No SORT of verification

The Strategic Offensive Reductions Treaty (SORT), signed by US President George W. Bush and Russian President Vladimir Putin on 24 May 2002, is one of the shortest arms control accords in history. It has only one substantive provision: under Article I parties are obliged to 'reduce and limit strategic nuclear warheads . . . so that by December 31, 2012 the aggregate number of such warheads does not exceed 1700–2200 for each Party'. SORT confirms that the first Strategic Arms Reduction Treaty (START I) of 1991 remains in force. It also establishes a Bilateral Implementation Commission (BIC) that will meet at least twice a year.

SORT lacks most of the standard provisions of other bilateral nuclear arms control treaties between Russia and the US. In order to preserve stability, the two Strategic Arms Limitation Treaties (SALT I and II) of 1972 and 1979 and the two START treaties of 1991 and 1993 aimed to determine the structure of the two parties' strategic arsenals. By contrast, SORT gives Moscow and Washington complete freedom of choice in regard to the structure of the land-, sea-, and air-based components of their nuclear triads.

Previous treaties also contained elaborate plans for the timing and scope of reductions to prevent parties from gaining temporary advantage by postponing the bulk of their cuts to the end of the reduction period. SORT contains no such schedule. Even a temporary increase in the number of warheads is permissible as long as the parties comply with their obligations by 31 December 2012. Given that the treaty expires on 1 January 2013 unless renewed, the parties, technically speaking, need only be in compliance for one day. The US has, however, unilaterally announced its intention to reduce its strategic weapons to 3,800 by 2007. Although Russia has not declared its intentions, the size of its nuclear arsenal is bound to decrease substantially because it cannot afford to maintain and/or replace its existing stockpile.

SORT also lacks the complex accounting rules which, in the past, have determined the maximum number of warheads that each side could deploy. The two countries can achieve their reductions either by dismantling warheads or removing them from delivery vehicles and placing them in storage. The latter option, known as 'downloading', is cheaper, but the warheads can be quickly redeployed or 'uploaded'. According to a statement by US Secretary of State Colin Powell to the Senate Foreign Relations Committee on 9 July 2002, the US plans to make extensive use of downloading and maintain around 2,400 warheads in 'responsive storage'. In contrast, Russia's 'uploading' capability will be negligible due to the costs and because redeploying Russian nuclear warheads is technically difficult.

As in previous treaties, each side has the right to withdraw from SORT, but after just three months' notice rather than the customary six. Moreover, unlike its forerunners, SORT does not require such a decision to be justified by 'extraordinary events' that threaten the country's supreme interests.

Inside this issue . . .

Nikolai Sokov analyses the Strategic Offensive Reductions Treaty, while Alexandra González-Calatayud reviews *Earth Summit 2002: A New Deal*, edited by Felix Dodds. Plus all of the usual features: Peace Missions Monitor, Verification Watch, Science and Technology Scan, Verification Quotes and VERTIC News and Events.

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United States

Estimated current deployed strategic warheads 7,000 (including spares)

Deployed warhead limit under SORT 2,200

Russia

Estimated current deployed strategic warheads 5,000

Deployed warhead limit under SORT 2,200

SORT's biggest and most troubling surprise, however, is the complete absence of data exchange or verification mechanisms. As things stand, transparency will depend on the parties providing information voluntarily. Much of this will not be verifiable.

The politics of SORT

The treaty reflects the fact that Russia and the US no longer perceive each other as a nuclear threat. Consequently, each side can afford the other a high degree of flexibility in determining its nuclear posture, while making implementation of agreed reductions less complicated and costly. Verification was sacrificed to these considerations. As Colin Powell put it, the traditional approach to nuclear arms control verification was 'neither required nor relevant'.

From the perspective of international security, this is a mistake. Transparency is the most valuable element of any international regime, especially if the provision of information is accompanied by the ability to verify its accuracy. It reduces uncertainty and helps to prevent suspicion and misperception. The costs of verification are offset by the long-term benefits of increased predictability and trust. In the case of SORT, with an effective verification system in place the US could reap the immediate benefit of being able to verify that Russian nuclear warheads were not being diverted to other states or terrorists.

SORT (of) verification

Throughout the SORT negotiations Russia proposed measures to make it more difficult for the US to reconstitute its nuclear forces by uploading warheads from storage. These measures included verified elimination of delivery vehicles and/or verifiable destruction of downloaded warheads. There are reasons to believe, however, that the Russian commitment to these proposals was half-hearted. The Russian military would not have been prepared to accept a highly intrusive inspection regime for its own nuclear weapons infrastructure, although it has recently shown greater appreciation of the value of transparency.

The START I verification regime, which is set to expire along with START I itself at the end of 2009, will not be able to fill the SORT verification gap. Even if Russia and the US decided to extend its life, it would not meet SORT's requirements. START I establishes upper limits on nuclear weapon delivery vehicles—inter-continental ballistic missiles, submarine-launched ballistic missiles (SLBMs) and heavy bombers—and seeks to verify these limitations, while SORT restricts the number of deployed warheads. Under the START verification regime it is not possible to verify the status of non-deployed nuclear warheads, which may be kept ready for redeployment near a missile base or returned to a base from storage without the other side being aware of it.

The only START verification measure with potential relevance to SORT is re-entry vehicle on-site inspections (RV OSI). These could help confirm the number of deployed warheads on most delivery vehicles (although there is controversy over whether they can truly verify the number of warheads on US SLBMs). The number of RV OSIs under START I is, however, limited to ten per year. Additional RV inspections provided for by START II will never materialise as that treaty is effectively dead: immediately after the US withdrew from the 1972 Anti-Ballistic Missile (ABM) Treaty on 14 June 2002 the Russian Foreign Ministry informed the Duma (parliament) that it considered START II officially void.

Fixing SORT verification

A SORT verification regime would lead both countries into uncharted territory, since nuclear warheads have never been subject to verification and neither country has allowed foreigners access to its most secret nuclear weapon facilities. Even the Cooperative Threat Reduction (Nunn–Lugar) Programme, which assists Russia in dismantling nuclear weapons and improving the safety and security of Russian nuclear facilities and which gives the US unprecedented access to Russian nuclear facilities, does not include regular visits to warhead storage and dismantlement facilities. In order to open each country's nuclear weapon complex to verification, Moscow and Washington would have to overcome considerable opposition from their military establishments (the US navy reputedly being the most vociferous opponent), as well as from the US Department of Energy (DOE) and the Russian Ministry of Atomic Energy (Minatom), which are in charge of nuclear weapons production.

On the positive side the improved relationship between the two countries allows almost unlimited time for developing a SORT transparency and verification regime. Furthermore, each

side favours progress on at least some elements of such a regime. The US has traditionally been interested in exchanging data on warheads, while Russia is interested in restricting the US uploading capability. The main hope for strengthening transparency and verification under SORT rests with the BIC. It could do so gradually, starting with transparency measures, to reassure domestic sceptics that secret information can be fully protected. Russian officials, including the ministers of foreign affairs and defence, and military leaders, have already decl ared that they hope to use the BIC to develop measures to limit the US uploading capability.

Discussions on SORT verification do not need to start from scratch. An outline of a verification regime for tactical nuclear warheads was developed by the Soviet Union in the early 1990s, but was pre-empted by the US/Soviet unilateral pledges of September and October 1991 that the majority of such weapons would be eliminated or placed in storage. Since negotiations on such weapons never took place, the Soviet plan has never been made public. Yet it could serve as a starting point for discussions in the BIC, as the procedures for monitoring strategic and tactical nuclear warheads are the same.

Another document that might be studied for SORT verification ideas is the Memorandum of Understanding (MOU) tabled by the US in February 2000 as part of a draft START III treaty. While this did not propose verification measures, it did contain detailed proposals for data exchanges on strategic and tactical nuclear warheads, as well as various other information categories. Moscow rejected the memorandum because it opposed data exchange without verification and because it viewed the document as biased against Russia. Finally, a SORT verification regime could apply some of the START mechanisms to warheads. These include baseline and close-out inspections, suspect-site inspections and elements of the procedures designed for permanent monitoring of perimeters and portals.

In addition, the BIC could be used to discuss transparency measures for tactical warheads. In fact, a verification regime that addresses only strategic warheads is destined to be incomplete, since each side might harbour suspicions that the other had mischaracterised strategic warheads as tactical.

A possible SORT verification regime

A proposal for a warhead verification regime was presented by the author at a conference on tactical nuclear weapons organised by the United Nations Institute for Disarmament Research (UNIDIR) in September 2001. Such a regime would comprise three elements which would be introduced in stages.

The first element would be data exchange. Initially, Russia and the US could trade basic information on warhead stockpiles, starting with total numbers and the location of storage facilities. This could be later expanded to include additional data, such as the quantity and type of warheads stored at each facility. The second element would be the verified elimination of warheads, for which procedures developed in the mid-1990s by the Russian nuclear weapons laboratory at Snezhinsk (Chelyabinsk-70) under a contract with the US DOE could be utilised. The purpose of these procedures is to give inspectors the ability to confirm that a warhead has been disassembled and that the extracted fissile materials have been shipped to a designated storage facility.

The third and potentially most controversial element would involve the monitoring of, and inspections at, storage facilities. Both sides could initially agree on measures to secure the perimeter of such sites, by installing, for example, remote sensors at portals to assess the movement of warheads. This would ensure that stored warheads were not secretly transferred or re-deployed. The 'legitimate' movement of warheads would be subject to notifications, analogous to those under START I regarding the transportation of missile stages. Next, more intrusive procedures could be introduced, including on-site inspections at storage facilities in order to ascertain the number (and possibly types) of stored warheads. The same approach could be followed at production and maintenance facilities to provide verifiable information on the quantity of newly produced and refurbished warheads.

In the author's detailed discussions with US and Russian government experts (civilian and military), the uniform response was that such a regime was 'doable'. All they needed was a political decision to begin.

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Verification Watch

OPCW: new Director-General appointed

On 25 July the reconvened First Special Session of the Conference of States Parties to the Chemical Weapons Convention endorsed a recommendation by the Executive Council (EC) of the Organisation for the Prohibition of Chemical Weapons (OPCW) that Argentinean diplomat Rogelio Pfirter be appointed as the organisation's new Director-General. The appointment is for four years. Pfirter is currently Under-Secretary for Foreign Policy in the Ministry of External Relations, International Trade and Worship, in Buenos Aires. The new appointment became necessary after José Bustani of Brazil was dismissed as head of the chemical weapons verification organisation in April 2002 (see lead article in *Trust & Verify,* May–June 2002).

Source 'OPCW Special Session appoints Director-General', *OPCW Press Release,* no. 51, The Hague, 25 July 2002.

Good news and bad for Kyoto

May and June brought good news for the Kyoto Protocol. On 30 May the 15 members of the European Union (EU) simultaneously submitted their instruments of ratification to United Nations (UN) Secretary-General Kofi Annan in New York. On 4 June Japan followed suit, bringing the total number of ratifications to 74. There was also bad news, though, as Australian Prime Minister John Howard announced his government's intention not to ratify, claiming that it would cost jobs and damage the country's national energy industries. Instead, Australia joined the US in a bilateral initiative—the US–Australia Climate Action Partnership—to cut greenhouse gas (GHG) emissions. The project was officially announced on 11 July and includes 19 programmes, covering areas like climate change science and engagement with business in developing technology to reduce GHGs.

To enter into force the Kyoto Protocol must be ratified by at least 55 countries, including the industrialised countries listed in Annex 1 that were responsible for at least 55 percent of GHGs in 1990. The ratifications by the EU states and Japan take the emissions percentage to 35.8 percent. Without Australia or the US (which withdrew from the negotiations in March 2001), ratifications by Russia (17.4 percent) and Poland (3 percent) provide the likeliest scenario for achieving entry into force.

Source 'The EU's 15 members submit Kyoto Protocol ratification', *UN Wire,* 30 May 2002, www.unwire.org; 'Australia refuses to ratify Kyoto', *UN Wire,* 5 June 2002, www.unwire.org; 'US, Australia start joint emissions program', *UN Wire,* 9 July 2002, www.unwire.org; Parliamentary question without notice: Kyoto Protocol, Australian House of Representatives, Column 3163, *Hansard,* 5 June 2002, www.aph.gov.au; United Nations Framework Convention on Climate Change, www.unfccc.int.

IAEA: safeguards progress; radioactive sources hunted

After three years of work, the Board of Governors of the International Atomic Energy Agency (IAEA) agreed on a 'Conceptual Framework for Integrated Safeguards' at its meeting on 18–22 March 2002 (see *Trust & Verify,* March–April 2002). The framework describes the principles for combining old and new safeguards. The goal of integrated safeguards is to reduce verification activities in those states where an Additional Protocol (AP) is being implemented, resulting in cost savings and a reduction in the inspected state's verification burden. The new framework gives the IAEA more flexibility in applying safeguards, both at the state level and at certain types of facilities, including light water reactors, research reactors, on-load refuelled reactors and spent fuel storage areas. The new approach is not summarised in a single paper; several documents set out the overall objective, basic principles and technical guidelines.

Six APs (for Jamaica, Kuwait, Nicaragua, Paraguay, Tajikistan and South Africa) were approved by the Board of Governors on 12 June 2002. This brought the total number approved to 68. Twenty-six have entered into force. Two nuclear weapon states have also made progress on strengthened safeguards. On 28 March, China became the first nuclear weapon state to ratify an AP. According to press reports, however, it wants to limit its extended reporting under the agreement to more information on nuclear exports to non-nuclear weapon states. Apparently, Beijing does not intend to provide more information on, or access to, its domestic nuclear activities. Meanwhile, the US government has submitted its AP to the Senate for ratification. US officials have been quoted as saying that ratification would have no great effect on American industry other than to require more than 100 nuclear-related facilities, mostly manufacturing plants, to supply the IAEA with general descriptions of their activities.

The IAEA has also increased its efforts to improve control over radioactive sources that could be used in radiological weapons. Such devices use conventional explosives to disperse radioactive material. The Agency estimates that, worldwide, such sources

are used at more than 20,000 facilities, divided almost evenly between medical and industrial users. The IAEA claims that more than 100 countries do not even have basic controls over such sources. In February and March, Agency experts helped secure two strontium-90 sources in Georgia, one abandoned cobalt source in Kabul, Afghanistan, and one cobalt-60 source in Uganda. A high-profile search for two other Soviet-era strontium-90 generators in Georgia, involving 80 inspectors over a two-week period in June, found nothing. On 12 June the Agency, the US DOE and Minatom of Russia established a tripartite Working Group on Securing and Managing Radioactive Sources in the former Soviet Union, which will be funded by Russia and the US.

Source 'Background on IAEA Board of Governors' approval of framework for integrated safeguards', undated; 'Stronger nuclear safeguards system taking shape', *Worldatom Frontpage News,* 19 April 2002, www.iaea.org; Pierre Goldschmidt, 'Strengthened safeguards: meeting present and future challenges', *IAEA Bulletin,* vol. 43, no. 4, 2001, pp. 6–11; 'Spokesperson's remark on China's completion of legal procedures for the Protocol Additional to the Safeguards Agreement between the PRC and the IAEA', *Press Release*, Ministry of Foreign Affairs of the People's Republic of China, Beijing, 2 April 2002; Steve Hirsch and Greg Webb, 'United States 1: Bush sends Additional IAEA Safeguards Protocol to Senate', *Global Security Newswire,* 10 May 2002, www.nti.org; 'The IAEA board approves verification agreements with more states', *Worldatom Frontpage News,* 20 June 2002, www.iaea.org; 'Inadequate control of world's radioactive sources', *Press Release PR 2002/9,* IAEA, Vienna, 25 June 2002, www.iaea.org; 'Georgia nuclear hunt draws a blank', *BBC News Online,* 1 July 2002, www.bbc.co.uk.

Illegal logging: G-8 performance revealed

The illegal logging of protected tree species was on the agenda at the G-8 summit in Kananaskis, Canada, on 26–27 June 2002. Under discussion was a recently published report by the G-8 Action Programme on Forests, which was set up in 1998 to complement international activities to safeguard forests. The report outlined the improvements made by the G-8 countries (Canada, France, Germany, Italy, Japan, Russia, the UK and the US) and China in monitoring and assessing trends in forest management and developing indicators to measure progress. It also examined the increasing use of satellite and aerial imagery to help track illegal logging.

However, this publication was closely followed by a World Wildlife Fund for Nature (WWF) report, *The Timber Footprint of the G8 and China,* which alleges that 13 percent of the timber and wood products imported by these countries have been illegally logged. WWF is one of the independent non-governmental organisations (NGOs) contracted by the Secretariat of the 1973 Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES) to review the trade data submitted by parties in their annual reports as required under the treaty's monitoring mechanism. The WWF report estimates that every year 53 million cubic metres of timber, pulp and paper is imported by the G-8 from countries like Brazil and Indonesia where illegal logging is widespread.

The report states that measures should be implemented to verify the legality of this imported timber. Currently, unless timber species are listed under CITES, they are not tracked once they leave the exporting country. To date, the UK is the only nation to have implemented a 'green timber' procurement policy. It has also signed an MOU with Indonesia, committing both countries to legislative reform and the development of systems to prevent logging and illicit trade of Indonesian timber. The WWF calls on the UK government to encourage its G-8 partners to take similar steps.

Source 'G8 Action Programme on Forests: Final Report 2002', Government of Canada G8 Summit 2002 website, www.g8.gc.ca; 'G8 imports of illegally logged wood condemned', *New Scientist,* 2 June 2002, www.newscientist.com; 'Government responsible for illegal timber imports', *WWF press release,* 20 June 2002.

CTBT news

- Burkina Faso, Kazakhstan and Venezuela are the latest countries to ratify the 1996 Comprehensive Nuclear Test Ban Treaty (CTBT), bringing the total number of ratifications to 93. This includes 31 of 44 states that must ratify the agreement before it can enter into force. As of 2 July, the total number of signatories was 165.
- During its seventeenth session, the Preparatory Commission (PrepCom) for the CTBT Organisation (CTBTO) agreed to provide the UK-based International Seismological Centre (ISC) with its seismological data for 2000 and 2001. The data, obtained by the CTBTO's International Monitoring System, will be used in the ISC catalogue and bulletin. The PrepCom decided that future discussions should 'focus on guidelines for a draft model agreement between the PTS and scientific organizations, before addressing any further requests' for its data.
- During a closed briefing for members of the US Congress, Bush administration officials accused Russia of making preparations to conduct a nuclear test. According to the *New York Times* of 11 May, the officials claimed that the pattern of work (presumably observed by American satellites) at the former Soviet test site at Novaya Zemlya was similar to that observed prior to past nuclear tests. While the veracity of the information was debated, the briefing did lead the House of Representatives to amend the 2003 Defense Authorization Bill to include a

Verification Quotes

There are no mileposts for performance. There is nothing really to verify except good faith. If things start going sour between the two countries and we get into a period of intensive distrust, this document will be looked back on as having no legal enforcement mechanism, no performance mechanism and not much of an accomplishment at all.

Former Chairman of the Senate Armed Service Committee, Sam Nunn, commenting on the Strategic Offensive Reductions Treaty, quoted in Peter Slevin, 'Senate set to scrutinize accord on nuclear cuts', *International Herald Tribune,* 8 July 2002, p. 2.

The verification regimes that have accompanied our previous arms control agreements with Russia have . . . been the product of two countries suspicious and distrustful of one another—two countries that considered each other as a strategic threat. I have submitted to the Congress a report required by Section 306 of the Arms Control and Disarmament Act on the verifiability of the Moscow Treaty. In that Report, I conclude that the Treaty is not constructed to be verifiable within the meaning of Section 306, and it is indeed not. A treaty that was verifiable under the old Cold War paradigm was neither required nor relevant in this case.

US Secretary of State Secretary Colin L. Powell, 'Statement on the US–Russia Treaty on Strategic Offensive Reductions', Testimony before the Senate Foreign Relations Committee, Washington, DC, 9 July 2002.

programme for exchange visits by Russian and US scientists to their respective nuclear test sites. Moscow has denied that it plans resuming nuclear tests. Independent experts believe that Russian efforts to improve test site readiness mirror US activities (see *Trust & Verify,* March–April 2002). Pavel Felgenhauer, a Moscow-based defence analyst, notes that: 'Naturally, the government began preparing for major tests as soon as the [US] Nuclear Posture Review came out. But they won't move until the Americans do'.

Source CTBTO website, www.ctbto.org; Tom Shanker, 'US says Russia is preparing nuclear tests', *New York Times,* 12 May 2002, www.nytimes.com; Charles Digges, 'Moscow denies US reports that Russia is planning nuclear tests', Bellona Foundation, 13 May 2002, www.bellona.org; Michael Jasinski, Cristina Chuen and Charles Ferguson, 'Renewed US–Russian controversy over nuclear testing', *Research Story of the Week,* Center for Nonproliferation Studies, Monterey Institute of International Studies, 27 May 2002, www.cns.miis.edu; CTBTO Preparatory Commission document, *CTBT/PC-17/1/Annex 2,* Vienna, 15 April 2002, www.ctbto.org.

Shipping safety and pollution code in force, again

On 1 July 2002 the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code) entered into force for general cargo and container ships and certain mobile off-shore drilling platforms. It aims to enhance ship safety and management practices, thereby preventing ocean pollution from shipping, by requiring implementation of a Safety Management System (SMS). The code, which is mandatory for states parties to the International Convention for the Safety of Life at Sea (SOLAS), entered into force for other classes of vessels, including passenger ships, oil tankers and bulk carriers, on 1 July 1998.

Compliance with the Code will be verified through a certification system managed by the flag state, an organisation recognised by the state, such as a classification society, or another SOLAS state party. Shipping companies will be issued with a Document of Compliance following an initial inspection, which is valid for five years, subject to an annual verification audit. Each ship will be granted a Safety Management Certificate if its owners and shipboard management are complying with an SMS. Shipping companies are encouraged to conduct voluntary examinations of their procedures between inspections. Port states will also play a role in monitoring implementation of the ISM Code by requiring information on ISM certification status from ships entering their territorial waters.

There is concern, however, that ships from 'flag of convenience' nations—those that maintain open registries where there may not be a 'genuine link' between the ship owners or crew and the registering state—may not be properly inspected prior to certification. Moreover, Safety Management Certificates may not be revoked when shipping companies fail to comply with the SMS.

There is also a perception that self-reporting on implementation of the SMS may incriminate ship owners or crew. This could result in legal action following a ship accident that results in pollution or other damage. A study is currently being conducted to assess whether this may affect the quality of reporting. However, one indication that many companies have improved ship management practice as a consequence of the code is that fewer insurance claims were made during 2000 with respect to those vessels required to implement the new practices on 1 July 1998, compared with those covered by the July 2002 deadline.

Source 'Shipping enters the ISM Code era with second phase of implementation', *IMO Press Briefing,* 28 June 2002, www.imo.org; 'ISM frequently asked questions', www.imo.org; 'Safety management', www.imo.org; 'The production of evidence within the ISM code: a conflict between public and private interests', www.ismcode.net.

Australia Group adopts new guidelines

Members of the Australia Group (AG) agreed to a number of new measures at their annual meeting in Paris, France, on 3–6 June. These guidelines will expand the AG's control over the

export of chemical and biological weapons-related materials and technology. Founded in 1985, the AG is an informal network of 33 countries which seek to harmonise their export controls on biological and chemical dual-use items. The new guidelines attempt to update and refine previously agreed regulations.

The two most important new measures are the 'no-undercut' and 'catch-all' provisions. The latter directs members to license the export of items that could be used to develop biological or chemical weapons, even if they are not on the group's control lists. Exporters are required to alert government authorities if they are aware that unlisted items are intended for a biological or chemical weapons programme. The 'no-undercut' provision obliges all members to deny export licences for any item that is essentially identical to one for which another member state has already denied a licence.

AG members also agreed to limit exports of fermenters with a capacity in excess of 20 litres and have added eight new toxins to its biological control list. For the first time, AG member states agreed to control the spread of critical technology by 'intangible means', such as electronic communications. It remains unclear how this will be implemented.

Source Mike Nartker, 'International response: Australia Group adopts new guidelines', *Global Security Newswire,* 21 June 2002, www.nti.org; Seth Brugger, 'Australia Group concludes new chem-bio control measures, *Arms Control Today,* July/August 2002, www.armscontrol.org; 'Australia Group–new measures to fight the spread of chemical and biological weapons', *Australia Group Press Release,* 7 June 2002, www.australiagroup.net.

US zigzagging on threat reduction

On 27 December 2001 the Bush administration announced that a nine-month review of US nonproliferation and threat reduction assistance to Russia had found that most of the 30 programmes 'work well, are focussed on priority tasks and are well managed'. In contrast to previous attempts to cut such programmes, the review recommended extending DOE efforts to secure and consolidate weapon-grade nuclear materials and expanding the Warhead and Fissile Material Transparency Programme.

Accordingly, the Bush administration in its fiscal year (FY) 2003 request proposes to spend US$957 million on weapons of mass destruction nonproliferation efforts by the DOE, Department of Defense and Department of State. This would be an 18 percent increase over the FY2002 congressional appropriation. However, if the extra funding spent on nonproliferation tasks after 11 September is taken into account, the Bush administration request amounts to a 6 percent decrease compared with actual spending in FY2002.

In early April the *New York Times* reported that Washington had informed Moscow that it could not certify Russian compliance with the 1972 Biological Weapons Convention (BWC) and the 1993 Chemical Weapons Convention (CWC). Annual certification of Russia's 'commitment' to treaty compliance is required under US law. If the administration does not certify compliance, Russia cannot receive new funds for threat reduction programmes. (DOE Cooperative Threat Reduction programmes would not be affected.)

While the notice is not an accusation of Russian non-compliance, the Bush administration remains dissatisfied with Russia's account of its past offensive chemical and biological weapons activities and its refusal to provide the United States with a genetically-modified strain of anthrax (see the September–October 2001 issue of *Trust & Verify*). US administration officials say that the freeze on existing programmes is temporary and that they are seeking a waiver of the congressional certification requirement.

At the G-8 Summit in Kananaskis, Canada, on 26–27 June, the US successfully lobbied for its plan to commit the world's seven richest nations to spending US$20 billion over the next ten years on a 'Global Partnership Against the Spread of Weapons and Materials of Mass Destruction'. Under the scheme, the US has pledged US$10bn, which will be matched by the other G-7 states (the G-8 minus Russia). Priorities are chemical weapon destruction, nuclear submarine decommissioning, fissile material disposition and employment of former Soviet weapon scientists.

Russia will be the first country to receive assistance, but others may follow. The agreed guidelines for the programme state that 'mutually agreed effective monitoring, auditing and transparency measures and procedures will be required' to ensure the success of the measures.

Source 'Administration review of non-proliferation and threat reduction assistance to the Russian Federation', *Press Release,* The White House, Office of the Press Secretary, 27 December 2001; 'Russian–American experts applaud Bush administration budget for cooperative nuclear security programs', *News Release,* Russian–American Nuclear Security Advisory Council, Washington, DC, 4 February 2002, www.ransac.org; Bill Hoehn, 'Analysis of the Bush administration's fiscal year 2003 budget requests for US–Former Soviet Union nonproliferation programs', Russian–American Nuclear Security Advisory Council, Washington, DC, April 2002, www.ransac.org; Judith Miller, 'US warns Russia of need to verify treaty compliance', *New York Times,* 8 April 2002, www.nytimes.com; Philipp C. Bleek, 'Bush refuses to certify Russian chem-bio compliance', *Arms Control Today,* May 2002, www.armscontrol.org; 'Statement by G8 leaders: The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction', Kananaskis, 27 June 2002, www.g8.gc.ca.

Science & Technology Scan

Super-intelligence to monitor terrorists

Following the terrorist attacks of 11 September 2001, the US Defense Advanced Research Projects Agency has accelerated its programme to develop an information system to identify and track terrorist activity. A US$200m prototype, called Total Information Awareness (TIA), is expected to be operational by September 2002. By integrating data from a wide range of sources and using automated analysis tools to generate possible scenarios for a terrorist attack, the system is designed to trigger warnings of future assaults.

Terrorist movements, communications, meetings, transfers of money or weapons can generate informational clues. The TIA project aims to establish a database of heterogeneous information from, *inter alia,* passport and visa applications, criminal, education and housing records, travel and transportation information, as well as personal identity data like fingerprints and iris scans. Electronic data mining tools will be used to sift through information from security services. The combined data will be automatically processed and information patterns checked for correlations with data in a library of previous terrorist attacks. The system is also intended to provide policy-makers with a tool to evaluate strategies to deal with the consequences of a possible terrorist attack. The TIA is expected be fully operational within five years.

The systems and techniques used to store, analyse and retrieve large volumes of data, such as those being developed for the TIA, could benefit verification organisations seeking evidence of illicit activities in large quantities of diverse information.

Source Frank Tiboni, 'New $200 system designed to follow terror's money trail', *Defense News,* 3–9 June 2002, p. 3; 'Information awareness proposer information pamphlet', US Defense Advanced Research Projects Agency, BAA 02-08, 21 March 2002, available at www.darpa.mil.

Making light work of radiation detection

Radioactive contamination is invisible to the naked eye. This hampers clean-up operations after radioactive leaks and spillages, since it is difficult to locate the source and extent of the contamination. The invention of goggles that make radiation glow in the dark could change this. Researchers at British Instrument Consultants (BIC) have exploited the phenomenon of scintillation—small flashes of light that occur when alpha particles hit molecules of zinc sulphide—to make radiation visible. The flashes of light can be picked up using standard military night-vision glasses tuned to the wavelength of the scintillated light. The contamination reveals itself as an intense glow on the green screen of the goggles. Currently, the new technique can detect contamination levels down to 30 becquerels per square centimetre. However, BIC is confident that this could be reduced to as low as 10 becquerels per square centimetre. At the moment, the goggles can only be used in the dark because daylight disguises the tiny flashes of scintillated light. However, researchers think that filters could make it possible to see the radiation glow in ambient light.

The main advantage of this technique is the ability to 'see' radioactivity emitted from unusually shaped objects. Traditional probes find it difficult to explore the nooks and crannies in nuclear power plants or inside warheads. The disadvantages include having to spread the contaminated area with zinc sulphide. Nonetheless, the goggles provide a valuable new radiation detection tool which could prove useful for on-site inspections under arms control regimes, as well as during the decommissioning of nuclear power plants.

Source Rob Edwards, 'Glow for it', *New Scientist,* 14 March 2001, www.newscientist.com; 'New light on radiation spillage', *Press Release,* British Instrument Consultants, Cheshire, UK, 12 December 2001, www.tradepartnersuk-usa.com.

Mini-neutron detector

Researchers at the Argonne National Laboratories in Illinois, US, have developed one of the smallest portable neutron detectors. Neutrons are uncharged particles, making them impossible to detect directly. At the heart of the new device is a small wafer of gallium-arsenide—a semi-conducting material similar to silicon—coated with a thin layer of boron or lithium. When a neutron strikes the coating, it produces a cascade of detectable charged particles.

The wafer is the size of a shirt button, but it is thinner. It uses less than 50 volts of power, substantially less than silicon alternatives. In addition, the device can operate at room temperature and does not degrade when exposed to ionising radiation. Taken together, these qualities give the detector a number of important advantages over other sensor techniques and methods. The team has already developed working prototypes and is now seeking commercial partners before taking the project further. Future verification applications might include helping inspectors detect the presence of fissile materials.

Source 'Tiny device can detect hidden nuclear weapons, materials', *Press Release,* Argonne National Laboratory, Argonne, Illinois, 21 June 2002, www.anl.gov.

VERTIC | News & Events

VERTIC/UNA verification pamphlet

VERTIC has produced, with the United Nations Association of Great Britain and Northern Ireland (UNA-UK), a pamphlet on the verification of arms control and disarmament agreements. A copy is enclosed with this edition of *Trust & Verify*. If you would find additional copies useful for educational purposes please contact John Russell at j.russell@vertic.org.

VERTIC/UNIDIR Verification Handbook

VERTIC has completed the text of a *Handbook on Verification and Compliance,* commissioned by UNIDIR, with funding from the US Department of State. The book will be published jointly by VERTIC and UNIDIR later this year in English and Arabic. While it is primarily directed towards assisting negotiators of future arms control and disarmament agreements in the Middle East and for use as a training tool in that region, it should also be of general interest. It is intended as a companion volume to *Coming to Terms with Security: A Lexicon for Arms Control, Disarmament and Confidence-Building,* which was published by UNIDIR in 2001. For more information see www.unog.ch/unidir.

New VERTIC interns

Two new interns have joined VERTIC until September 2002. Kristina Hinds, of Barbados, who is completing an MA in international relations at the University of Kent, will research India–Pakistan border monitoring possibilities. Marie Fagerström, of Sweden, a third-year law student at the London School of Economics and Political Science, will assist with VERTIC's project on national implementation legislation for the BWC.

Peace Missions Monitor

Israel/Palestine: proposals for international monitoring

The upsurge of violence between Israelis and Palestinians in recent months has led to increasing calls for an international presence that has a monitoring and verification role. Traditionally, Israel has opposed such ideas, viewing international involvement as a threat to its sovereignty and restricting its military options. Palestinians have generally supported such a presence, which they see as safeguarding their security and raising their international legitimacy.

US, June 2001, March 2002 and April 2002

Tenet Plan proposed by Central Intelligence Agency (CIA) Director George Tenet calls for 'designated US officials' (presumably CIA personnel similar to those used to help implement the 1998 Wye River Memorandum) to assist both sides through liaison and monitoring in strictly observing their ceasefire. Middle East Special Envoy Anthony Zinni proposes deployment of CIA monitors in Palestinian jails and security officers to assist in maintaining a ceasefire. Secretary of State Colin Powell, on his ill-fated Middle East mission, recommends the dispatch of monitors to verify compliance with a ceasefire and to rebuild confidence between the parties.

Saudi Crown Prince Abdullah, March 2002

Eight-Point Plan calling for Israel to withdraw to 1967 borders and Arab recognition of Israel, included a proposed international peacekeeping force with a monitoring and protection role.

United Nations, April 2002

UN Secretary-General Kofi Annan calls for international peacekeeping force led by the North Atlantic Treaty Organisation (NATO), with Security Council authorisation and robust mandate. US and NATO are lukewarm to the idea.

European Union (EU), April 2002

Based on a proposal by German Foreign Minister Joschka Fischer, the EU suggests dispatching an international force, involving the UN and the EU, to monitor a buffer zone between Israel and Palestine. Israel quickly voices its opposition.

Source 'Powell mission in jeopardy as Israel defies US', *The Times,* 12 April 2002, p. 1; 'Israelis warn EU against buffer force plan', *The Times,* 15 April 2002, p. 16; 'Israel must not show any sign of weakness', *Die Zeit,* 11 April 2002 (English version on German Foreign Ministry website, www.auswaertiges-amt.de); 'Annan pushes for NATO force of peacekeepers', *Financial Times,* 18 April 2002, 'Saudi Minister calls for peacekeeping force in Palestinian Territories', *Financial Times,* 28 April 2002, 'Monitors begin supervision of jailed Palestinians', *Financial Times,* 3 May 2002, all on www.ft.com; 'Why Bush entered the fray', *Time,* 25 March 2002, p. 34.

Verification Yearbook 2002

Preparations are well under way for publication of this year's edition of the *Verification Yearbook,* VERTIC's annual survey of verification developments. The 2002 volume will include: coverage of new trends in the verification of multilateral arms control and nonproliferation agreements; CTBT and CWC developments; infrasound monitoring of CTBT compliance; the new non-governmental Bioweapons Prevention Project; the Soviet/UK/US trilateral initiative on biological weapons; small arms verification and monitoring; entry into force of the Open Skies Treaty; developments in the Kyoto Protocol regime; and verification of the Convention on Biodiversity. For the first time, the *Verification Yearbook* will also have chapters on international election monitoring, with a focus on the 2002 Zimbabwe presidential poll, and human rights monitoring. The book will be launched in December 2002. To secure your copy, at a 15% discount, see the order form at www.vertic.org.

Book Review *Earth Summit 2002: A New Deal.* Felix Dodds (ed), (London: Earthscan Publications, 2000), £18.50 (paperback) pp. 384, ISBN 185-383-8675

Felix Dodd's timely book looks at the challenges that the World Summit on Sustainable Development, to be held in Johannesburg, South Africa, from 26 August to 4 September 2002, should address and the preparatory action needed. In evoking US President Franklin D. Roosevelt's New Deal of the 1930s it anticipates the expectations that readers may have that the summit will advance the sustainable development agenda through new approaches. It brings together contributions from all relevant sectors, including non-governmental organisations (NGOs), governments and inter-governmental organisations (IGOs). Contributors also reflect the concerns of different regions, making *A New Deal* a truly global exercise. The downside of having such a variety of contributions, though, and, one of my few gripes with the book, is that there is a certain amount of repetition.

Since part I is the only section that deals directly with implementation, one might have expected a chapter on the important subject of verification. Unfortunately this is not the case, despite the fact that almost all the chapters mention compliance, monitoring and verification as key tools for ensuring the success of Agenda 21. For instance, Simon Upton considers that a system of rules will not succeed without at least a degree of compliance enforcement. Victoria Elias concludes by suggesting that the establishment of a new international mechanism, 'respecting sectoral, regional and gender differences, would help to monitor . . . information access and exchange on environment and development'.

Part III looks at developments in specific areas, including forests, transport, poverty, financial resources, trade, and civil society and business. Of particular interest from the verification point of view are the chapters on forests and finances. In both, the authors acknowledge the importance of verification for sustainable development and recommend that it be implemented and enhanced for various purposes. Stephen Bass recommends an extension of the certification/verification mechanisms established by the Forest Stewardship Council (FSC) to global environmental services and other forest issues, while Barbara Bramble suggests that the Ad Hoc Open-ended Working Group on Financing for Development should commission research on what kinds of programmes have delivered results. Finally, Rob Lake points out the important role of civil society in transparency and information disclosure mechanisms for verifying companies' compliance with sustainable development standards.

In the fourth section of the book, existing global environmental monitoring systems are examined and recommendations made for their supplementation. Jagjit Kaur Plahe and Pieter van der Graag look at the potential of verification and monitoring in their article on the accountability and responsibility of large transnational companies. While voluntary codes of conduct are the main tool proposed by transnationals to ensure their compliance with sustainable development objectives, the only way to make these credible and effective, according to the authors, is through an independent monitoring and evaluation system, based on independently verified indicators.

Felix Dodd closes the book with a chapter on reform of international institutions. He outlines some of the options for moving the international machinery forward, proposing the creation of a World Environment Organisation to 'counterbalance' the World Trade Organisation. Dodd concludes by identifying the need for a 'new realistic deal' between developed and developing countries. *Earth Summit 2002: A New Deal* offers a comprehensive analysis that will make it a stimulating read not only for policymakers, but also for anyone interested in the advancement of sustainable development.

Alexandra González-Calatayud, Intern, Legal Affairs Division, World Trade Organization, Geneva.

Staff news

MOLLY ANDERSON attended a meeting with the UK Department of Environment, Food and Rural Affairs (DEFRA), organised by Climate Action Network-UK (CAN-UK), on 27 May to discuss preparations for the sixteenth meetings of the subsidiary bodies (SB16) to the UNFCCC. Molly participated in a UNFCCC workshop on greenhouse gas registries on 2–3 June in Bonn, Germany, and stayed on to attend the SB16 from 5–14 June. She has been working on the environmental chapters for the *Verification Yearbook 2002* and organising VERTIC's workshop entitled 'Getting on with it: obstacles to early implementation of reporting and review under the Kyoto Protocol', which will be held in London on 13 September 2002.

TREVOR FINDLAY, along with Mark Bromley of the British American Security Information Council (BASIC), met with Beth Richardson of the Canadian High Commission on 13 May to discuss the outcome of the Nuclear Non-Proliferation Treaty Review Conference PrepCom meeting, which was held in April in New York. On 17 May he met with David Garner, Director of the Space Monitoring Directorate, US Department of Defense, to discuss VERTIC activities. On 21 May he attended the launch at the House of Commons of a report by several NGOs on the concept of a British UN Civilian Peace Service. Together with other VERTIC staff, he met with Denis Chouinard of the Canadian Department of Foreign Affairs and International Trade to discuss VERTIC research, Canadian arms control policy and funding possibilities. He had a breakfast meeting with Hilary Palmer on 5 June to discuss US funding developments. Trevor and Oliver Meier met with Hakan Fidan, Political Research Officer at the Australian Embassy, Ankara, Turkey, on 11 June. On 26 June Trevor gave a presentation to the IAEA's Seminar for African States on the Non-Proliferation of Nuclear Weapons in Johannesburg, South Africa, on 'Verification and compliance for a nuclear weapon-free world: what is required?' The following day he toured the Pelindaba nuclear facility with other conference delegates. On 3 July he attended the launch at the International Institute of Strategic Studies (IISS) of the book *Peacemonger* by former UN Under Secretary-General for Political Affairs, Marrack Goulding.

VANESSA CHAGAS continued helping with the organisation of VERTIC's climate change workshop. She has started examining the issue of compatibility between the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and the Kyoto Protocol and the possibility of undertaking a research project on that issue. She also continued to help with general administrative tasks. Vanessa has joined VERTIC as a part-time Research Assistant with the Environment Programme from the end of July until the end of September 2002.

BEN HANDLEY continued to manage daily administration. He has produced financial statements and reserve policy calculations for the Board of Directors. He has also overseen the installation of a new contacts list database for VERTIC and a new distribution method for *Trust & Verify.*

JOAN LINK made a second visit to The Hague, Netherlands, during the meeting of the Executive Council of the Organisation for the Prohibition of Chemical Weapons to talk to national delegates and members of the Technical Secretariat about ideas she is developing for her VERTIC report on the CWC. She also attended a seminar in the Netherlands organised by the Pugwash Chemical and Biological Weapons Group to discuss preparations for the CWC Review Conference in 2003.

OLIVER MEIER participated in a meeting of the Interim Steering Committee of the Bioweapons Prevention Project in London on 18 and 19 May. Along with Trevor Findlay, he met with Yuri Kase of the Japan Institute of International Affairs on 20 May to discuss possibilities for co-operation. On 22 May, Oliver was interviewed on *DeutschlandRadio* on the new US–Russia nuclear arms control accord. From 28–30 May he attended the annual meeting of the European Safeguards Research and Development Association (ESARDA) in Luxembourg, where he gave a paper on 'New trends in the verification of multilateral arms control and nonproliferation agreements'. On 6 June, together with Trevor Findlay, he met with the Japanese Ambassador to Saudi Arabia, Nobuyasu Abe, to discuss recent arms control developments. On 24 June, Oliver and Trevor Findlay attended a seminar by Joseph Cirincione of the Carnegie Endowment for International Peace at the IISS on the Bush administration's nonproliferation policies. In the reporting period, Oliver co-authored with Trevor Findlay a VERTIC *Briefing Paper* on 'Exploiting synergies between nonproliferation verification regimes: a pragmatic approach'. His joint chapter with Iris Hunger on '"Open Sources" und Verifikation: Die Demokratisierung von Rüstungskontrolle?' has been published in Ulrich Albrecht and Jörg Becker (eds), *Medien zwischen Krieg und Frieden* (Nomos: Baden-Baden, 2002).

JOHN RUSSELL finished work on the *Handbook on Verification and Compliance* and added the finishing touches to the VERTIC/

UNA-UK Guide to Verification for Arms Control and Disarmament. He has also been conducting research on national implementation legislation for the BWC, various nonproliferation issues, implementation of the CWC and the 1992 Open Skies Treaty. On 25 June and 9 July he attended All-Party Working Group meetings at the House of Commons, where Joseph Cirincione spoke on 'Post ABM: US Nuclear Policy and its effect on non-proliferation' and Ambassador Rakesh Sood, India's representative to the Conference on Disarmament in Geneva, spoke on 'India, nuclear weapons and arms control'.

ANGELA WOODWARD met with Kate Dewes and Rob Green of the Disarmament Security Centre in Christchurch, New Zealand, on 12 May. She also attended the Intersessional Standing Committee meeting of the states parties to the Ottawa Convention on 31 May in Geneva, where she consulted delegations and NGOs on VERTIC's guide to fact-finding missions for the convention and made a statement to the meeting on 'Promoting facilitation and clarification of compliance'. She visited the UK office of the Harvard Sussex Program at the University of Sussex on 12 and 13 June to conduct research for VERTIC's project on national implementation legislation for the BWC and to consult with Daniel Feakes. Along with Trevor Findlay, she attended the Charity Awards 2002 ceremony at the Hotel Inter-Continental in London on 20 June, as guests of VERTIC's auditors, Trustient Chartered Accountants.

On 1 July, Angela submitted a dissertation on 'Verification of alleged biological weapon use' as part of the LLM course that she is currently doing at the London School of Economics and Political Science.

VERTIC

VERTIC is the Verification Research, Training and Information Centre, an independent, non-profit making, non-governmental organisation. Its mission is to promote effective and efficient verification as a means of ensuring confidence in the implementation of international agreements and intra-national agreements with international involvement. VERTIC aims to achieve its mission through research, training, dissemination of information, and interaction with the relevant political, diplomatic, technical, scientific and non-governmental communities.

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