

The CTBT: lack of progress in the Middle East and South Asia

The objective of the 1996 Comprehensive Nuclear Test Ban Treaty (CTBT) is to bring all testing of nuclear devices, in all environments, to an end. It is enjoying broad support among members of the international community, with 175 and 122 states having signed and ratified the accord, respectively. Nevertheless, in the nine years since it was opened for signature, it has failed to attract the number of ratifications needed to enter into force. The treaty has a distinctive entry-into-force clause, in Article XIV, requiring the ratification or accession of all 44 states listed in Annex II (the member countries of the Conference on Disarmament (CD) that had an advanced civilian nuclear capability at the time of the CTBT negotiations—that is, they possessed nuclear research or power reactors). All Annex II states have signed the CTBT, except for India, North Korea and Pakistan. China, Colombia, Egypt, Indonesia, Iran, Israel, the United States and Vietnam are yet to ratify their signature. Many consider US ratification a necessary first step for eventual entry into force of the CTBT. However, even if the US were to ratify tomorrow, there are still a number of ‘hold-out states’ that must follow, particularly in the Middle East and South Asia (MESA).

The CTBT groups states into six geographical regions to ensure equitable geographic representation on the Executive Council of the Comprehensive Nuclear Test Ban Treaty Organization (CTBTO). One region comprises nations in the Middle East and South Asia. Complex sub-regional relationships characterize this region, which is home to three de facto nuclear weapon states: India, Israel and Pakistan. As a result, a number of the 26 states in this region have been hesitant to sign up to and ratify the CTBT, as illustrated in Box 1. While only 10 per cent of the countries of the world have yet to sign the treaty, one-quarter of MESA states have not signed it. Furthermore, while 63 per cent of nations across the globe have signed and ratified the accord, only 54 per cent of MESA states have done so. Of the five MESA countries listed in Annex II, to date only one has ratified (Bangladesh), two have signed (Iran and Israel) and two are still to sign (India and Pakistan).

A South Asian stand-off

Two important partners in the quest for a comprehensive nuclear test ban are India and Pakistan. India in particular has been reluctant to join the CTBT. After its nuclear weapons tests of 1998, the country faced international pressure to accede to the treaty. However, although it

In this issue . . .

Sean West examines some of the challenges to CTBT entry into force, while Yana Feldman and Beth Nikitin explore Saudi Arabia's Small Quantities Protocol. Plus Verification Watch, Science and Technology Scan, Peace Missions Monitor and VERTIC News and Events.

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Trust & Verify

Verification Research, Training
and Information Centre (VERTIC)

Development House
56–64 Leonard Street
London EC2A 4JX
United Kingdom

tel +44 (0)20 7065 0880
fax +44 (0)20 7065 0890
e-mail info@vertic.org
website www.vertic.org

Box 1 Status of signatures and ratifications among MESA states

Not signed: Bhutan, *India*, Iraq, Lebanon, *Pakistan* [s], Saudi Arabia [s], Syria

Signed: *Iran* [s], *Israel* [s] [f], Nepal [s], Sri Lanka [s] [f], Yemen

Ratified: Afghanistan, Bahrain, *Bangladesh* [s], Jordan [s] [f], Kazakhstan [s] [f], Kuwait [s], Kyrgyzstan [s], Maldives, Oman [s] [f], Qatar, Tajikistan, Turkmenistan [s], United Arab Emirates, Uzbekistan, Yemen

Source: CTBTO, August 2005

Note: italicization indicates that the state's ratification is necessary for the treaty to enter into force; [s] symbolizes that the state is scheduled to host IMS facilities; [f] denotes that the state has concluded a facility agreement with the CTBTO.

subsequently announced a voluntary testing moratorium, it refused to sign and ratify the CTBT. During the initial treaty negotiations, India expressed concerns about the intrusiveness of on-site inspections (OSIs) and the use of satellite and other national technical means (NTM) as part of the verification regime. Its main worry, though, was the treaty's place in wider arms control and disarmament law, and hence it sought, unsuccessfully, to link entry into force of the CTBT with nuclear disarmament. As India considers its strategic situation in relation to China, its signature is unlikely to occur before China's ratification. Even if China ratifies, there is no guarantee that India will follow, due to its long-standing apprehensions about Pakistan's foreign and security policy. During the CTBT's negotiation, Pakistan echoed India's sentiments regarding the failure to link the test ban with nuclear disarmament and raised similar concerns over the use of NTM in CTBT verification. Yet, it voted in favour of the treaty's adoption in the United Nations (UN) General Assembly and did not express doubts about its verifiability. Since then, though, it has not taken any steps to sign the treaty, its signature apparently dependent on that of India.

The reluctance of India and Pakistan to join the CTBT blocks its entry into force. As long as these states remain outside of the treaty regime, construction of the International Monitoring System (IMS) stations proposed for the area cannot commence (see Box 2). While a bilateral agreement between Pakistan and the CTBTO could be adopted, enabling the Preparatory Commission to begin construction activities irrespective of Pakistan's treaty status, Pakistan's current position is to deny authorization for construction of the scheduled infrasound station and primary seismic array on its territory unless it is party to the accord. No IMS stations are planned on Indian soil. Both India and Pakistan may feel that their respective NTM, such as national seismic arrays, are sufficient to enable them to verify independently whether their neighbour has conducted a nuclear test.

This may allow them to attach less value to immediate implementation of the CTBT verification regime.

The Middle East: progress on hold

The international community has welcomed Israel's signature of the CTBT. Its decision to sign an IMS facility agreement with the CTBTO on 23 September 2004 received less attention, but nevertheless strengthens Israel's commitment to the treaty. Israel currently hosts two auxiliary seismic stations and one radionuclide laboratory as part of the IMS. However, despite these advances, Israel has yet to ratify the treaty and is not likely to do so until its concerns regarding OSIs have been met. Israel asserts that broadly mandated OSIs would be too intrusive, and fears that inspectors may gather intelligence on nuclear activities unrelated to the treaty and in contravention of its confidentiality provisions. Therefore, Israel is seeking detailed rules on the use of maps, potentially sensitive information and third-party equipment for treaty verification. Moreover, it is concerned about the processing of information derived from OSIs by the CTBTO and wants strict confidentiality provisions to apply. The Preparatory Commission's Working Group B is currently considering the OSI operational manual, which must be finalized when the treaty enters into force.

Iran has not yet ratified its signature to the CTBT, yet it actively participates in the work of the Preparatory Commission. While Iran did not voice concerns about the treaty's verifiability during its drafting and adoption, the extent of its support for the development of the verification regime is currently unclear. On 27 January 2002, it suspended transmissions from its IMS stations to the Preparatory Commission's International Data Centre (IDC) in Vienna, Austria, citing a conflict with its constitution, which does not allow the government to fulfil implementation commitments related to treaties that parliament is still to ratify.

As the previous discussions illustrate, the factors influencing CTBT adherence by MESA states are many and complex. Some of these relate to concerns about the practical aspects of CTBT implementation, which may be resolved as the verification regime moves closer to completion. Others, however, go beyond specific CTBT concerns and relate to the region's complicated political climate.

Moving forward

An Article XIV Conference will be held in September 2005 in New York to discuss entry into force. It gives states an opportunity to take stock of the advances that have been made, particularly in the development of the verification regime, to analyze the obstacles to entry into force and universalization and to agree on how to move forward. States could consider working simultaneously on certain issues.

Completion of the IMS and the other CTBT verification mechanisms

It is critical that the CTBTO continues to receive the financial support necessary to complete the verification regime. So far, this has been forthcoming from member states. The CTBTO's budget has risen from US\$27.7 million in 1997 to US\$88.6m in 2003. Of the 2003 budget, 83 per cent was allocated to verification-related activities, including US\$30.1m to the Capital Investment Fund, which was set up to finance the establishment of the IMS. The rate of collection of assessed contributions from member states remains acceptable, with approximately 90–97 per cent of the budget collected annually.

Furthermore, states should also consider how they can work with the CTBTO to answer two key questions that are major barriers to completion of the verification regime:

- how to establish, and ensure data transmission from IMS stations in 'hold-out' countries like Iran and Pakistan; and
- how to reach agreement on on-site inspection procedures, including the long-delayed OSI manual.

Signature and ratification of 'hold-out' states

US ratification is often characterized as the key to progress on signature and ratification as a whole. For instance, it is claimed that US ratification is necessary to trigger a wave of successive ratifications or accessions: China would follow the US; India would follow China; and so on. However, US policy on CTBT ratification is highly unlikely to shift under the current administration. In addition, many of the states in this ratification chain are in the Middle East and South Asia, and US ratification is not their only concern with respect to the treaty. The 2008 US presidential election may see the accession of a CTBT-friendly administration. In the meantime, it is essential that the signatory states support universalization and continue to engage with hold-out states and seek out ways to address their anxieties and to convince them of the benefits of joining the treaty.

Other options

When the IMS is completed, the international community will find itself in the peculiar situation of having an operational monitoring system for an accord that is not yet in force. As long as the treaty does not enter into force, the IMS will be little more than a powerful supplement to states' national technical means of verification. Some nations have already begun to question whether work to complete the IMS should continue at the same pace as in the past. Some observers, therefore, have highlighted the possibility of provisional application, allowing

Box 2 Status of IMS construction in the MESA region

	Seismic		Radionuclide		Hydro-Acoustic	Infra-sound
	Primary	Auxiliary	Stations	Laboratories		
World	50	120	80	16	11	60
MESA	5	13	2	1	0	3
Under construction	1	3	n/a	n/a	n/a	0
Construction completed	2	10	2	n/a	n/a	1
Station certified	2	3	1	n/a	n/a	1
Station sending data to IDC	1	5	1	n/a	n/a	1

Source: CTBTO, August 2005

A global monitoring system nearing completion

While progress on signing and ratifying the treaty has been slow, the development of its verification system has progressed steadily over the past nine years. The International Monitoring System will form the cornerstone of this system. In terms of its global reach and interconnectedness, it is the most ambitious remote monitoring infrastructure envisaged for a multilateral arms control or disarmament agreement. It will eventually comprise 321 monitoring stations and 16 radionuclide laboratories located in some 90 countries. There are four types of station, seismic, infrasound, hydroacoustic and radionuclide, which collect data on a continuous basis. Stations automatically transfer this information to the International Data Centre in Vienna, which collates, processes, analyzes, reports on and archives it. Thereafter the IDC transmits the data on a trial basis to subscribing national authorities. Presently, 88 states subscribe to IDC products. On entry into force, only state parties have the authority to initiate the verification process, starting with a consultation and clarification procedure and, if requested by a state and approved by the Executive Council, concluding with an on-site inspection.

The Preparatory Commission supervises and coordinates the development, preparation, technical testing and, pending entry into force, provisional operation of the IDC and the IMS. The construction of the latter is progressing steadily, with the system currently at 65–70 per cent completion. However, a number of states, including some in the MESA region (described above), have blocked either the development of, or data transmission by, IMS stations on their territory. It is difficult to discern precisely the system's capability to detect and identify illicit nuclear tests, but it is clear that the IMS is already exceeding the estimates made by its designers, the Group of Scientific Experts, during the CTBT negotiations in the early 1990s.

Recently, member states have come to recognize the civil and scientific utility of data derived from the IMS. Non-treaty mandated uses of the system include the detection and possible prediction of earthquakes and tsunami using seismological and other waveform networks, as well as improved early warning and forecasting of weather fronts and volcanic eruptions. Radionuclide stations can supply information on natural or human induced radioactivity in the environment.

CTBT signatory states to implement the treaty and support continued maintenance of the verification regime, pending entry into force. The main benefit would be that the treaty gains legal force, at least among certain signatory states. Conversely, however, provisional application would not encompass all recognized or de facto nuclear weapon states, making the treaty less potent—the involvement of all states capable of nuclear testing was one of the reasons behind the strict entry into force provision. Others, who argue that a customary norm against nuclear testing exists, believe that the CTBT may not need to enter into force at all, as significant elements of the verification regime are already being implemented. They contend that even without a mechanism for verifying compliance, information collected by the monitoring regime could support an ad hoc compliance mechanism. Where IMS data indicates that a signatory state has conducted a nuclear test, this might trigger a meeting of the Preparatory Commission to consider the compliance concern. In any event, as CTBT compliance concerns impact on international peace and security, information supporting an alleged nuclear test can always be brought independently to the attention of the UN Security Council.

Even before member states consider whether to apply the treaty provisionally prior to entry into force, they can seek to convince the 'hold-out' states of the benefits of joining the test ban. While the CTBT's monitoring system is nearing completion, it is unlikely that it will be finished before 2008 (construction may well continue into the next decade). When the verification regime is fully developed, though, CTBT signatory states may wish to consider other options, including provisional application, which will allow the vast majority of nations to feel assured that a verifiable ban on nuclear testing is in force, albeit one temporarily lacking global reach.

Sean West

VERTIC Intern

For more information on the CTBT and its verification regime, see: Ben Mines, 'The Comprehensive Nuclear Test Ban Treaty: virtually verifiable now', *VERTIC Brief*, no. 3, VERTIC, London, April 2004; David Hafemeister, 'Effective CTBT verification: the evidence accumulates', *Verification Yearbook 2004*, VERTIC, London, 2003, pp. 29–44; and Oliver Meier, 'CTBT verification: technical progress versus political stasis', *Verification Yearbook 2002*, VERTIC, London, 2002, pp. 37–52.

Verifying small quantities: Saudi Arabia's SQP

Saudi Arabia finally signed a Comprehensive Safeguards Agreement (CSA) with the International Atomic Energy Agency (IAEA) on 16 June 2005. Once it ratifies this accord it will fulfil its overdue obligation under the 1968 Nuclear Non-Proliferation Treaty (NPT), which it joined on 10 March 1988, to establish nuclear safeguards. However, this development may prove to be a muted success, as Saudi Arabia simultaneously opted for a Small Quantities Protocol (SQP) to its CSA. This protocol, which suspends certain verification arrangements under a CSA, weakens the effectiveness of the nuclear safeguards regime. The IAEA is currently reviewing the efficacy of SQPs.

SQPs were first established in the 1970s. They were intended to reduce IAEA verification activities in states that do not possess the facilities and materials needed to develop a nuclear weapons programme, allowing the agency to concentrate on those with a developed nuclear industry. SQPs were also meant to reduce the verification burden on the IAEA, as well as on states with small or no nuclear programmes, thereby increasing the incentives for them to accede to the NPT and its associated safeguards regime.

Only those states that do not operate specific types of nuclear facilities and do not possess nuclear materials in quantities that are required to be under safeguards can conclude an SQP with the IAEA. And the IAEA may not refuse an SQP to a state that meets the specified criteria. The agency's model CSA identifies the types of facility and quantity thresholds of nuclear materials exempt from safeguards. Under an SQP, a state must provide information annually to the IAEA on its operational (of which there should be none), shut-down or decommissioned nuclear facilities, any planned nuclear facilities and international imports and exports of controlled materials. However, the SQP defers a state's CSA obligations to maintain material accounting systems and to report to the agency. Significantly, it also suspends the IAEA authority to carry out in-country monitoring and verification activities. States under an SQP are required to inform the agency of the development of facilities or the acquisition of materials that would otherwise be subject to comprehensive safeguards, at which point the SQP is redundant. Yet, independent verification of an SQP is problematic.

The recent agreement between Saudi Arabia and the IAEA, which came after months of negotiations, brings the total number of states that have signed SQPs to 90, with 76 in force. The vast majority of such agreements have not caused international concern; however, a number of members of the IAEA Board of Governors, including the US, opposed Saudi Arabia's SQP.

Cause for concern?

While suspicions about Saudi Arabia's involvement in a nuclear weapons programme cannot be confirmed by publicly available information, a string of unconfirmed media reports since the 1970s claim that it has undertaken a clandestine campaign to obtain a nuclear deterrent. Saudi Arabia has fuelled these suspicions through its military co-operation with states that have sought or possessed nuclear weapons. It reportedly offered to finance the rebuilding of Iraq's Osirak reactor, following its destruction by Israel in 1981, and had extensive relations with Iraq in the field of nuclear science prior to 1990. More recent reports suggest its intention either to develop security arrangements with a nuclear-armed patron, or possibly to seek to develop its own nuclear deterrent. Further fuelling this speculation, in 1998, China supplied Saudi Arabia with CSS-2 nuclear-capable, but modified, intermediate-range ballistic missiles, while in 2003, press reports alleged that Pakistan had agreed to furnish Saudi Arabia with a new generation of CSS-2 missiles in exchange for oil, although both governments strongly denied this.

Regional security issues will also affect the shape of Saudi Arabia's future defence and deterrent posture. Certain neighbouring states are known or suspected to possess nuclear, biological or chemical (NBC) weapons. There is ongoing anxiety over Iran's nuclear policy and Israel's extant nuclear weapons arsenal and alleged biological and chemical weapons capability. This is exacerbated by the deterioration of relations between Saudi Arabia and the US after the terrorist attacks of 11 September 2001 and doubts about the reliability of US defence commitments, as well as by global security questions.

Nevertheless, Saudi Arabia is not believed to have the requisite technical capability and expertise to develop an advanced nuclear programme. In particular, it lacks extensive knowledge of, and training in, nuclear fuel cycle-related activities (mining, conversion, enrichment, fuel fabrication and nuclear power production). However, its scientists have participated in numerous experiments into, and studies of, many aspects of uranium analysis, isotope production, radiation protection, waste management and reactor operations. Furthermore, academic research centres in Saudi Arabia have taken part in co-operative research projects on nuclear topics with a large number of states in the Gulf region and beyond.

Saudi Arabia's Atomic Energy Research Institute, located at the King Abdulaziz City for Science and Technology, in Riyadh, conducts programmes on the industrial application of radiation and radioactive isotopes, radiation protection, nuclear power and reactors, as well as nuclear materials. Saudi Arabia's other facilities that contribute to nuclear research include the Energy Research Laboratory, King Fahd University of Petroleum and Minerals, in Dhahran, which houses a three megawatt (MW) General Ionex Tandem Accelerator (used to study ion beam techniques) and the Cyclotron and Radiopharmaceuticals Department of King Faisal Specialist Hospital and Research Center, in Riyadh, which houses a CS-30 Cyclotron, designed for isotope production. In addition to the cyclotron, the department hosts five shielded hot cells, and separate laboratories for target preparation, radiopharmaceutical production, radio analyses and quality control.

Saudi Arabia's current technological and human resource capabilities are comparable to those of Libya before it became a customer of A.Q. Khan's nuclear procurement network. Libya sought to acquire nuclear-related technology in the mid-to-late 1980s and had begun to assemble a relatively advanced enrichment capability by 2003. With Saudi Arabia's immense wealth combined with an evolving nuclear black market, it could theoretically acquire a nuclear weapons capability in a much shorter time than the 20 years it took Libya.

Despite concerns that Saudi Arabia may consider acquiring nuclear weapons to quell its security anxieties, the state regularly affirms its commitment to a Middle East that is free of nuclear weapons, and has stated that its recent signature of the SQP demonstrates to the world that it has no intention of expanding its nuclear programme. Furthermore, Saudi Arabia's statements emphasize that it will continue to use nuclear science for peaceful purposes and will not pursue a nuclear weapons programme.

Under the agreed SQP, however, the IAEA's ability to conduct in-country verification of Saudi Arabia's nuclear activities will be severely restricted. Although, in theory, there remains the possibility of voluntary inspections, these would be subject to negotiation. Instead, the agency will be reliant on information provided by the Saudi Arabian authorities, complemented by any data it can obtain from other governments or from open sources. If Saudi Arabia were to develop a nuclear weapons programme, despite its assurances to the contrary, it could avoid detection more easily under an SQP than a standard CSA.

The SQP: too weak to work?

Apprehensions about Saudi Arabia's possible nuclear ambitions were heightened with its signing of the SQP, particularly because of the timing, coming after the agency had just initiated a review of SQPs as a whole. Current concerns over SQPs are primarily focused on the absence of information supplied by SQP states to the IAEA. This information gap is exacerbated by the fact that many of the SQP countries do not serve on the IAEA Board of Governors and most of them have no representation in Vienna, making communication between the agency and these nations more difficult.

So what action is required to strengthen the nuclear verification regime? The immediate answer would appear to be the scrapping of the SQP. If all SQPs were abolished, former SQP states would be subject to the full verification requirements under their CSA. This would enable the IAEA to verify states' safeguards agreements, notably by increasing the amount of information states are obliged to provide to the agency and facilitating in-country verification. This would allow the IAEA to draw safeguards conclusions on the country with greater ease.

The problem of safeguarding small quantities is primarily related to the absence of declarations by the SQP state. Currently such nations are not required to submit an initial report on their nuclear materials and facilities. However, even if SQPs were abolished, the scope of declarations under a CSA is inadequate, which agency experience in Iraq clearly shows. If a state under a CSA reports the complete absence of nuclear materials or facilities, the IAEA does not have a mandate to verify the accuracy and completeness of this report. Only expanded declarations under the 1997 Additional Protocol would help close this information lacuna.

The information deficit under a CSA also impinges on the agency's ability to conduct inspection activities, as details of undeclared nuclear facilities or holdings of nuclear material

Peace Missions Monitor

UN peace mission in Timor-Leste ends

On 20 May 2005, the last contingent of UN peacekeepers departed from Timor-Leste (formerly known as East Timor). The United Nations Mission of Support in East Timor (UNMISSET) was guided by a three-pronged mandate: to assist core administrative structures, especially the justice sector; to provide interim law enforcement and aid the development of a national police force; and to contribute to the maintenance of security. Despite several significant shortcomings in relation to the mission, much progress has been made. Timor-Leste has seen the withdrawal of nearly 5,000 UN peacekeepers without a major surge in violence. Nearly the entire border with Indonesia has been delineated, and is now patrolled by the Timorese Border Patrol Unit. Moreover, the UN initially administered the state, but it now stands on its own feet.

However, there are a number of areas in which UNMISSET's mandate was not fully achieved. First, the level of professionalism of the national police remains a serious concern. Although over 3,000 police officers have been trained and deployed, there have been numerous reports of human rights violations by police officers. Second, the justice system as a whole requires further capacity building. UNMISSET established training programmes for lawyers, but the first class will not graduate until 2007. Until then, courts will continue to be staffed in part by international judges, prosecutors and public defenders.

A political mission has succeeded UNMISSET: the United Nations Office in Timor-Leste (UNOTIL). UNOTIL is mandated to support critical state institutions, further develop the police and provide human rights training. UNMISSET's termination hopefully marks another key point on Timor-Leste's journey towards lasting peace, human security and reconciliation.

Sources include: *End of mandate report of the Secretary-General on the United Nations Mission of Support in East Timor*, 12 May 2005, S/2005/310, www.un.org/documents/repesc.htm.

cannot be incorporated into inspection plans. Information on sites and holdings derived through national technical means of verification could help point the agency in the right direction. But the use of such information by international verification organizations is sensitive. As experience in Iraq illustrates, national intelligence assessments can be inaccurate.

The IAEA has recognized the difficulties in safeguarding small quantities of nuclear materials and acknowledged that SQPs are problematic for the strength of the regime. In June 2005, the IAEA Board of Governors discussed a report by IAEA Director General Mohamed El Baradei that highlighted the constraints that the SQP imposed on the agency. The report also presented two possible solutions. The first is for the IAEA to refuse to authorize any more SQPs and to call on states with an SQP in force to rescind it. The second is to adopt a modified SQP, which requires that states that conclude an SQP in future provide initial reports to the agency on facility design and holdings of nuclear materials. The modified protocol would grant the agency a strengthened mandate for conducting on-site inspections and would only be available to states with no existing or planned nuclear facilities. It is further proposed that states that could not fulfil the new criteria be asked to cancel their current SQP. Another possible amendment, not raised by the IAEA, is to allow for the operationalization of clauses in the CSA that govern the use of special reports and inspections, giving the IAEA the explicit right to conduct inspections.

The road ahead

The agency will discuss options for changing the SQP regime in September. It is also planning seminars to inform member states of the related technical, legal and institutional issues in order to ensure that they understand the implications of amending or rescinding the protocol. The IAEA has stressed that all amendments would be implemented on a non-discriminatory basis. Saudi Arabia has stated its willingness to implement any changes in its CSA, as long as such modifications are mandated for all states.

The case of Saudi Arabia highlights the limitations of SQPs, and the nuclear safeguards system as a whole, in verifying the absence of a nuclear weapons programme in states that claim to have small quantities of, or no, nuclear materials. However, the problem of the nuclear safeguards system runs deeper than this, as it does not sufficiently take states' intentions to develop such weapons into account. The IAEA and its member states will need to consider the best options for facilitating a safeguards regime that works effectively, on a non-discriminatory basis and with limited funds.

Yana Feldman and Mary Beth Nikitin
FirstWatch International (FWI)

The authors are research analysts at FWI, a research consultancy that supports the nonproliferation efforts of governments and international and non-governmental organizations (NGOs). Mary Beth Nikitin is also Research Associate at the Center for Strategic and International Studies in Washington, DC.



Decision on UNMOVIC's fate looms

UN Security Council discussions on the future of the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC), which have continued throughout 2005, look set to enter an end-game phase. Only a Security Council resolution can terminate the commission's mandate to verify the dismantlement of Iraq's weapons of mass destruction (WMD) and long-range missile programmes and to institute ongoing monitoring and verification (OMV).

The new Iraqi regime has called for UNMOVIC's cessation and the return of money collected through the oil-for-food programme to pay for UN-mandated verification activities since February 2005. Iraqi officials have said that they now consider the state-specific verification system overseen by UNMOVIC as both discriminatory and unnecessary. Iraq has stated its intention not to acquire WMD, and has provided a detailed report on implementation of UN Security Council Resolution 1540 on preventing the acquisition of WMD by non-state actors. While the Security Council seems set to agree to the closure of UNMOVIC, there is growing recognition of its unique verification expertise relating to biological weapons and missiles. Debates on a future arrangement will likely address whether and how to preserve this proficiency in some way.

In the meantime, UNMOVIC continues to collate and analyze information on the status of sites (primarily through satellite imagery) and dual-use equipment and materials that are subject to monitoring, and is finalizing a compendium of Iraq's proscribed weapons and programmes. The compendium details the verification lessons to be drawn from the Iraq case and the experience of UNMOVIC and its predecessor, the United Nations Special Commission (UNSCOM). Work is also continuing to refine the OMV plan for Iraq. UNMOVIC has not been able to perform on-site verification activities in Iraq since March 2003. In practice UNMOVIC lost its mandate to carry on with them under UN Security Council Resolution 1483 of 22 May 2003, which recognized American and British inspections under the Iraq Survey Group. However, it has continued to train inspectors on its roster for deployment with on-site inspection missions and to establish OMV systems.

Ultimately, financial considerations may impact on the decision to wind up UNMOVIC. In June 2005, the Security Council

endorsed a proposal by UN Secretary-General Kofi Annan, at Iraq's behest, to transfer funds from UNMOVIC's escrow account, containing US\$345.9m. Two hundred million US dollars was transferred to the Development Fund for Iraq, and a further US\$20.2m was used to cover Iraq's arrears with regard to assessed contributions to the UN.

Sources 'Security Council approves transfer of \$200 million from escrow account to Development Fund for Iraq', *UN Press Release*, SC/8427, 24 June 2005, www.un.org; *Provisional record of the 5204th meeting of the Security Council*, S/PV.5204, 16 June 2005, www.un.org; 'Support grows for dismantling UNMOVIC', *Global Security Newswire*, 9 June 2005, www.nti.org; *Twenty-first quarterly report on the activities of the United Nations Monitoring, Verification and Inspection Commission in accordance with paragraph 12 of Security Council resolution 1284 (1999)*, S/2005/351, 27 May 2005, www.un.org; 'Russian diplomat says Iraq WMD issue not over yet', *Xinhua News Agency*, 21 May 2005, <http://news.xinhuanet.com>; 'Iraqi UN envoy calls for end to UNMOVIC', *Global Security Newswire*, 3 February 2005, www.nti.org.

Iran resumes uranium conversion

On 10 August 2005, Iran broke seals and resumed uranium conversion at its Esfahan facility. This followed an apparent breakdown in negotiations with the so-called E-3 (France, Germany and the United Kingdom), the European Union (EU) and Iran (see *Trust & Verify*, nos. 116, 117 and 119). The seals were broken under IAEA supervision and the agency will continue to monitor remotely operations at the facility using cameras. By deciding to continue to observe its voluntary suspension of all enrichment-related activities, Iran left open the possibility of further negotiation. The E-3/EU has responded by characterizing Iran's move as a breach of the 15 November 2004 'Paris Agreement' and the IAEA Board of Governors' resolution of 29 November 2004. The latter welcomes Iran's decision to suspend enrichment related and reprocessing activities while negotiations proceed on long-term arrangements, which aim to provide objective guarantees that Iran's nuclear programme is exclusively for peaceful purposes. Neither document was intended to establish legally binding commitments relating to Iranian uranium conversion. Iran has not indicated that it will suspend provisional application of its Additional Protocol.

On 11 August 2005, the IAEA Board of Governors adopted a resolution urging Iran to re-establish the full suspension of

all enrichment related activities—of which uranium conversion forms part—in the same non-legally binding manner as before. Meanwhile, the IAEA is continuing to verify Iran's compliance with its safeguards agreement and to assess its past and present nuclear activities. The IAEA Secretariat submitted a report on the implementation of Iran's safeguards agreement to its Board of Governors on 2 September 2005. In the report, the agency stresses that Iran's full transparency is indispensable and overdue. It also notes that, in light of past breaches of Iran's safeguards agreement, the country will have to employ transparency measures extending beyond the formal requirements of the Comprehensive Safeguards Agreement and the Additional Protocol. Without such measures, the agency's ability to verify the correctness and completeness of Iran's statements will be restricted.

Sources 'IAEA tests back Iranian claim on source of nuclear material', Global Security Newswire, 9 June 2005, www.nti.org; *Communication dated 1 August 2005 received from the Permanent Mission of the Islamic Republic of Iran to the Agency*, INF/CIRC/648, 1 August 2005, www.iaea.org; *Communication dated 2 August 2005 received from the Permanent Missions of France, Germany and the United Kingdom to the Agency*, INF/CIRC/649, 2 August 2005, www.iaea.org; *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran and related Board resolutions*, GOV/2005/64, 11 August 2005, www.iaea.org.

Forest treaty negotiations advance slowly

The third part of the 1994 UN Conference for the Negotiation of a Successor Agreement to the International Tropical Timber Agreement (ITTA) was held between 27 June and 1 July 2005 in Geneva, Switzerland. Over 180 governments, international organizations and an inter-governmental body took part in the negotiations. The ITTA's mandate, due to expire on 31 December 2006, has already been extended twice.

The ITTA provides a framework for co-operation between producer and consumer countries of tropical timber. It also promotes trade expansion and diversification, forest management-related research and policies for sustainable utilization and conservation of tropical forests and maintaining ecological balance. The successor agreement seeks to expand information sharing, to incorporate non-tropical timber issues and to address sustainability concerns. The ITTA established the International Tropical Timber Organization (ITTO) in 1986, which has some 59 members (divided into producer and consumer countries), which account for 90 per cent of global trade in tropical timber and 80 per cent of the world's forests.

Several reporting and review issues were tackled at the conference. Article 29, on 'Statistics, Studies and Information', requires that members provide information and statistics on

timber, trade in timber and timber-related activities, and is intended to achieve sustainable management of timber-producing forests. Under this article, it is envisioned that the ITTO will collate this information and assist in the standardization and harmonization of reporting. Although there is general agreement that good information is crucial to the effective working of the organization, some countries, from both consumer and producer groups, have not yet supplied the necessary information. In negotiations on Article 29, some producer members worked to remove the possibility of sanctions for non-reporting. Some nations opposed penalties for failing to provide the necessary information without a satisfactory explanation. Other states argued that the Council (the ITTO's highest authority) should be able to respond when confronted with such a situation. The suspension of voting rights and other rights had been proposed for countries that fail to submit the required statistics and information and that fail to seek assistance from the Executive Board or the Council, or to provide a satisfactory explanation for these failures. However, this option was rejected. The producer countries proposed giving the Council the ability to provide technical assistance to countries that were having difficulty in reporting satisfactorily, but an agreement could not be reached on this issue and the formulation of this article is pending.

In contrast to the Article 29 difficulties, Article 30, on 'Annual Report and Review', was approved. Under this article, the Council is required to publish an annual report on its activities and biennially review and assess the international timber situation. With respect to Article 35, on 'Review', delegates agreed that the Council may evaluate the implementation of the agreement, including objectives and financial mechanisms, five years after entry into force. However, Article 41, which concerns the method of entry into force, is yet to be agreed on.

Although progress was made during the third part of the negotiations on the successor agreement, the Vice-President of the Conference, Jürgen Blazer, expressed concern about the small amount of flexibility shown by delegates. The fourth part of the conference will take place from 16–20 January 2006 and should address the unresolved contentious issues. There may be a greater sense of urgency to conclude an agreement at those negotiations, since the current ITTA mandate will expire at the end of the same year.

Source 'Summary of the UN Conference for the Negotiation of a Successor Agreement to the International Tropical Timber Agreement, 1994, Third Part: 27 June–1 July 2005', *Earth Negotiations Bulletin*, vol. 24, no. 63, 4 July 2005, www.iisd.ca. For conference documents see www.unctad.org.



Sharper satellites

Reducing uncertainty in earth observation instruments leads to a clearer picture of environmental changes and trends. More accurate information from these devices allows for more informed decision-making and planning to prevent environmental degradation. The reduction of uncertainty could also foment wider, more comprehensive action on environmental issues by stimulating broader consensus. Satellites used for assessing climate change suffer from uncertainty. Some of it concerns the calibration of hyperspectral sensors mounted on the satellites, which measure various parameters, ranging from average global temperature to aerosol presence in the troposphere. However, the launch process can damage the calibration of the sensors. The utility in recalibrating sensors by comparing them with sensors on other satellites is limited, since such sensors may also have been damaged during the launch process, or they may have become less sensitive or lost calibration over time. Fortunately, the UK National Physical Laboratory claims to have found a way to overcome this problem. Researchers at the laboratory have devised a satellite, named the Traceable Radiometry Underpinning Terrestrial and Helio Studies (TRUTHS), which can calibrate in orbit. It is the first unmanned probe to be able to do so, and it could reduce uncertainty by a factor of 10. As well as enhancing the capacity of observers to monitor climate change, more accurate satellite data could improve systems for the accounting of removals of greenhouse gases by sinks, in particular through the provision of good quality data on the health status of trees (trees act as a sink by absorbing carbon dioxide).

Source 'Silencing the climate sceptics', *New Scientist*, no. 2502, 4 June 2005, p. 14.

Video surveillance software for intelligent verification

ObjectVideo, a company based just outside of Washington, DC, has received funding from the US Department of Homeland Security to further its research into intelligent video surveillance systems. The company will examine the concept of 'automated scene understanding', which could increase the efficiency and lower the response times of video surveillance activities. CCTV video footage is fed into the computer so as to produce an automatic determination of the type and position

of objects picked up by the camera. The system will also be able to recognize the different elements of the scene where the object under surveillance is located. If the software is developed successfully, it will form part of a larger system designed to merge information collected not only from CCTV cameras but also from radar, seismic stations and acoustic sensors. This software will reduce a large number of objects, events or patterns into a manageable few and, if appropriate, raise an automated alarm. The first generation of automated scene understanding software is being used by US troops in Iraq to set up rapid perimeter surveillance.

Intelligent CCTV software could be used to verify compliance with most types of arms control agreements. Since inspectors can sift through many hours of video effectively, it may be of great value to the IAEA in its development of integrated safeguards.

Sources 'Gov't research agency picks ObjectVideo', *ObjectVideo Press Release*, 13 May 2005, www.objectvideo.com; 'Marines deploy ObjectVideo intelligent video software in Fallujah to protect soldiers with a virtual perimeter', *ObjectVideo Press Release*, 15 June 2005, www.objectvideo.com.

VERTIC seminar: 'Facilitating the Early Entry into Force of the 1996 Comprehensive Nuclear Test Ban Treaty: Overcoming Political and Technological Challenges'

Thursday 22 September 2005 at 13.00
Conference Room 4, UN Secretariat, New York

Introduction

Michael Crowley, Executive Director, VERTIC

Moving forward: the role and activities of the Special Representative of CTBT States Ratifiers

Ambassador Jaap Ramaker, Special Representative

US ratification: prospects and consequences

Daryl Kimball, Executive Director, Arms Control Association

Nuclear noise: the role of infrasound monitoring

Dr Lassina Zerbo, Head, International Data Centre

Hydroacoustics: monitoring the world's oceans

Dr Wolfgang Jans, German Federal Armed Forces Underwater Acoustic and Marine Geophysics Institute

VERTIC is grateful to the governments of the Netherlands and Norway for their generous support for this seminar.

For more information, contact Jane Awford, by phone at +44 (0) 20 7065 0880, by fax at +44 (0) 20 7065 0890, or by e-mail at jane.awford@vertic.org

FCO grant for nuclear and biological weapons treaties implementation project

The UK Foreign and Commonwealth Office (FCO) has awarded VERTIC £100,000 from the UK Global Opportunities Fund (GOF) to support its project to build capacity to implement nuclear and biological weapons treaties, norms and UN Security Council resolutions. The project is intended to enhance states' capacity to implement effective national measures (in particular, criminal law, export controls, bio-safety/biosecurity measures and nuclear safety/security initiatives). VERTIC aims to raise awareness of requisite national implementation measures and systems among states, civil society, regional and relevant international organizations, such as the CTBTO, IAEA, Interpol, the Organisation for the Prohibition of Chemical Weapons (OPCW) and UN agencies, committees and directorates. Work will also include the development of training materials and pilot workshops, and the drafting and dissemination of model laws. VERTIC also plans to establish a website to make these and related materials widely available. VERTIC is grateful to the FCO for its backing.

ODI commissions verification study

VERTIC has been commissioned by the Forest Policy and Environment Programme (FPEP) at the UK Overseas Development Institute (ODI) to write a case study on the verification of nuclear safeguards. The paper will be one of several case studies commissioned by the FPEP as part of its 'VERIFOR project: institutional options for verifying legality in the forest sector'. The project supports the EU's Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan (see *Trust & Verify*, no. 120), which focuses on the institutional options for verification of forest products, particularly timber, and the provision of equitable solutions that do not have adverse effects on the poor and support good governance principles. The FPEP is particularly interested in exploring verification systems, such as nuclear safeguards, that span national and international constituencies.

Esmée Fairbairn grant for climate change project

In September 2005, the Esmée Fairbairn Foundation awarded VERTIC a grant of £72,000 to promote the verification and implementation of international agreements to combat climate

change. The two-year project will initially focus on the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and its 1997 Kyoto Protocol, but will also facilitate and promote the building of a post-2012 climate change regime. VERTIC is grateful to the Esmée Fairbairn Foundation for its continuing support of its Environment Programme.

New interns at VERTIC

Matthew Peterson and **Benjamin Mayo**, both MSc candidates in international relations at the London School of Economics and Political Science (LSE), joined VERTIC in July.

Matthew is helping Angela Woodward compile a survey of BWC implementation legislation in Commonwealth countries, and researching BWC implementing structures in Oceania.

While at VERTIC, Benjamin is investigating national structures and institutional frameworks overseeing implementation of arms control and disarmament treaties and agreements.

Staff news

MICHAEL CROWLEY took over as Executive Director on 27 June 2005. In his first two months in the post, Michael has concentrated on reviewing the organization's operations, establishing relations with its funding bodies and making contact with relevant governmental, inter-governmental and non-governmental organizations. He participated in the WMD 'New Approaches' seminar held at the Harvard Sussex Program from 29 June–1 July 2005, along with Angela Woodward and Andreas Presebo.

JANE AWFORD attended a press conference by former US Secretary of Defense Robert McNamara and General Sir Hugh Beach at the Foreign Press Centre on 3 June 2005, along with Andreas Persbo. The WMD Awareness Programme organized the event. On 15 June 2005, she listened to a talk on 'Russia and the Press' by Konstantin Eggert, Editor-in-Chief of the BBC Russian Service's Moscow Bureau, also at the Foreign Press Centre. She is currently publicizing VERTIC's CTBT seminar, to be held at the UN Secretariat in New York in September 2005.

BEN HANDLEY continued to deal with the day-to-day running of VERTIC's office, including producing financial budgets for the funders and the financial statement for the centre's Board of Trustees.

LARRY MACFAUL attended the meeting on 'Illegal Logging Update and Stakeholder Consultation' at the Royal Institute of International Affairs in London on 27–28 July 2005. He is continuing to examine future framework possibilities for the climate change regime.

ANDREAS PERSBO is organizing the upcoming VERTIC CTBT seminar. He is also writing the paper on verification of nuclear safeguards commissioned by ODI. On 8 June 2005, he observed the Nuclear Issues Working Group meeting at the Grayston Centre. On 15 June 2005, along with Larry MacFaul and Jane Awford, he participated in a 'Becoming media savvy' training course run by Reporting the World on behalf of the WMD Awareness Programme.

SEAN WEST continued his research on Middle East and South Asian attitudes toward the CTBT, and as part of his research met with political officers from various national embassies.

He is also monitoring the progress of the Central Asian Nuclear Weapons-Free Zone.

ANGELA WOODWARD attended a seminar on the 1925 Geneva Protocol organized by the governments of France and Switzerland, held on 9–10 June 2005 in Geneva, and represented VERTIC at the Meeting of Experts to the BWC, held on 13–17 June 2005. Together with Michael Crowley and VERTIC Board Co-Chair, Owen Green, Angela met with VERTIC funders and held consultations with UN personnel during a visit to New York and Washington, DC, from 21–28 June 2005. She gave a presentation on the International Committee of the Red Cross (ICRC)/VERTIC model implementing law for the BWC at a meeting of National International Humanitarian Law Committees of Commonwealth Countries, in Nairobi, Kenya, on 19–21 July 2005. Angela also observed several sessions of an UNMOVIC biological weapons inspector training course, held in Swindon, UK, on 25 July–5 August 2005.

building trust through verification

VERTIC is the Verification Research, Training and Information Centre, an independent, non-profit making, non-governmental organization. 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.

PERSONNEL Michael Crowley BSc (HONS), *Executive Director*; Angela Woodward BA (HONS), LLB, LL.M., *Deputy Director and Arms Control and Disarmament Researcher (Chemical and Biological)*; Jane Awford BA (HONS), MA, MA, *Information Officer and Networker*; Ben Handley, *Administrator*; Larry MacFaul, BA (HONS), MSc, *Environment Researcher*; Andreas Persbo, LL.M., *Arms Control and Disarmament Researcher (Nuclear)*; Sean West, *Intern*.

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EDITOR Michael Crowley.

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VERTIC
Development House
56–64 Leonard Street
London EC2A 4JX
United Kingdom

tel +44 (0)20 7065 0880
fax +44 (0)20 7065 0890
e-mail info@vertic.org
website www.vertic.org

Registered company no.
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