumch'ang-ri is the construction site for a natural-uranium, graphite-moderated reactor, the same type that the DPRK has attempted unsuccessfully to build in the past. Intelligence reports cite soil samples and nuclear detonation device tests as evidence that Kumch'ang-ri was to be the hub of a new nuclear weapons program. Russia and China have criticised what they see as a US obsession with Kumch'ang-ri, pointing out that North Korea has traditionally had hundreds of underground sites. Japan has expressed interest in joining the verification effort, given its security interests in the outcome and its contributions to the international effort to provide North Korea with a peaceful nuclear programme in return for its renunciation of nuclear weapons. The on-site inspection is however unlikely to reveal any damning evidence. The North Koreans have had months to strip the site and have until May to thoroughly cleanse it of any remaining evidence.

Sources: Newsbrief, *Programme for Promoting Nuclear Non-Proliferation*, no. 45, 1st Quarter 1999, pp. 12-14; *Aviation Week and Space Technology*, 8 March 1999, p. 25.

New Nuclear Safeguards Loophole?

Recent reports confirm that some types of nuclear waste previously thought to be useless for making nuclear weapons can in fact be used for such purposes. Two of the isotopes, neptunium 237 and americium 241, are of particular concern because, although present at civilian waste processing facilities, they are not covered by the safeguards system of the International Atomic Energy Agency (IAEA). The agency verifies the non-diversion of peaceful nuclear materials to weapons purposes. While the IAEA has pledged to closely monitor these isotopes from now on, it will take some time to add them to the list of materials that require safeguarding. Currently the world inventory of the two isotopes is estimated at roughly 80 metric tonnes and is growing by about 10 metric tonnes a year.

Source: Venter, Al J., *Jane's Defence Weekly*, 31 March 1999, p. 8.

Resolution Confusion

Two United States agencies, the National Reconnaissance Office (NRO) and the National

Verification Quotes

Some negotiated [peace] settlements have explicitly allowed the parties to maintain control over a part of their military assets during the cantonment phase. Such fail-safe arrangements have led, however, to normative ambiguities, greatly complicating the verification tasks of the peacekeepers and increasing the prospects for a relapse into violence.

Frank Tanner, 'Weapons control in semi-permissive environments: a case for compellence' in Pugh, M. (ed.), *The UN, Peace and Force* Frank Cass & Co. Ltd, London, 1997, p. 130.

'But I have experimental verification', said the Time Traveller. 'It would be remarkably convenient for the historian', the Psychologist suggested. 'One might travel back and verify the accepted account of the Battle of Hastings, for instance!'

H.G. Wells, *The Time Machine*, Heinemann, London, 1961, p. 6.

The information was deemed credible and relevant and we pursued it, but I never said that Iraq had three or four nuclear devices.

Scott Ritter, former UNSCOM inspector, denying reports that he had said Iraq had components for three or four nuclear devices, minus the fissile core, quoted in an interview with *Jane's Defence Weekly*, 14 Oct. 1998, p. 32.

The whole purpose of UNSCOM was to spy on Iraq.

Unnamed 'exasperated' White House aide when questioned about allegations that the United States had used UNSCOM to gain intelligence information on Iraq for its own national purposes, quoted in *Time*, 18 Jan. 1999, p. 26.

...if the inspectors are not permitted to visit suspect sites or monitor compliance at known production facilities, they may as well be in Baltimore, not Baghdad.

President Bill Clinton, Arlington National Cemetery Veterans Day Ceremony, 11 Nov. 1998, quoted at www.fas.org/news/iraq/1998/11/981111-whl.htm

Imagery and Mapping Agency (NIMA), will invest a billion dollars over the next five years in obtaining commercial satellite imagery. The plan seeks to take advantage of three privately owned

satellites that will be launched this year. All three boast resolution capabilities of one metre, allowing them to detect ground objects of one metre or larger. This places them at the cutting edge of satellite imagery resolution. The three satellites are owned by US-based companies and will provide their imagery solely to the US government. Such capabilities are useful not only for intelligence purposes but for augmenting the so-called 'national technical means' by which the US nationally verifies international agreements in a number of fields.

Meanwhile, however, NASA and the Canadian Space Agency (CSA) have hit an impasse over what was to be a free US launch of the Canadian Radarsat 2 imaging spacecraft. While the US had initially agreed to launch the satellite in exchange for access to its data, it backed out when it became clear that the resolution of the all-weather satellite would be less than three metres. This would make the Canadian satellite one of the most powerful radar imaging satellites in space, capable of circumventing the US Congressional ban on satellite images of Israeli territory below three metres.

Further muddying the waters, two Israeli companies and a US company have united to develop a small constellation of eight satellites that will produce imagery possessing one-metre resolution. Israel is expected to be the joint venture's first customer. Given apparent US/Israeli security concerns about satellite imagery resolution, the clientele may be limited to the two governments.

Sources: Ferster, Warren, *Defense News*, 12 April 1999, p.1; *Aviation Week and Space Technology*, 29 March 1999, p. 29; *Aviation Week and Space Technology*, 22 Feb. 1999, p. 23; Eshel, David, *Jane's Defence Weekly*, 31 March 1999, p. 17.

Science and Technology Scan

- The British Army is testing a multiple-function electronic sensor which it projects could replace human sentries in many circumstances. The sensor, which stands three inches tall and could be buried or mounted, detects movement, vibration, magnetic fields and sound. The information is transferred to a central computer manned by a protected human sentry. This system would be useful in peacekeeping operations faced with monitoring long, dangerous frontiers or cease-fire lines without the requisite personnel.

Source: McManners, Hugh, *Times*, 4 Oct. 1998, p. 8.

- A miniature helicopter that can detect deployed landmines is currently undergoing testing in the UK. The helicopter, which could

fit in the boot of a car, would be able to locate metal and plastic landmines as well as determine the presence of various fluids such as petroleum or water. The craft would have an artificial intelligence piloting system.

Source: De Bruxelles, Simon, *Times*, 15 March 1999, p. 3.

- Several new developments have taken place in the effort to produce reliable systems to detect chemical and biological weapons. A team of chemists at the University of Maryland in the US has developed a compound that reacts visually in the presence of sarin gas. The compound is less likely to succumb to false positive readings than other tests. Another group of US scientists has built a suitcase-sized device that can detect the presence of a variety of biological weapons within a matter of hours. The design is considered an early prototype for much smaller and portable detection devices. Finally, the British Ministry of Defence has signed a contract exceeding fifty million pounds for the development and production of a mobile Integrated Biological Defence System. This would be deployed with British troops worldwide and be capable of providing near instantaneous detection of biological agents.

Sources: *New Scientist*, 9 Jan 1999, p. 13; Seigle, Greg, *Jane's Defence Weekly*, 10 March 1999, p. 11; *Defense News*, 12 April 1999, p. 20.

Monitoring Missions

- Turkey and Bulgaria have signed a bilateral agreement aimed at removing anti-personnel landmines along their joint border. A verification system will be instituted to verify the removal of the mines.

Source: Sariibrahimoglu, Lale, *Jane's Defence Weekly*, 31 March 1999, p. 12.

- Angola has rebuffed a UN Security Council proposal for a small political/military force with a monitoring function to replace the current UN Monitoring Mission in Angola (MONUA) whose mandate has expired. The departure of MONUA will leave Angola without an international monitoring presence for the first time since 1989. MONUA is currently in the liquidation phase of its departure and will continue to serve in a limited capacity until all personnel exit in the middle of this year. This comes at a time when renewed civil war is again threatening Angola's stability and well being.

Source: Heitman, Helmoed-Romer, *Jane's Defence Weekly*, 3 March 1999, p. 18.

Compiled by Christopher Moore

Position Available

RESEARCHER/SENIOR RESEARCHER VERIFICATION SCIENCE AND TECHNOLOGY

VERTIC seeks a researcher/senior researcher to conduct policy-relevant research into the scientific and technological aspects of the verification and monitoring of international agreements, notably in the areas of arms control, disarmament and peace settlements. You should have a higher degree in science or technology, such as physics, chemistry, biology, engineering or seismology, or equivalent experience in these fields. You should also have a wide-ranging interest in scientific and technological developments outside your area of expertise and a demonstrated interest in the implications of such developments for international politics, including verification. Proficiency in English and ability to write for a generalist audience are essential.

A two-year contract will be offered initially, with the possibility of extension depending on performance and funding. The salary range for a researcher is £15,000 to £21,000; for a senior researcher £21,000 to £30,000.

The closing date for applications is 14 May 1999. Applicants should send a letter addressing the selection criteria, nominating 3 referees and providing a curriculum vita. For job descriptions and selection criteria see VERTIC's website or contact VERTIC's Administrator. VERTIC maintains a smoke-free work environment. This is a re-advertised position.

New Grants

VERTIC has been awarded two new grants. The first, by the Joseph Rowntree Charitable Trust, was for £5,000 to switch VERTIC's computer system from Macintosh to PCs. The new system was installed by the Information Technology Support Unit for Voluntary Organisations (ITSUVO), an offshoot of the Farndon House Information Trust (FHIT) funded by the Joseph Rowntree Charitable Trust. VERTIC is grateful both to the Trust and to Lee Chadwick and Mark Tomlinson of ITSUVO for their assistance in arranging the purchase and installation of VERTIC's new information technology.

The John D. and Catherine T. MacArthur Foundation of Chicago has announced a substantial grant for VERTIC to continue and expand its networking function over the next two years. The grant will permit VERTIC to enhance its role as a clearinghouse for verification information, improve its publications programme and help nurture the growth of an international verification community. VERTIC is grateful for the MacArthur Foundation's generous support for these activities.

New Environment Researcher Appointed

A new Environment Researcher, Clare Tenner, has been appointed to continue the work carried out by John Lanchbery on verification of environmental agreements. Clare will focus on the verification and implementation of the Climate Change Convention and its Kyoto Protocol. Clare has a Master's degree in Environmental Science from University College London, and a BSc in Environmental Biology from the University of Liverpool. She previously worked in the Science Advice Section at the Royal Society, where her responsibilities included work with the group on Scientific Aspects of International Security, projects on energy and climate change and activities related to the International Decade for Natural Disaster Reduction.

New Administrator Appointed

Fiona Steele, VERTIC's Administrator since November, has resigned to join the helicopter wing of the British Army. VERTIC is indebted to Fiona for helping sustain the organisation during its 'virtual' period and for helping to move the organisation into its new premises. We wish her well in her new career.

VERTIC's new Administrator is **Angela Woodward**, formerly Programme Assistant for the Programme for Promoting Nuclear Non-Proliferation (PPNN) at the Mountbatten Centre for International Studies, University of Southampton. Originally from New Zealand, Angela holds BA (Hons) (Political Science)/LLB degrees from the University of Canterbury, Christchurch, New Zealand.

Interns

Two new interns joined VERTIC in January for three-month assignments.

Chris Moore is a third year undergraduate at Albion College, Michigan, USA, studying political science and public service. He comes to VERTIC through Educational Programmes Abroad (EPA). His primary research task at VERTIC is to examine the role and impact of the Kosovo Verification Mission.

Joshua Gabriel is from American University in Washington DC and is studying international relations and history. His research task at VERTIC is to examine the verification of decommissioning in Northern Ireland.

In addition to their research projects, Chris and Joshua have also assisted in the move to VERTIC's new office and helped reorganise and update VERTIC's library. Both interns will be with VERTIC until the end of April.

Landmine Monitor Project

VERTIC has submitted its contribution to the Landmine Monitor Annual Report which is to be presented to the First Conference of States Parties to the Landmine Convention in Maputo, Mozambique from 3-7 May. VERTIC's report was prepared by two consultants: David Robertson, a New Zealand international lawyer and Joe McGrath, an Australian international lawyer. An expanded version of the report will be published as a *VERTIC Research Report*. VERTIC will be represented at the Maputo conference by Trevor Findlay.

Workshop on Visits under International Law Verification, Monitoring and Prevention

VERTIC will cosponsor, with the Geneva-based Association for the Prevention of Torture, an international workshop designed to familiarise those involved in preventing torture with the on-site inspection and other verification and monitoring arrangements used in fields such as arms control and disarmament and the

environment. The workshop will be held in Geneva from 24-26 June 1999. For further details contact The Association for the Prevention of Torture, Route de Ferney 10, Case postale 2267, CH-1211, Geneva 2, Switzerland, tel. +41 22 734 20 88; fax. +41 22 734 56 49; email: apt@apt.ch; website: www.apt.ch

Select Committee Enquiry on International Environmental Agreements

VERTIC has been invited to make a submission to the Inquiry into International Environmental Agreements being undertaken by the Environment Sub-Committee of the UK House of Commons Select Committee on Environment, Transport and Regional Affairs. VERTIC will be addressing the implementation and monitoring of such agreements in the UK and elsewhere and mechanisms for ensuring compliance.

Getting to Zero Project

VERTIC held a workshop on 20 April to examine a new draft of the second part of VERTIC's report on verifying nuclear disarmament ('Getting to Zero'). The draft was prepared by Tom Milne of Pugwash and Henrietta Wilson of the Berlin Information-centre for Transatlantic Security (BITS). The final version will be published as a *VERTIC Research Report*.

Staff News

Trevor Findlay was primarily engaged since November in supervising VERTIC's move to new offices, recruitment of new personnel and organising VERTIC's Wilton Park Conference in March.

He also attended several seminars during the period, including: one on the Biological Weapons Convention at the Foreign and Commonwealth Office (FCO) on 25 November; a meeting with veteran American arms controller Ambassador Tom Graham organised by the British-American Security Information Council (BASIC) on 11 December; and a meeting of the UK UN Association on the proposed Fourth Special Session on Disarmament (SSOD IV) on 28 January.

In February and March, Trevor attended: a talk by Indian Foreign Secretary Singh at the International Institute for Strategic Studies (IISS) on 4 February; an all-day meeting of the Programme for Promoting Nuclear Non-Proliferation (PPNN)/FCO Nuclear Non-Proliferation Study Group to discuss current non-proliferation issues on 19 February; meetings at the House of Commons on 'The NPT: Does it Need Rescuing?' on 23 February and on the Additional Protocol to

IAEA Safeguards Agreements on 23 March, both organised by the Acronym Institute; and a seminar by Michael Krepon, head of the Henry L. Stimson Centre, Washington D.C., on Nuclear Issues on the Indian Sub-continent.

Trevor also joined the IISS Working Group on Weapons of Mass Destruction for two meetings, on 15 February and 1 March. He gave two seminars himself: one at King's College on 'Post-Conflict Demilitarisation: The Role of Verification' on 2

February and one to the Annual MacArthur Conference for Post-Graduate Students, on 'Verification and Confidence-Building', in Guildford on 8 April.

Finally, he gave the introductory presentation at the VERTIC/Wilton Park Conference on 5 March on the theme of the meeting, 'The Verification Revolution', as well as giving concluding thoughts at the final session on 7 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 treaties or other agreements that have international or national security implications. VERTIC aims to achieve its mission by means of research, training, dissemination of information and interaction with the relevant political, diplomatic, technical and scientific communities. A Board of Directors is responsible for general oversight of VERTIC's operations and an International Verification Consultants Network provides expert advice. VERTIC is funded primarily by grants from foundations and trusts, currently the Ford Foundation, the John Merck Fund, the Joseph Rowntree Charitable Trust, the Ploughshares Fund, the Rockefeller Family Philanthropic Offices, Landmine Monitor, the W. Alton Jones Foundation and the John D. and Catherine T. MacArthur Foundation.

Trust & Verify

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